

ANIMAL CARE AND HUSBANDRY - MACAQUES AT [redacted] (03/08/2020)

PQMS3-MARP-SOP-0061-V2.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

Irrelevant Information

8: 38 AM AE

: 42 AM AES

9: 09 AM AES

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe what is required for the daily observation, monitoring, feeding and watering of macaques at [redacted]




1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Area of [redacted] at [redacted]

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Ergonomics and Manual Handling
-  PQMS3-MARP-SOP-0118 Health Monitoring of Macaques
-  PQMS3-MARP-SOP-0319 Provision of Water for Macaques

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

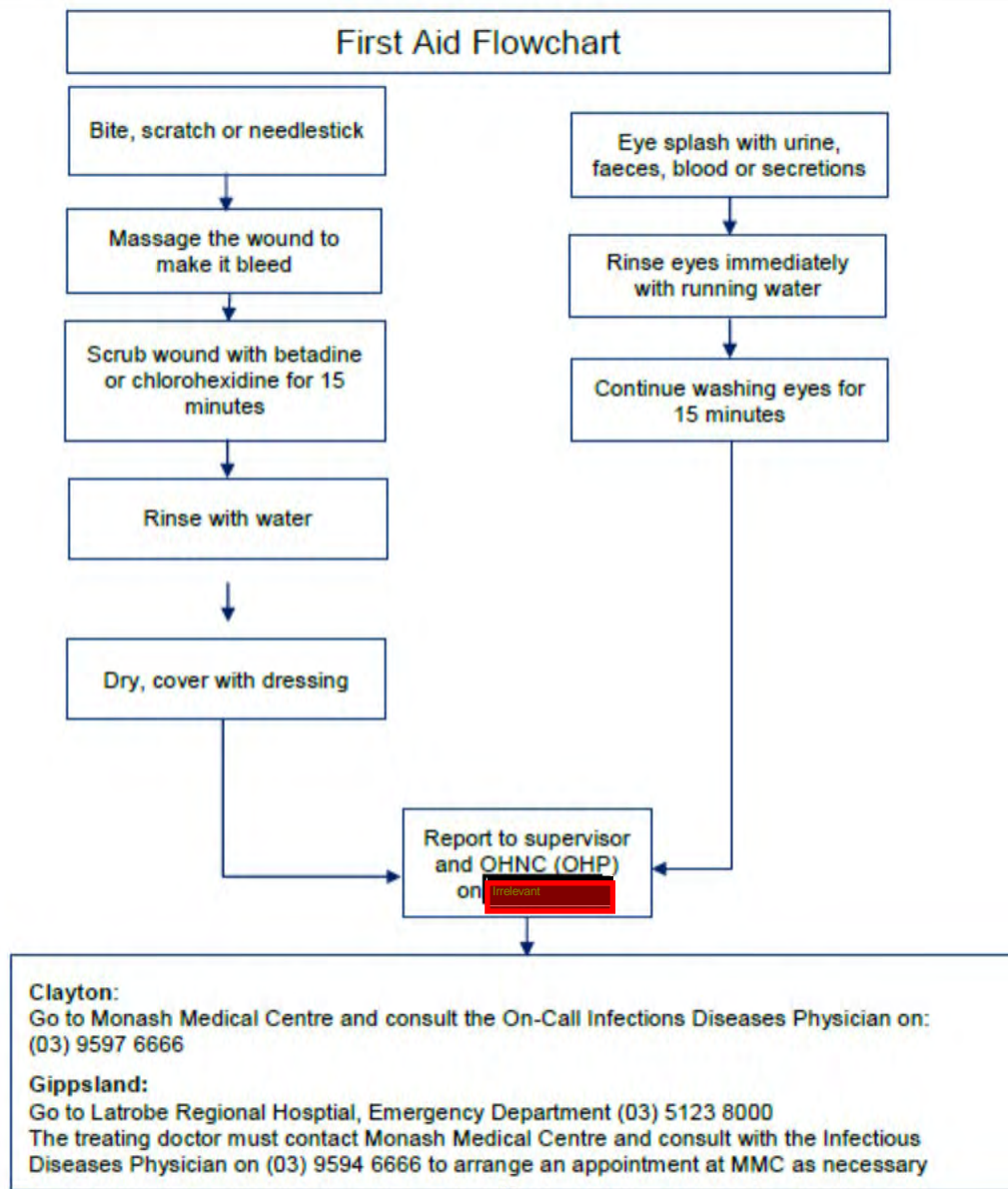
PQMS3-MARP-RA-0161 Macaque Area Risk Assessment [redacted]

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities [redacted]

Specific health and safety considerations while performing this procedure are:


- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the [redacted] of [redacted].

Macaque First Aid Flow Chart



5. DAILY, WEEKLY AND MONTHLY TASK SCHEDULE

5.1 All Daily, Weekly and Monthly Tasks are listed on the double doors of irrelevant (Fig.1).

 PQMS3-MARP-REF-0128 Daily Task List for Macaques – irrelevant







GFS MACAQUE FACILITY DAILY TASK LIST		
MONDAY TO FRIDAY	WEEKEND	PUBLIC HOLIDAY
ENVIRONMENTAL OBSERVATIONS	ENVIRONMENTAL OBSERVATIONS	ENVIRONMENTAL OBSERVATIONS
TREATMENTS AND MEDICATIONS	TREATMENTS AND MEDICATIONS	TREATMENTS AND MEDICATIONS
HEALTH AND WATER CHECKS / OUTSIDE ACCESS / FEED PELLETS	HEALTH AND WATER CHECKS / FEED PELLETS	HEALTH AND WATER CHECKS / FEED PELLETS
LABTRACKS - Medications - Task Manager - Clean Cage Checks - Projects Monitoring	LABTRACKS - Medications - Task Manager - Clean Cage Checks - Projects Monitoring	LABTRACKS - Medications - Task Manager - Clean Cage Checks - Projects Monitoring
CLEANING FLEXAGONS (starting Monday if feasible and continuing until complete)		FEED FRUIT
OUTSIDE ACCESS LOCKED IN / FEED FRUIT / DOUBLE CHECK		WASH BUCKETS / CLEAN WASH AREA
WASH BUCKETS / HOPPERS / CLEAN WASH AREA		CLEAN FLEXAGONS IF SCHEDULED ON ROSTER
FOOD PREPARATION (as required)		FOOD PREPARATION (as required)
ENVIRONMENTAL ENRICHMENT DISTRIBUTION (as feasible)		

EXTRA TASKS AS PRIORITIZED BY REQUIREMENTS	
WEEKLY	
Client Orders (Animals, Blood Collection, etc.)	Cleaning irrelevant
Technical Procedures (worming, TB Testing, etc.)	Cleaning irrelevant
Enrichment Preparation	Cleaning / Restocking PAPR
Cleaning irrelevant	Cleaning Change Rooms and irrelevant
Cleaning irrelevant	Setup / Wash Bins
Cleaning irrelevant	Eye Wash Testing
Cleaning irrelevant	
MONTHLY OR AS REQUIRED	
Pressure Cleaning Floors around Flexagons	Cleaning Kitchen Windows
Cleaning irrelevant	Cleaning Cool Room and Shelves irrelevant
Cleaning Oven in irrelevant	Preparing Muffins

Fig.1

5.2 Daily tasks are described in the following procedures in this SOP:

5.3 Weekly and Monthly tasks are described in the following SOPs:

-  PQMS3-MARP-SOP-0292 Washroom Operations for Macaques
-  PQMS3-MARP-SOP-0318 Environmental Enrichment for Macaques
-  PQMS3-MARP-SOP-0321 Cleaning General Areas for Macaques
-  PQMS3-MARP-SOP-0112 Cleaning Flexagons for Macaques
-  PQMS3-MARP-SOP-0124 Cleaning Primate Housing Units
-  PQMS3-MARP-SOP-0108 Food Preparation for Macaques

5.4 All daily tasks need to be completed on the day except for cleaning flexagons and general areas, food preparation and environmental enrichment distribution.

5.5 Upon completion of tasks, they are written into the macaque diary so that all staff know they have been completed.

5.8 Weekend and Public Holiday are also listed in the Daily task List and detailed in the related SOP. Generally no extra tasks are performed at Weekends, except for the Christmas Holidays when cleaning and food preparation is performed.

 PQMS3-MARP-REF-0128 Daily Task List for Macaques – irrelevant

6. RECORDING DAILY ENVIRONMENTAL OBSERVATIONS IN Irrelevant Information

6.1 The following equipment and materials are required to perform this procedure:


QUANTITY	EQUIPMENT DETAILS
5	Testo 174H data Loggers
1	Data Logger Cradle
1	Computer with MARP Intranet Access
1	Diary Log Book
QUANTITY	MATERIAL DETAILS
1	Macaque Facility Diary
1	Pen

6.2 Temperature and Humidity are recorded first thing in the morning.



Fig.2

6.4 Go to each area and display readings as per Environmental Recording SOP.

 PQMS3-MARP-SOP-0274 Environmental Recording

 PQMS3-MARP-FRM-0276 Room Environmental Recording Form


6.5 Record the current temperature and humidity in the Macaque Diary and on the Room Environmental Recording Form.

 PQMS3-MARP-FRM-0276 Room Environmental Recording Form

6.6 Log onto a computer and enter the Environmental Observations into the online recording system via the MARP Intranet.

 PQMS3-MARP-SOP-0274 Environmental Recording

6.7 At the end of each month a report needs to be downloaded to show any alarms where the temperature or humidity has exceeded normal ranges.

 Temperature and humidity readings that are outside the set parameters must be reported to the AFM immediately.

6.8 For importing measurement data from each data logger, save to file using the following folder on the Monash Share Drive:

S:\MNHS-MARP\nhmrc\ [redacted] Field Station [redacted] Macaques\Facility Management\Testo Datalogger Records\current year\current month

6.9 Print the report showing any alarm points and send to the Animal Facility Manager.

- Alarm points for the various rooms are:

Room	Min. Temp	Max. Temp	Min. Humidity	Max. Humidity
[redacted]	20 °C	26 °C	30%	70%
[redacted]	20 °C	26 °C	30%	70%
[redacted]	18 °C	35 °C	30%	70%
[redacted]	18 °C	35 °C	30%	70%
[redacted]	18 °C	35 °C	30%	70%

6.10 If recording of daily environmental observations are required in [redacted] refer to the Testo Data Logger SOP for procedure.

- PQMS3-MARP-SOP-0517 BC2/PC2 – Testo Data Loggers

- The [redacted] may request that daily environmental observations are taken for [redacted] rooms even if there are no BC2/PC2 projects active.

7. GENERAL HEALTH CHECKS AND OUTSIDE ACCESS

7.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Mini Marker
1	Cage keys
1	Robertson Wrench
QUANTITY	MATERIAL DETAILS
varies	PQMS3-MARP-FRM-0009 Macaque Outside Access Sheet

7.2 Daily checks are performed with the following frequency and time of day:

	Monday - Friday	Weekend / Public Holidays
Frequency	2 times a day	Once a day
Time of day or activity	Morning or When providing outside access and feeding their morning ration of pellets	Any time of day or during any activity
	Afternoon or When moving macaques back inside and feeding their ration of fruit and vegetables	


- ☐ Macaques are provided with outside access every day of the working week, except for Weekends, Public Holidays or if being treated for illness/injury.
 - ☐ It is a Legislative Requirement that Macaques must not be without outside access for a maximum of 6 weeks without written approval from the Monash Animal Ethics Committee.
 - ☐ Macaques are only allowed outside access if two staff are rostered on duty to allow double checking and verification. If one staff member leaves early in the day, it is essential that all macaques are locked inside while there are two staff members present.
 - 🐒 Macaques are not allowed outside access if the outside environmental conditions are too extreme, such as temperature below 5°C or over 35°C, strong wind, storms or fire risk is code red or extreme.
- 7.3 On Entry to relevant information go to room relevant information and get a set of access keys and Mini Marker. During this time look though irrelevant windows for any escapees and notify other staff if animals are loose within the building.
- 📖 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
- 7.4 Once correct PPE is on walk next to the flexagon in which the health of the macaques will be visually observed (Fig.3).
- 📖 PQMS3-MARP-SOP-0117 Entry and Exit to Macaque Facilities - relevant information




Fig.3: Macaque Flexagon

 PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities 

7.5 Check every macaque for health as per the Health monitoring SOP.

 PQMS3-MARP-SOP-0118 Health Monitoring of Macaques

7.6 Check the correct operation of the watering system.

 PQMS3-MARP-SOP-0319 Provision of Water for Macaques.

7.7 If all macaques in the flexagon appear to be healthy and behaving in a normal manner, and there's no problems with the automatic water supply, sign, date and initial the outside access sheet located on the external enclosure door next to the flexagon with a mini marker.

 PQMS3-MARP-FRM-0009 Macaque Outside Access Sheet (Fig. 4).

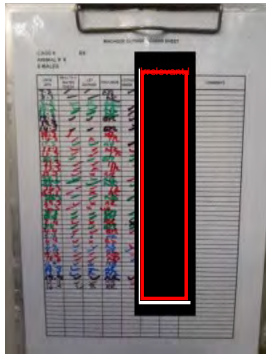




Fig. 4: Outside Access Sheet

7.8 If any births are observed in the cage, record on outside assess sheet diary, Macaque Diary, Macaque Database and LabTracks.

 PQMS3-MARP-FRM-0009 Macaque Outside Access Sheet


 PQMS3-MARP-SOP-0128 Macaque Animal Records

7.9 After signing outside access sheets, lift locking bar lever, pull and drop onto the first notch, so that the slide door leading to the outside enclosure is open. (Fig.5).



Fig 5: Locking bar mechanism

- 7.10 At the end of the day all animals are monitored again as per the health monitoring SOP, while they are brought inside and locked in for the night. Ensure that all macaques in the group are inside when operating the chute to lock them inside.

 PQMS3-MARP-SOP-0118 Health Monitoring of Macaques

- 7.11 Lift the locking bar up to release the lever.


- 7.12 Push the lever so the chute door closes the opening in the outside access tunnel (Fig.6).




Fig.6: Fully closed slide door


- 7.13 Lower the lock bar so it engages the right notch which prevents the lever and door from moving (Fig.3).

- 7.14 Count and check all macaques in the group against the number of animals listed on the Non-Human Primate Daily Checks and Outside Access Sheet to determine that all of them are inside, and are healthy and free of any injuries as described in the Health Monitoring of Macaques SOP.

 PQMS3-MARP- FRM-0009 Non-Human Primate Daily Checks and Outside Access Sheet.


 PQMS3-MARP-SOP-0118 Health Monitoring of Macaques


- 7.15 Sign the Outside Access Sheet located on the door.

 PQMS3-MARP-FRM-0009 Non-Human Primate Daily Checks and Outside Access Sheet

- 7.16 A second staff member now counts and checks all macaques in the flexagon as per 8.14 and then signs the Outside Access Sheet on the door.

 This is to verify that no animals are inadvertently left outside.

 PQMS3-MARP-FRM-0009 Non-Human Primate Daily Checks and Outside Access Sheet

 Once all spaces are filled on the Outside Access Sheets, they are replaced with a new sheet and stored in a folder marked "Outside Access Sheets" located in the

irrelevant


8. FEEDING DAILY PELLETT RATIIONS

8.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Pellet Trolley
4 bags	Pellet diet
1	scissors
1	Measuring Jug
QUANTITY	MATERIAL DETAILS
1	Pellet sheet
1	Group sheet


8.2 Macaques are fed twice daily, in the morning and then in the afternoon. In the morning, macaques are fed Pellets while doing animal checks and opening outside access tunnels. In the afternoon they are given their fruit & vegetable ration.

FEEDING SCHEDULE		
DAY	PELLET RATIIONS	FRESH FOOD RATIIONS
Normal Weekday	AM	PM
Weekend	AM	n/a
Public Holiday	AM	AM

 At weekends, macaques are only fed pellet rations but during public holidays, they are fed both pellets and fruit and vegetables.

8.3 Collect the full Pellet Bin Trolley (Fig. 7) from outside the East side door of the Irrelevant

Irrelevant

 Ensure that the pellet sheet on the Pellet Trolley clipboard is present. Refer to: Food preparation for Macaques.



 PQMS3-MARP-SOP-0108 Food Preparation for Macaques.



Fig 7: Pellet Bin Trolley

8.4 Move the Pellet Trolley to one of the flexagons at one end of the facility, locate its Group number from the Group Sheet (Fig.8) displayed on the Flexagon and find the amount to feed that group from the Pellet Sheet (Fig.9).

 PQMS3-MARP-FRM-0024 Pellet Sheet for Macaques.

GROUP E2		GROUP NUMBER					
Breeding Group	Printed:	3/01/2014					
<i>M.nemestrina</i>							
Sex	ID.	M/C#	D.O.B	AGE	Comments	Weight	Date
M	C23	0006F1045E	21/02/1997	16.9	Breeder	18.0	30/05/2013
F	4D	0006F10028	25/05/1998	15.6	Breeder	10.6	30/05/2013
F	6L	0006F0F6C5	28/05/2003	10.6	Breeder	10.0	30/05/2013
F	19C	0006EE49EF	4/07/1997	16.5	Breeder	8.3	30/05/2013
F	21B	0006F26DB0	18/06/1996	17.6	Breeder	10.1	10/10/2013
F	22C	0006F0F3E7	1/04/1997	16.8	Breeder	8.6	30/05/2013
F	29L	0006F10653	5/06/2004	9.6	Breeder	7.4	30/05/2013
F	NF3	0006F039F8	18/08/2004	9.4	Breeder	7.7	10/10/2013
F	NF8	0006F05EDF	7/01/2005	9.0	Breeder	5.5	30/05/2013
F	NF41	0006F11C1B	2/06/2006	7.6	Breeder	7.9	30/05/2013
F	NF68	0006F056C1	2/04/2007	6.8	Breeder	6.5	30/05/2013
M	NM230	0006C983D3	7/02/2012	1.9	Stock Available	1.5	20/12/2012 22C
F	NF240	0006C9BABA	11/04/2012	1.7	Stock Available	1.5	20/12/2012 19C
M	NM243	000725EA66	2/06/2012	1.6	Stock Available	1.5	20/12/2012 29L

Fig.8: Example of a Group Sheet (cage card) displayed on every Flexagon (cage)


BREEDER AREA		BREEDER AREA	
CAGE	PELLETS / L	CAGE	PELLETS / L
W1	2.6	E1	2.5
W2	Group Number 3.4	E2	4.2
W3	4.4	E3	2.0
W4	2.6	E4 FRONT	1.3 Amount to Feed
W5	1.7	E4 BACK	7
W6 FRONT	2.0	E5	1.9
W6 BACK	1.2	E6	1.8
W7	0.6	E7	1.1
W7 PHU	1.5	E8	1.7
W8	1.7	E9	1.4
W9			
RETIRED AREA		RETIRED AREA	
CAGE	PELLETS / L	CAGE	PELLETS / L
W10	1.2	E10	0.9
W11	1.2	E11	2 Muffins & 1.0 pellets daily 1.2 pellets at Weekend
W12	0.8	E12	0.0
TOTAL = 34.3 kg			
OBSERVE DAILY INTAKE & INFORM SUPERVISOR IF EXCESS PELLETS ARE LEFT. REDUCE SERVING IF REQUIRED.			

Fig.9: Pellet Sheet that lists the amount of pellets to be given to every group.

- 8.5 Measure out the pellets required in a measuring jug that is stored in the Pellet Trolley (Fig.10).



Fig.10: 1 liter measuring jug used to measure amount of pellets to feed groups

- Spread out rations in all hoppers attached to the flexagon
- 8.6 Continue steps 8.4 to 8.5 until all groups have been fed pellets.
-  Ensure that any macaques being housed in Primate Housing Units are also fed pellets.

- 8.7 Once finished distributing pellets, refill the Pellet Trolley by moving it into the Kitchen relevant and then into the Cool Room relevant information where the Pellet Bags are stored and position the Pellet Trolley next to bags (Fig. 11).



Fig.11. Bags of Pellets stored in the Cool Room (relevant information)

- 8.8 Place the bag of pellets in Pellet Trolley Bin (Fig. 12).



Fig.12. Place bag in Pellet Trolley

- 8.9 Cut the bottom of the bag with a pair of scissors to release the contents of the bag into the pellet trolley (Fig.13).



Fig.13. Cut bottom of bag to release pellets into Pellet Trolley Bin

Use enough bags to fill Pellet Trolley Bin without overfilling or leaving any leftovers in bags. Once full, place the lid firmly onto the pellet trolley's bin and placed back where usually stored outside East Side Door of the Kitchen relevant information

Dispose of the empty bags into a waste bin located just outside the East Door to the Kitchen Area relevant information


- 8.10 Once or twice a week, ensure that all old pellets and dust are emptied from the Bin.


9. FEEDING DAILY FRUIT AND VEGETABLE RATIONS

9.1 The following equipment and materials are required to perform this procedure.

QUANTITY	EQUIPMENT DETAILS
2	Flat Trolleys
QUANTITY	MATERIAL DETAILS
As Required	Buckets/bowls with daily fruit

9.2 In the afternoon on weekdays only (Mon-Fri) Macaques are fed fruit and veg that are made up prior during the week and stored in the cool room located in room [irrelevant]. This is usually done in conjunction with locking the macaques inside after their daily outside access - see 8.10.

 PQMS3-MARP-SOP-0108 Food Preparation for Macaques.

 Macaques aren't fed fruit and vegetable rations at Weekends but are fed fruit and vegetable rations during Public Holidays.

9.3 Collect a prepared food trolley from the [irrelevant] [irrelevant] (Fig.14).



Fig. 14: Food trolley with buckets stacked on it.

9.4 Mondays, Wednesdays and Fridays, Protexin Powder is sprinkled over the fruit and vegetables in each bucket. The amounts to use are as follows;

SMALL GROUPS (1-8 animals): 1/3 measuring spoon (1 to 2g)

MEDIUM GROUPS (9-15 animals): 2/3 measuring spoon (3 to 4g)

LARGE GROUPS (16 or more animals): 1 measuring spoon (5g)

9.5 Wheel trolley to a Flexagon group which has a number corresponding to a bucket or bowl on the trolley Refer to Figure 15.

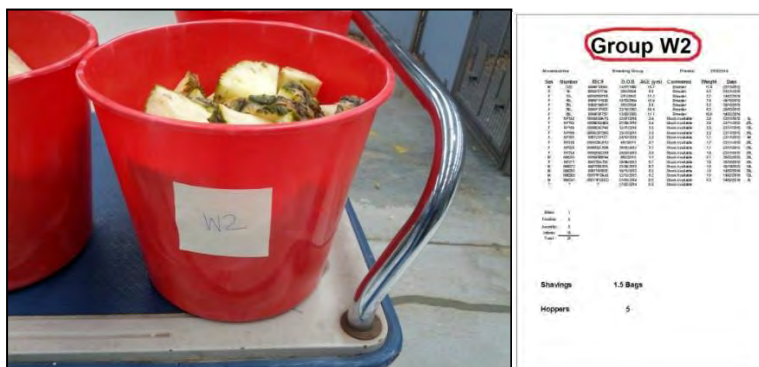


Fig. 15: Numbered feed bucket with corresponding Flexagon Group Sheet.

- 9.6 Pick up the bucket and tip the contents into the browse basket. If the group has multiple browse baskets, spread the contents of the bucket between them (Fig. 16).



Fig. 16: Tipping the feed bucket into the browse basket

- 9.7 If the group gets its food in a polycarbonate bowl, place the bowl into the forager basket and lock it in place (Fig. 17).



Fig.17: Food in the forager basket

- 9.8 Repeat steps 10.3 to 10.7 until all cages have been fed.
- 9.9 After feeding all of the macaques, empty buckets are cleaned in the Washroom.

 PQMS3-MARP-SOP-0292 Washroom Operations for Macaques.

10. ENVIRONMENTAL ENRICHMENT

10.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Flat Trolley
QUANTITY	MATERIAL DETAILS
As Required	Prepared enrichment

10.2 Plan what enrichment may be able to be distributed from the environmental enrichment schedule.



PQMS3-MARP-REF-0126 Environmental Enrichment Schedule for Macaques in relevant information

10.3 The procedure for both preparation and distribution of Environmental Enrichment can be found in the relevant SOP.



PQMS3-MARP-SOP-0318 Environmental Enrichment for Macaques

11. CLEANING

11.1 Refer to the following SOP for equipment and materials required to perform this procedure:



PQMS3-MARP-SOP-0112 Cleaning of Flexagons for Macaques



PQMS3-MARP-SOP-0321 Cleaning General Areas for Macaques

11.2 Cleaning of the flexagons begins on Monday and continues until all flexagons are cleaned. Six flexagons can be cleaned per day by each staff member. Primate Housing Units are cleaned in conjunction with the flexagons.

DAY	CLEANING
Monday	Flexagons E1=E12
Tuesday	Flexagons W1-W12
Wednesday	QAP Area, General Areas
Thursday	General Areas
Friday	General Areas



Cleaning Flexagons and Primate Housing Units may require more days depending on circumstances. The supervisor or most senior staff member will schedule which flexagons will be cleaned.

12. ANIMAL MONITORING & WELFARE

- 12.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 12.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 12.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 12.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

13. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-FRM-0009	Macaque Outside Access Sheet
PQMS3-MARP-FRM-0024	Pellet Sheet for Macaques
PQMS3-MARP-REF-0126	Environmental Enrichment Schedule for Macaques in [REDACTED]
PQMS3-MARP-REF-0128	Daily Task List – Macaque at [REDACTED]
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-SOP-0108	Food Preparation for Macaques at [REDACTED]
PQMS3-MARP-SOP-0112	Cleaning of Flexagons for Macaques
PQMS3-MARP-SOP-0117	Entry and Exit to Macaque Facilities - [REDACTED]
PQMS3-MARP-SOP-0118	Health Monitoring of Macaques
PQMS3-MARP-SOP-0124	Cleaning Primate Housing Units
PQMS3-MARP-SOP-0128	Macaque Animal Records
PQMS3-MARP-SOP-0292	Washroom Operations for Macaques
PQMS3-MARP-SOP-0318	Environmental Enrichment for Macaques
PQMS3-MARP-SOP-0319	Provision of Water for Macaques
PQMS3-MARP-SOP-0321	Cleaning General Areas for Macaques

PQMS3-MARP-SOP-0517	BC2/PC2 – Testo Data Loggers
EXTERNAL REFERENCES	
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013) https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes
NHMRC Guidelines	Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals https://www.nhmrc.gov.au/about-us/publications/guidelines-promote-wellbeing-animals-used-scientific-purposes
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016) https://www.nhmrc.gov.au/about-us/publications/principles-and-guidelines-care-and-use-non-human-primates-scientific-purposes
Monash OHSE	Using Biologicals and Animals at Monash University https://www.monash.edu/_data/assets/pdf_file/0006/147156/using-biologicals.pdf
Monash OHSE	Monash Move Smart https://www.monash.edu/_data/assets/pdf_file/0006/148596/movesmart.pdf
Monash OHSE	Monash OHSE Immunization https://www.monash.edu/_data/assets/pdf_file/0003/147117/immunisation-procedure.pdf
Monash OHSE	Monash OHSE Immunization Grid https://www.monash.edu/ohs/info-docs/safety-topics/immunisations
Monash OHSE	Monash OHSE Monkey-B-Virus https://www.monash.edu/_data/assets/pdf_file/0020/147125/monkey-b-virus.pdf



DOCUMENT HISTORY			PQMS3-MARP-SOP-0061-V2.docx
Version no.	Date of Issue	Reviewed by: Name	Amendments
1	15/08/17	irrelevant information	
2	03/08/2020	[REDACTED]	Update to Animal Monitoring & Welfare Statement Removed superseded references SOP0350, SOP 0298 Updated External references Updated Animal Monitoring and Welfare section Minor editing and revision from comments

MACAQUES - CAPTURE AND RESTRAINT (21/03/2022)

PQMS3-MARP-SOP-0104-V3.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from date of issue

Irrelevant Information

8 AM AEDT

8 AM AEDT

16 AM AEDT

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for capture and restraint of macaques.



1.2. Scope

This SOP is to be applied to all staff members working with Macaques across MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Ergonomics and Manual Handling Training
-  PQMS3-MARP-SOP-0186 Anesthesia in Macaques

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Flexagon	Caging system to house Macaques
PHU	Primate Housing Unit – smaller cage where macaques can be housed individually and has a squeeze back mechanism when required.
PPE	Personal Protective Equipment
Slide	Metal Slide used as a barrier
Transfer Tunnel	Tunnel which links two tunnel adaptors
Tunnel Adaptor	Flexible tunnel used to connect Non-Human Primates' Caging Systems together
WIN	Work Instructions – A Controlled Document

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents relevant to the area they will be working

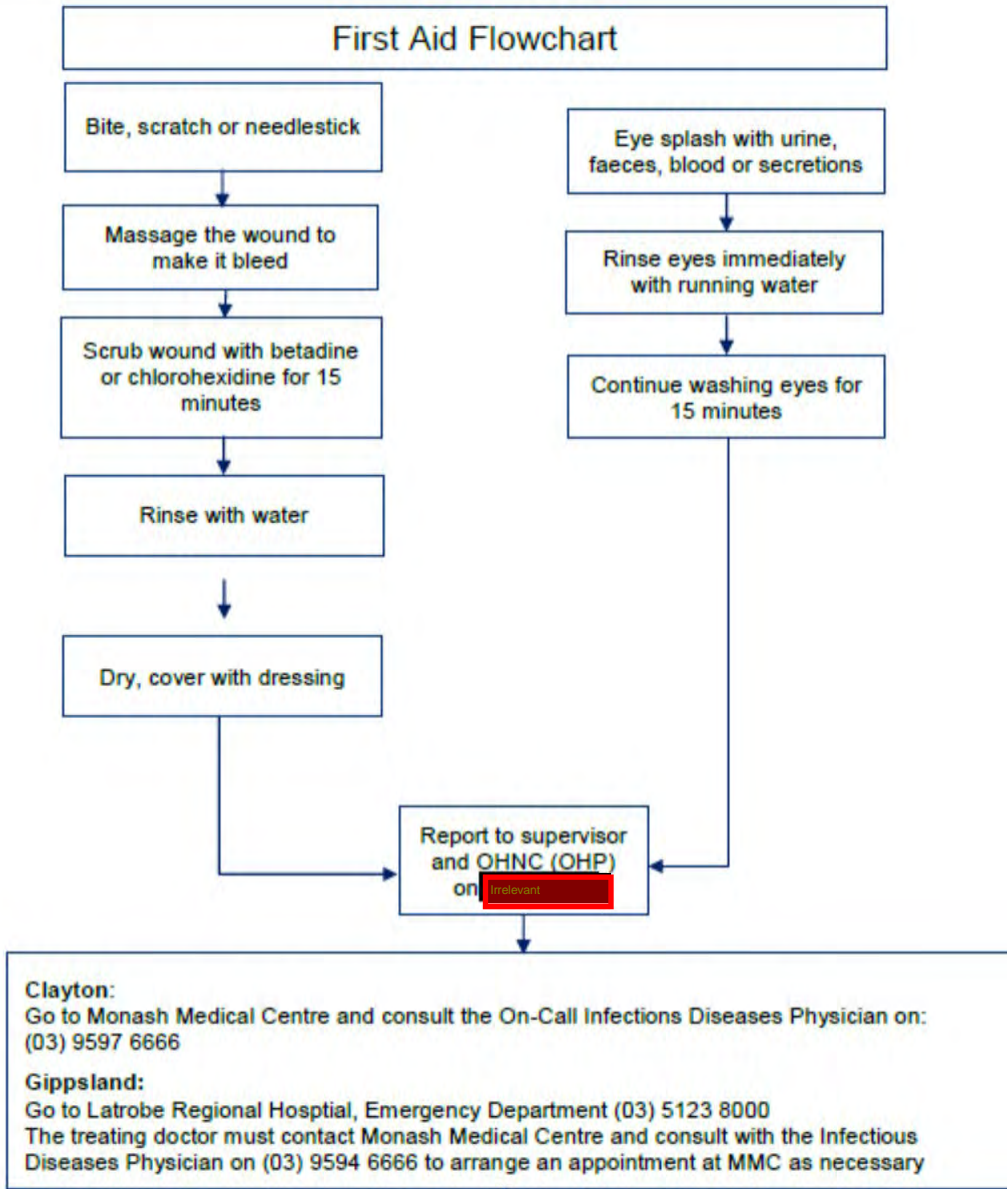
PQMS3-MARP-RA-0161 Macaque Area Risk Assessment [redacted]

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities – [redacted]

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for [relevant Information]

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area.



5. PROCEDURE FOR DETERMINING WHAT METHOD TO USE FOR CAPTURE AND RESTRAINT

SITUATION	METHOD OF CAPTURE	METHOD OF RESTRAINT
Under 3 months (i.e. micro-chipping)	Primate Housing Unit	Mother Chemically Restrained, Infant Physically Restrained then Gaseous Restraint
3 months and older (i.e. Worming, Weaning, TB Testing, Blood Collection)	Primate Housing Unit	Physical or Chemical
Un-Anaesthetized Restraint (i.e. Blood Collection, Infusion)	Pole and Collar	Restraint Chair
Under Anaesthesia	n/a	Restraint Hold (Section 6.21, Figure 15) when moving, otherwise maintenance of anaesthesia under GA.
Escaped Macaques in Building	Flexagon / Capture Net	Attempt first to recapture in Flexagon by enticing with food or outside access, then with Capture Net if unsuccessful.
Escaped Macaques outside Building	Procedure included in the Approved Contingency Planning Condition of Monash University's Agriculture Victoria's Pest Animal Research Education Permit	



PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

6. PROCEDURE FOR CAPTURE AND RESTRAINT OF MACAQUES IN PRIMATE HOUSING UNITS

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Transfer Tunnel
1	Primate Housing Unit
1	Macaque Work Station
QUANTITY	MATERIAL DETAILS
1	Lock and Key

6.2 Locate a Tunnel Adaptor on the Flexagon (Fig.1).



Fig.1

6.3 Insert a Slide and lock into position (Fig.2).



Fig.2

6.4 Unlock and Remove Wire Mesh Panel (Fig.3).




Fig.3

6.5 Attach Tunnel Adaptor end of Macaque Work Station to Tunnel Adaptor.
Lock into position (Fig.4).



Fig.4

 PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station

6.6 Attach an end of the Transfer Tunnel to the Primate Housing Unit by first inserting a Slide into the Tunnel Adaptor Insert and lock into position with a key and lock (Fig.5).



Fig.5

- 6.7** Remove the Wire Mesh Cover of the Tunnel Adaptor with an Allen Key by unlocking the locking bar (Fig.6).

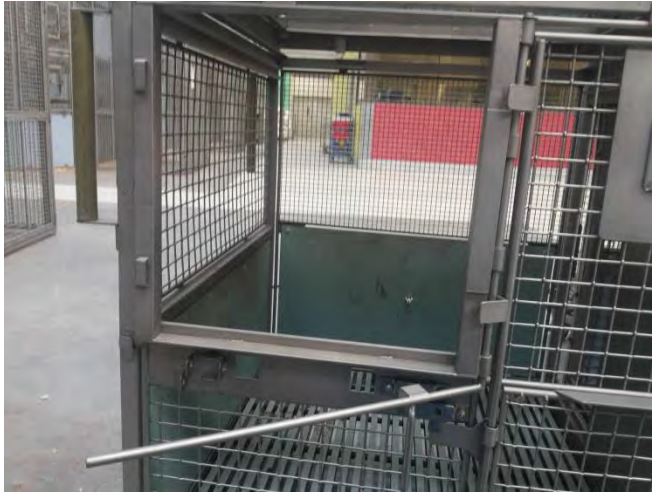


Fig.6

- 6.8** Attach end of Transfer Tunnel to Tunnel Adaptor (Fig.7).



Fig.7

- 6.9** Lock into position by shutting the locking bar with an Allen Key (Fig.8).



Fig.8

- 6.10** Attach other end of Transfer Tunnel to the Macaque Work Station and secure the locking lugs (Fig. 9).



Fig.9

- 6.11** Once a transfer tunnel has been connected between a flexagon, the Macaque Work Station and a Primate Housing Unit, open the slides in the tunnel adaptors at each end of the tunnel (Fig. 10).



Fig.10

- 6.12** If the macaques won't willingly move through the tunnel, a staff member will need to enter the flexagon housing the macaques to encourage them to move through the tunnel (Fig.11).



Fig.11

- 6.13** Once through the tunnel, place slides back into the tunnel adaptor to prevent the macaques from re-entering the tunnel (Fig.12).



Fig.12

- 6.14** Operate the Macaque Work Station to obtain the macaque's microchip number and weight.



PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station

- 6.14** Operate the Squeeze Back of the Primate Housing Unit to Restrain the Macaque by first releasing the squeeze mechanism lock so that the squeeze back can be moved (Fig.13).



Fig.13

- 6.14** Begin gently pulling the handle of the squeeze back towards you so to restrict the movement of the macaque (Fig.14).





Fig.14

- 6.15** Encourage the macaque to manoeuvre itself into the required position, i.e. vertically with back towards the operator for worming or laterally with side of quadriceps facing the operator for injectable anaesthesia (Fig.15).



Fig.15

- 6.16** Firmly but gently pull the squeeze back so that macaque is restrained and can't move from position.
- 6.17** Perform procedure. If the macaque needs to be anaesthetised, inject the anaesthesia IM (intramuscular) into the side of the quadriceps facing the operator.
-  PQMS3-MARP-SOP-0186 Anaesthesia in Macaques
- 6.18** Release squeeze back so macaque can move again.
- 6.19** Lock the squeeze mechanism lock once squeeze back is completely at resting position against rear of compartment.
- 6.20** If the macaque is anaesthetised, wait until it becomes unconscious then unlock the door of the Primate Housing Unit.
- 6.21** Determine that the animal is unconscious and sedated adequately for safe handling. Carefully grab both arms of the macaque and gently hold them behind its back in a restraint hold (Fig.15).

 PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

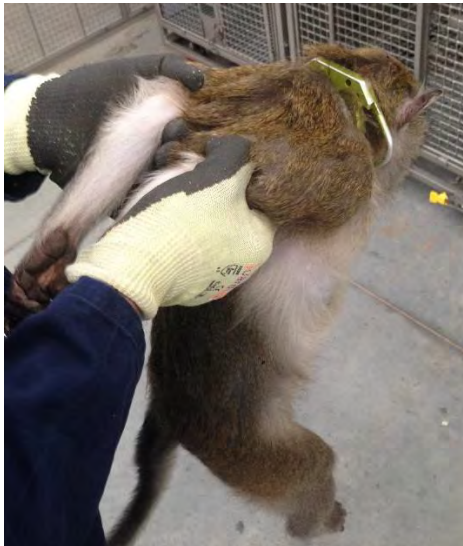


Fig. 15

- 6.22** The macaque can now be safely removed from the Primate Housing Unit
- 6.23** For capture and restraint at relevant refer to 6.16-6.22.

7. PROCEDURE FOR CAPTURE AND RESTRAINT OF MACAQUES IN NETS

7.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
3	Macaque Capture Nets
QUANTITY	MATERIAL DETAILS
Nil	

7.2 Work in teams of 2 or 3 staff members, with a net each, to ensure macaques can't easily get past as they are worked into capture position. Ensure all doors are locked.



Only experienced staff should attempt to capture macaques in nets as macaques are very unpredictable and situations can vary greatly depending on age and sex of the escaped macaque/s and location. If experienced staff aren't available, just monitor the situation until advice and/or assistance is received from supervisors.

7.3 Isolate the macaque to be caught in a position away from obstacles where its movement is restricted but there's sufficient space to manoeuvre the net, for example the corner of a room or a passageway (Fig.16).



Fig.16

7.4 Approach the macaque in a calm, considered and careful manner until it's within range of the net. Net (Fig.17).

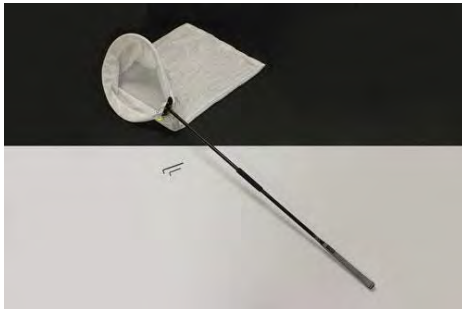


Fig.17

7.5 Manoeuvre the net in a slow sweeping action, trying to avoid sudden, jerky or swinging motions which could cause injury to the macaque.

7.6 Direct the opening of the net over the macaque until it's covered by the net. Care needs to be taken for sudden, unexpected jumps by the macaque, especially towards staff.

7.7 Once covered completely by the net, twist the net so that there's no opening for the macaque to escape. Hold the net off the ground and ensure that the fingers of the macaque don't get injured if it's clinging to any surfaces.

7.8 Transport the macaque that's been restrained in a capture net back to its enclosure and open the door.

7.9 Carefully lower the net to the ground so not to injure the macaque.


- 7.10** Untwist the opening of the net away from the operator so to allow the macaque to move out of the net.
- 7.11** Move out of the enclosure and lock the door.

8. PROCEDURE FOR CAPTURE AND RESTRAINT OF INFANT MACAQUES

8.1 The following equipment and materials are required to perform this procedure:


QUANTITY	EQUIPMENT DETAILS
1	Primate Housing Unit
QUANTITY	MATERIAL DETAILS
1	Injectable Anaesthesia

8.2 Once the infant and its mother have been separated from the group in a Primate Housing Unit, it will be necessary to anaesthetize the mother with injectable anaesthesia.

 PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

8.3 When the infant's mother has become unconscious, it will be safe to attempt retrieval of the infant. Unlock the door of the Primate Housing Unit.

8.4 Before attempting to capture the infant determine that the mother is unconscious and sedated to safely remove the infant by carefully grabbing the back of the infant in one hand.

 PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

8.5 With the other hand grab each of the infant's arms and bring them gently back behind the back in a restraint hold.

8.6 Once both arms are held securely in a restraint hold, the infant can be gently prised of its mother. Hold firmly as older infants will struggle and may even attempt to bite.

8.7 If the infant needs to be anaesthetised, then gaseous anaesthesia is applied through a mask held over the infant's mouth (Fig.18).



 PQMS3-MARP-SOP-0186 Anaesthesia in Macaques



Fig.18

8.8 Once unconscious, determine the amount of withdrawal reflex in the infant. If no withdrawal reflex is evident then the necessary procedure can be performed on the infant.

 PQMS3-MARP-SOP-0186 Anaesthesia in Macaques



9. ANIMAL MONITORING & WELFARE

- 9.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 9.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 9.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 9.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate within 72 hours of its detection. An incident / non-compliance report form is available on following link: <http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

10. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-RA-0161	Macaque Area Risk Assessment REDACTED
PQMS3-MARP-SOP-0034	Equipment Operations – Macaque Work Station
PQMS3-MARP-SOP-0117	Entry and Exit Procedures to Macaque Facilities - REDACTED
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque Facility REDACTED
PQMS3-MARP-SOP-0186	Anaesthesia in Macaques
RE66-2016/17	Agriculture Victoria's Pest Animal Research Education Permit
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013)
NHMRC Guidelines	Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016)
Monash OHSE	Using Biologicals and Animals at Monash University
Monash OHSE	Monash Move Smart
Monash OHSE	Monash OHSE Immunization
Monash OHSE	Monash OHSE Immunization Grid
Monash OHSE	Monash OHSE Monkey-B-Virus

DOCUMENT HISTORY			PQMS3-MARP-SOP-0104-V3.docx
Version no.	Date of Issue	Reviewed by: Name	Amendments
1	23/03/2017	[Redacted Name] irrelevant information	Old document SOP0104
2	05/08/2019		Update to Animal Monitoring & Welfare Statement Link to SOP-0034, added training reference, pest permit info Added 6.23 reference to [Redacted] Removed links for external documents and unapproved SOP referenced
3	21/03/2022		Removed reference to superseded document PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility [Redacted] Updated reference table to include PQMS3-MARP-SOP-0117 and PQMS3-MARP-SOP-0154 Changed author from [Redacted] [Redacted] [Redacted] Updated document authorisation panel formatting Updated footer formatting

FOOD PREPARATION FOR MACAQUES (22/06/2022)

PQMS3-MARP-SOP-0108-V4.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

Irrelevant Information

1- Jul - 2022 | 9: 03

AM AEST

11- Jul - 2022 | 9: 50

AM AEST

11- Jul - 2022 | 1: 41

PM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for preparing food for Macaques at irrelevant information.




1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Facilities across Monash Animal Research Platform.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Ergonomics and Manual Handling Training
-  PQMS3-MARP-SOP-0318 Environmental Enrichment for Macaques
-  PQMS3-MARP-SOP-0564 Environmental Enrichment for Macaques-irrelevant information

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment relevant

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities relevant

PQMS3-MARP-SOP-0558 Entry and Exit Procedures – Building relevant Large Animal Facility

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility relevant

Specific health and safety considerations while performing this procedure are:


- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the appropriate work place.

5. PREPARING PELLETS FOR MACAQUES


5.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer with MARP Share Drive Access
1	Printer
1	Laminator
QUANTITY	MATERIAL DETAILS
1	Sheet of A4 paper

5.2 A spreadsheet is used to determine the amount of pellets to be provided for each group of macaques and is printed on a laminated sheet which is attached to the Pellet Trolley used for distribution of the pellets to the macaques.

 PQMS3-MARP-FRM-0024 Pellet Sheet for Macaques.

5.3 Open the National Macaque Facility Database.

 PQMS3-MARP-SOP-0128 Macaque Animal Records.

5.4 Click on the Feeding Routines Button (Fig.1) to open the Macaque Feeding Routine.xlsx file which is used to determine the amount of food to provide to the macaques.

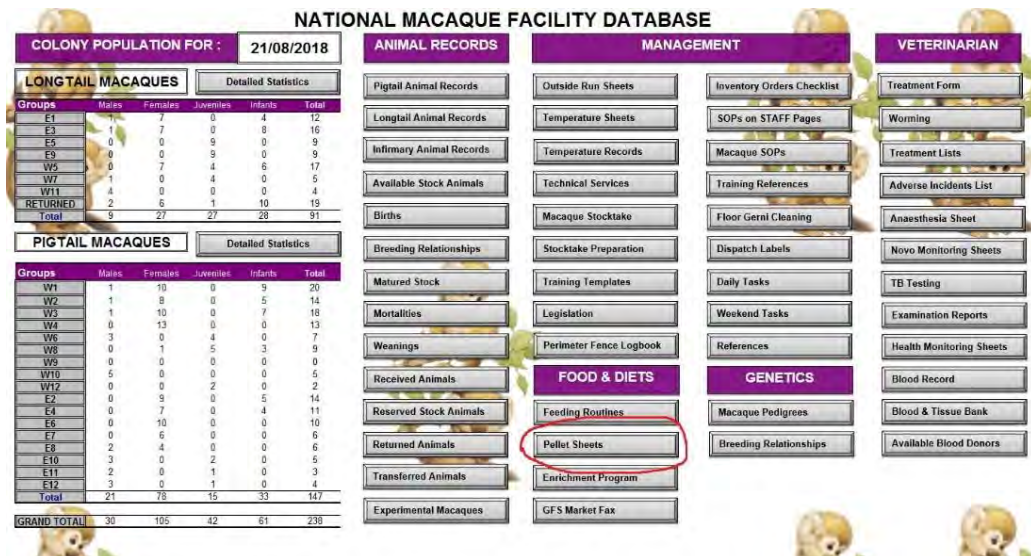


Fig. 1: Pellet Sheets Tab on the National Macaque Facility Database

5.5 There are three tabs on the bottom of the spreadsheet; BREEDER, RETIRED and CALCULATIONS. Whenever there are changes to the composition of any groups, click on the CALCULATIONS tab (Fig.2) so that these changes can be reflected in the amount of food given to the macaques.

	A	B	C	D	E	F
	CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
2	W1	1.90	3.80	1	n/a	
3	W2	1.60	3.20	1	n/a	
4	W3	1.90	3.80	1	n/a	
5	W4	1.50	3.00	1	n/a	
6	W5	1.40	2.80	n/a	2	2 Bowls
7	W6	0.90	1.80	1	n/a	
8	W7	0.55	1.10	1	n/a	
9	W8	0.95	1.90	1	n/a	
10	W9	0.00	0.00	1	n/a	
	CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
12	E1	1.10	2.20	n/a	2	2 Bowls
13	E2	1.45	2.90	1	n/a	
14	E3	1.30	2.60	n/a	2	2 Bowls
15	E4	1.10	2.20	1	n/a	
16	E4 PHU	0.10	0.20	1	n/a	
17	E5	0.65	1.30	1	n/a	
18	E6	1.20	2.40	1	n/a	Plus 25 muffins plus 20ml Omega Oil on Distribution
19	E7	0.95	1.90	1	n/a	
20	E8	0.70	1.40	1	n/a	
21	E9	0.75	1.50			
22	TOTAL	20.00	40.00	15	6	
23	Ordering Total 29.95 kg of each fruit variety					
24						

Fig. 2: Calculations Tab of the Feeding Routines Spreadsheet

5.6 Find the group number in the A Column (Fig.3).


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
28	M.nemestrina daily fruit & vegetables																
29		Breeding Adults	Non-breeding Adults	Retired Adults	Adolescents	Juveniles	Supplements in litres	Total									
30		♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	Daily Fruit	Pellets	Fruit & Veg	Pellets
31	W1	1	10	0	0	0	0	0	0	0	0	0	0	0.28	0.24	3.80	4.10
32	W2	1	9	0	0	0	0	0	0	0	0	0	0	4	0.33	0.16	3.20
33	W3	1	10	0	0	0	0	0	0	0	0	0	3	4	0.32	0.17	3.80
34	W4	0	0	0	13	0	0	0	0	0	0	0	0	0	0.14	0.02	3.00
35	W5	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
36	W6	0	0	3	0	0	0	2	2	0	0	0	0	0	0.29	0.20	1.80
37	W7	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
38	W8	0	0	0	0	0	3	0	2	2	0	0	0	3	0.16	0.19	1.70
39	W9	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
40	W10	0	0	5	0	0	0	0	0	0	0	0	0	0	0.25	0.10	1.50
41	W11	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
42	W12	0	0	0	0	0	0	0	0	1	0	0	1	0	0.21	0.17	0.50
43	E2	0	9	0	0	0	0	0	0	0	0	0	0	5	0.25	0.22	2.90
44	E4	0	7	0	0	0	0	0	0	0	0	0	2	2	0.25	0.15	2.40
45	E5	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
46	E6	0	0	0	10	0	0	0	0	0	0	0	0	0	0.20	0.60	2.40
47	E7	0	0	0	6	0	0	0	0	0	0	0	0	0	0.38	0.34	1.70
48	E8	0	0	0	0	2	4	0	0	0	0	0	0	0	0.16	0.14	1.40
49	E9	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
50	E10	0	0	4	0	0	0	1	0	0	0	0	0	0	0.20	0.20	1.40
51	E11	0	0	3	0	0	0	0	0	0	0	0	0	0	0.25	0.14	1.00
52	E12	0	0	3	0	0	0	1	0	0	0	0	0	0	0.25	0.22	1.20
53																	33.70
54																	37.30
55	M.nemestrina Food Ration- Daily Fruit & Vegetables for Environmental Enrichment																
56		0.30	0.25	0.25	0.22	0.22	0.20	0.20	0.18	0.17	0.15	0.12	0.08				
57	M.nemestrina Food Ration- Gordon's Speciality Stockfeeds Monash Macaque Pellets																
58		0.35	0.27	0.32	0.26	0.24	0.22	0.22	0.20	0.19	0.17	0.14	0.09				
59																	
60																	

Fig 3: Calculations Sheet

The Calculations Sheet refers to the Macaque Feeding Guidelines for the amounts to feed each age bracket.

PQMS3-MARP-REF-0029 Macaque Feeding Guidelines






- 5.7 Make any changes in the number of animals in each age bracket; Breeding Adults, Non-breeding Adults, Retired Adults, Adolescents & Juveniles.
- 5.8 The spreadsheet will automatically update the totals in the P & Q Columns.
- 5.9 Make adjustments in Columns N & O in order to round off the totals in the P & Q Columns and also to make allowances for extra supplements of daily fruit and pellets due to pregnancies and variations in sizes and growth rates of animals within the groups (e.g. larger animals require more food than smaller ones).
- 5.10 Click on the Pellet Sheet Button on the National Macaque Facility Database to open the Pellet Sheet Form and update any changes to the amounts in the Pellet Sheet from Column Q of the Feeding Routines Calculations Sheet.
 PQMS3-MARP-FRM-0024 Pellet Sheet for Macaques
- 5.11 Print and laminate the Pellet Sheet and place it on the Pellet Sheet Trolley.

6. PREPARING FRUIT AND VEGETABLES FOR MACAQUES

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer with MNHS-MARP NHMRC irrelevant information Share Drive Access
1	Kitchen Knife
1	Cutting Board
varies	10 litre plastic buckets
1	Kitchen Weighing Scales
varies	Polycarbonate Food Bowls
1	Set of PPE consisting of pair of nitrile gloves, pair of cut resistant gloves, overalls and steel capped boots.
1	Electronic Kitchen Scales
QUANTITY	MATERIAL DETAILS
varies	Varieties of Fruit and Vegetables

6.2 Calculate the number of buckets and polycarbonate bowls to weigh food out into from the feeding routines spreadsheet (fig.4). See 5.4 to 5.9 for how to access the spreadsheet.

-  Polycarbonate Bowls are used for providing fruit and vegetables to Longtail Macaque Breeding Groups as their infants can crawl out of the holes used for the normal provision of fruit and vegetables.
-  Polycarbonate Bowls are also used to provide food for macaques being kept in Primate Housing Units or the Returned Area (irrelevant).
-  PQMS3-MARP-SOP-0105 Equipment Operations – Primate Housing Units for Macaques

CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
W1	1.20	2.40	1	n/a	
W2	2.00	4.00	1	n/a	
W3	1.70	3.40	1	n/a	
W4	2.00	4.00	1	n/a	
W5	1.20	2.40	1	n/a	
W6 FRONT	0.70	1.40	1	n/a	
W6 BACK	0.90	1.80	1	n/a	
W7	0.40	0.80	1	n/a	
W7 PHU	0.40	0.80	1	n/a	
W8	0.65	1.30	1	n/a	
W9	0.75	1.50	1	n/a	
CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
E1	1.20	2.40	n/a	2	2 Bowls
E2	1.90	3.80	1	n/a	
E3	1.00	2.00	1	n/a	
E4 FRONT	0.70	1.40	1	n/a	
E4 BACK	0.70	1.40	1	n/a	
E5	0.85	1.70	1	n/a	
E6	0.90	1.80	n/a	1	1 Bowl
E7	0.50	1.00	1	n/a	
E8	0.75	1.50	1	n/a	
E9	0.65	1.30	1	n/a	
TOTAL	21.05	42.10	19	3	

Fig.4

- 6.3 Collect food buckets from beneath the centre bench in the Kitchen irrelevant (Fig.5). For ease of reference use the same colour for each bucket.
- 6.4 Spread out buckets calculated in 6.2 onto the benches in the Kitchen irrelevant (Fig.5). Buckets have permanent numbers labelled onto them for easy reference.



Fig.5

- 6.5 Pick up a box of one variety of fruit or vegetable from the Cool Room relevant and transport the box to the Kitchen Bench Table in the Kitchen relevant (Fig.6). If the box is too heavy use a trolley.



Fig.6

- 6.6 Put on appropriate PPE as per the requirements for cutting fruit and vegetables. This consists of nitrile gloves, cut resistant gloves, overalls and steel capped boots.
- 6.7 Collect 1 Large Kitchen Knife and a Cutting Board from the cupboard drawers next to the entrance of the Kitchen relevant (Fig.7) and place next to the fruit or vegetables to be cut up (Fig.8).



Fig.7



Fig.8

- 6.8 Take one item from the box, set it on the cutting board and carefully slice into smaller pieces about 50mm in size (Fig.10).
- Note that some varieties of fruits and vegetables don't require cutting as they are already small enough, e.g. Grapes.
 - There's no need to peel or cut off the skin of any fruits or vegetables.
 - Potatoes need to be cut up into 5 or 6cm pieces, place into an ice cream or microwaveable container and cooked in a microwave for 30 minutes.
 - Pineapple heads are cut off and can be given out as environmental enrichment.
 - PQMS3-MARP-SOP-0318 Environmental Enrichment for Macaques



Fig.10

- 6.9 Consult the Feeding Routines Spreadsheet for how much food to weigh out for every group. For convenience this spreadsheet is printed out and placed on the wall next to where the food is weighed out (Fig.11).

MACAQUE DAILY DIET BREEDER/STOCK					
CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
W1		2.15	4.30	1	n/a
W2		1.70	3.40	1	n/a
W3		2.10	4.20	1	n/a
W4		0.90	0.90	1	n/a
W5		1.40	2.80	n/a	2
W6 FRONT		0.90	1.80	1	n/a
W6 BACK		0.95	1.90	1	n/a
W7		0.90	1.80	1	n/a
W8		0.65	1.30	1	n/a
W9		0.90	1.80	1	n/a
CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
E1		1.15	2.30	n/a	2
E2		1.60	3.20	1	n/a
E3		1.15	2.30	n/a	2
E4		0.85	1.70	1	n/a
E5		1.65	3.30	1	n/a
E6		1.10	2.20	1	n/a
E7		0.85	1.70	1	n/a
E8		0.85	1.70	1	n/a
E9		0.85	1.70	1	n/a
TOTAL		19.40	38.80	16	6
Ordering Total :		29.75 kg of each fruit variety			

RETIRED SECTION					
CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
W10 FRONT		0.70	1.40	1	n/a
W11		0.45	0.90	1	n/a
W12		0.45	0.90	1	n/a
CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
E10		0.60	1.20	1	n/a
E11		0.60	1.20	1	n/a
E12		0.60	1.20	1	n/a
TOTAL		3.30	6.60	6	0
CAGE	FOOD ITEM	TOTAL KG	BUCKETS	BOWLS	COMMENTS
DAP1		0.25	0.50	1	n/a
DAP2		0.80	1.60	1	n/a
DAP3		0.15	0.30	1	n/a
DAP4 (M)		0.15	0.30	1	n/a
DAP4		0.70	1.40	1	n/a
TOTAL		2.05	4.10	5	0

Fig.11

- 6.10 Turn on the electronic kitchen scales, place an empty bucket for weighing fruit and vegetables on the platform (Fig.12).
- 6.11 Press the Re-Zero button to reset the digital display to zero. Check the scales are at 0 (Fig.12).



Fig.12

- 6.12 Place the food cut up in step 6.8 into the bucket which is labelled the same as the group from step 6.9 until the weight reaches the required amount (Fig.13).



Fig.13

- 6.13 Repeats Steps 6.8 to 6.12 until all labelled buckets are filled with the correct amount of food.
- 6.14 Stack the labelled buckets with weighed out fruit and vegetables on the racks in the Cool Room Irrelevant (Fig.14) in order from one side to the other. Stack the labelled buckets meant for the same day on the same rack for easy identification so if more than one day's food supply has been prepared it can easily be distinguished by the colour. For example in Fig.15, there's three days food supply with a different colour of each day (Red, Green and Blue) and a laminated label is placed on each rack designating what day the food on that particular rack is for.



Fig.14

- 6.15 Clean the Kitchen Knife and Cutting Board in the Sink (Fig.15) and dispose of waste fruit and vegetables in the waste bin (Fig.16), both located in the Kitchen Area Irrelevant



Fig.15



Fig.16

7. PREPARING MUFFINS FOR MACAQUES

7.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer
1	Kitchen Knife
1	Cutting Board
varies	10 litre plastic buckets
1	Kitchen Weighing Scales
varies	450ml Measuring cups
1	Gas Oven
17	Silicon Muffin Trays
1	Large Spoon
1	Pair of Oven Mittens
10	Plastic Snap Lock Bags
1	Permanent marker
QUANTITY	MATERIAL DETAILS
varies	Varieties of Fruit and Vegetables
4 kg	Pellets
4 kg	Cantaloupes, Rock Melon or Kiwi Fruit
20	Bananas
500 g	Rice
500 ml	Sunflower Oil
40	Eggs
1	Multipurpose Cleaning Wipes
1	Can of Heavy Duty Oven Cleaner
6	27cm x 33cm resealable plastic storage bags

7.2 One day prior to preparing the Macaque Muffins, gather all ingredients required.

Macaque Muffin Ingredient List	
4kg	Fresh Old World Non-Human Primate Pellets or powder
4 kg	Cantaloupe, Kiwi Fruit, etc
20	Bananas, sliced
½ kg	Rice
500ml	Sunflower Oil
40	Eggs

***if cantaloupe are not available use kiwi fruit or bananas as required**

7.3. If there is Old World Non-Human Primate Pellet Powder available go to step 7.7. If none is available, weigh 2kgs of Old World Non-Human Primate Pellets using the kitchen scales into two plastic buckets (For a total of 4kgs) (Fig.17).



Fig.17

- 7.4. Boil water using the kitchen kettle and fill buckets until pellets are covered.
- 7.5. Set aside to soak overnight.
- 7.6. The next day, cut up the kiwi fruit or cantaloupes into small pieces (approximately 5cm pieces) with a large kitchen knife on a cutting board and add to the two buckets of the pre prepared soaked pellets from steps 7.3.- 7.5.
- 7.7. If Old World Non-Human Primate Pellet Powder was available from step 7.3, add 2kg of the powder to two empty buckets and then add the cut up fruit.
- 7.8. Cut and peel up 20 bananas into 1cm wide slices and add equal amounts to each bucket.
- 7.9. Remove the shells from 40 raw eggs and add 20 of them to each bucket.
- 7.10. Then measure out and add 250g of rice, 250ml Sunflower Oil to each bucket.
- 7.11 Start to beat the mixture in the bucket with a large spoon.
- 7.12. If mixture is too dry and not combining together to form a smooth consistency, add 1 to 2 litres of water to the bowl to help with blending.
 - The mixture must be blended together into a smooth paste with no lumps or pieces of unprocessed fruit but not so runny so it can't be easily spooned out of the bowl.
- 7.13. Once ingredients are adequately mixed together, setup the muffin trays ready for baking.
- 7.14. Spray 6 muffin trays with Canola Spray and fill with mixture from the Mixer Bowl by using a large spoon to scoop out mixture and place it into the muffin trays (Fig.18).



Fig.18

- 7.15. Ensure that the top and around the Gas Oven is clear of objects (Fig.19).



Fig.19

- 7.16. Turn on the Exhaust Fan for the Hood over the Gas Oven (Fig.20).



Fig.20

- 7.17. Pre-heat the Gas Oven to 180°C by turning the knob for the Gas Oven to 180 and depress it to activate the lighter to ignite the gas burner (Fig.21).



Fig.21

- 7.18. After 5 minutes, put on Oven Mittens, open the Gas Oven Door and put the muffin trays on the shelves and then close the door (Fig.22).



Fig.22

- 7.19. Turn the Timer knob to 20 minutes (Fig.23).



Fig.23

- 7.20. When the Timer sounds, check the muffins for consistency with a spoon. They should be firm with a golden colour. If not cooked, reset the timer for 5 minutes and leave to cook more.
- 7.21. Once cooked, turn off the Oven by turning the knob to the top position (Fig.21).
- 7.22. Leave muffins in Oven to cool for at least 30 minutes, then put on oven mitts, open the Oven door and carefully remove the muffin trays by holding onto the sides and place on the kitchen bench top to cool further. Turn off the Exhaust Fan.
- 7.23. Once the Oven is cool, clean it by removing the shelves and washing with detergent in the kitchen sink. Then wipe down the inside and exterior of the Oven with detergent and sponge (Fig.24).



Fig.24

- 7.24. When necessary clean the inside of the Gas Oven with Heavy Duty Oven Cleaner while carefully following the instructions of the can.
- 7.25. Retrieve five or six 27cm x 33cm resealable plastic storage bags (Fig.25) from the cupboard drawers next to the entry door in the Kitchen Area irrelevant

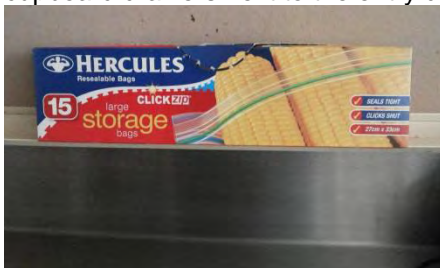


Fig.25

- 7.26. When the macaque muffins have cooled, place 20 muffins into each plastic storage bag and mark them with the date. (Fig.26).



Fig.26

- 7.27. Press the seal shut all along the top of the bag.
- 7.28. Carry the muffin bags to the freezer located in the Storage Room irrelevant.
- 7.29. Pack the muffin bags into a shelf in the freezer for storage (Fig.27), ensuring that the oldest date stamped muffin bags are at the front of the shelf.



Fig.27

8. PREPARING FRUIT, VEGETABLES AND PELLETS FOR MACAQUES AT [redacted]

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Fruit and vegetable schedule
1	Kitchen Knife
1	Chopping Board
As required	Plastic containers
1	Weighing Scales
QUANTITY	MATERIAL DETAILS
As required	Varieties of Fruit and Vegetables


8.2 Schedules in the [redacted] facilities may differ due to different needs for projects, any alterations from the schedules need to be specified within the approved project.

8.3 For the specific daily diet schedule for [redacted] refer to the following:

 PQMS3-MARP-REF-0685 [redacted] LAF PIG TAILED MACAQUE DIET

 PQMS3-MARP-REF-0686 [redacted] LAF LONG TAILED MACAQUE DIET

8.4 These schedules and food amounts are based on non-breeding males according to the Macaque feeding guidelines – PQMS3-MARP-REF-0029, as the animals at [redacted] are all experimental (mostly individually housed) and are a lot less active.

 PQMS3-MARP-REF-0685 Macaque Feeding Guidelines

8.5 Fruit and vegetables for the macaques is ordered online through Coles Online.


8.6 Pellets are located in a large tub on top of the bench in the preparation area.

8.7 Fruit and vegetables are located in the fridges in the preparation areas. In [redacted] the fridge is under the bench, in [redacted] the fridge is to the right of the preparation bench.


8.8 Use the chopping board and knife to prepare food. Cut up fruit and vegetables in approximately 5cm chunks.

8.9 Vegetables such as potato, sweet potato, beans and broccoli will need to be cooked and cooled prior to feeding. Cut up into segments and cook for 5-8 minutes in a microwave safe container in the microwave.

8.10 Weigh out the daily fruit and vegetable and pellets amounts for each animal/cage. Use the scales according to PQMS3-MARP-SOP-0156.

 PQMS3-MARP-SOP-0156 Equipment Operations – [redacted] NHP Scales

8.11 Place pellets in a separate container to the fruit and vegetables. Pellets are distributed in the morning with half of the fruit and vegetables, the other half being given in the afternoon.


 Depending on the approved project, feeding times may differ, for example all food is to be given after training only.

9. PROCEDURE FOR ORDERING FRUIT, VEGETABLES AND PELLETS AT GFS

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer
QUANTITY	MATERIAL DETAILS
	Nil

9.2 All fruit, vegetables and pellets used for feeding macaques must be low FODMAP approved. Pellets must also be suitable for old world non-human primates and low in FODMAPs.

 PQMS3-MARP-REF-0700 Low FODMAP Food for Macaques

9.3 The quantity of fruit and vegetables required to be ordered are sent to the Service/Administration Assistant at [redacted] who then places the order through email to the supplier.

9.4 Deliveries usually occur on a Wednesday so orders usually have to be sent on a Monday of the same week.

9.5 The amount of fruit and vegetables to be ordered are listed on the Feeding Routines Spreadsheet (Fig.2) and consists of 5 different fruits and 5 different vegetables taken from a list sent to the supplier, who then chooses the cheapest varieties to supply depending on market rates.

9.6 If the Service/Administration Assistant is unavailable to place the order, the supervisor can place the order by sending an email to the supplier with the subject being "Large Animal Order for [redacted]" and the following content body;

Could we please order the following items to be delivered to Monash Animal Research Platform at [redacted] on Wednesday, "Date of Delivery".

- 30 kg of 5 fruit varieties selected from the following list; Bananas, Cantaloupe, Grapes, Kiwi Fruit, Navel or Valencia Oranges, Mandarins or Pineapples.
- 30 kg of 5 vegetable varieties selected from the following list; Beans, Broccoli, Capsicum (not Red Capsicum), Carrots, Cucumber, Eggplant, Lettuce, Sweet Corn, Potato (washed), Sweet potato, Tomato or Zucchini.

Please charge our standing purchase order number.

9.7 Once delivered, Fruit and vegetables are stored in the Cool Room [redacted] of the Macaque Facility.

 PQMS3-MARP-SOP-0291 Macaque Food and Bedding Storage

9.8 Pellets are ordered by the Service/Administration Assistant once stock gets low and delivered on pallets which is then stored in the Hay Shed [redacted] From there 12-14 bags of pellets are transported to the Macaque Facility twice a week.

 PQMS3-MARP-SOP-0291 Macaque Food and Bedding Storage

10. ANIMAL MONITORING & WELFARE

- 10.1 All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 10.2 Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 10.3 Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 10.4 All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for Reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

11. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0105	Equipment Operations – Primate Housing Units for Macaques
PQMS3-MARP-SOP-0291	Macaque Food and Bedding Storage
PQMS3-MARP-SOP-0318	Environmental Enrichment for Macaques
PQMS3-MARP-SOP-0156	Equipment Operations - [REDACTED] Scales
PQMS3-MARP-REF-0029	Macaque Feeding Guidelines
PQMS3-MARP-REF-0685	LAF PIG TAILED MACAQUE DIET
PQMS3-MARP-REF-0686	LAF LONG TAILED MACAQUE DIET
PQMS3-MARP-REF-0700	Low FODMAP Food for Macaques
PQMS3-MARP-SOP-0558	Entry and Exit Procedures - Building [REDACTED] Large Animal Facility
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque Facility [REDACTED]
EXTERNAL REFERENCES	
Nil	



DOCUMENT HISTORY			PQMS3-MARP-SOP-0108-V4.docx
Version no.	Date of Issue	Reviewed by: Name	Amendments
1	08/5/2017	<div style="border: 2px solid red; padding: 5px; background-color: black; color: red; text-align: center;"> irrelevant information </div>	Original document
2	07/11/2018		Update to Animal Monitoring & Welfare Statement Update to current procedures
3	02/09/2019		Consolidated PQMS3-MARP-SOP-0027 into this SOP, section added for [redacted]
4	22/06/2022		Changed approver from [redacted] [redacted] Added OHS column to Document History Updated Document Authorisation and footer formatting

CLEANING OF FLEXAGONS FOR MACAQUES (22/06/2022)

PQMS3-MARP-SOP-0112-V4.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
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Irrelevant Information

11-Jul-2022 | 8:58 AM AEST

25-Jul-2022 | 10:11 AM AEST

25-Jul-2022 | 4:27 PM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for cleaning flexagons in which macaques are being housed.






1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Area of relevant information at irrelevant information.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Ergonomics and Manual Handling Training – Monash University
-  PQMS3-MARP-SOP-0035 Equipment Operations – Vacuum System at relevant information
-  PQMS3-MARP-SOP-0061 Animal Care and Husbandry – Macaques at relevant information
-  PQMS3-MARP-SOP-0292 Washroom Operations for Macaques
-  PQMS3-MARP-SOP-0318 Environmental Enrichment for Macaques

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Flexagon	Hexagonal Modular Housing System for Macaques
Pellet hopper	Food Container used to hold pellet food for macaques
PPE	Personal Protective Equipment
Pro-Foaming Gun	Tool attached to water hoses to dispense cleaning chemicals in a foam
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
Robertson wrench	Tool used to turn hexagonal sockets
Squeegee	Tool with a flat rubber blade used to remove water on flat surfaces
SOP	Standard Operating Procedure

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

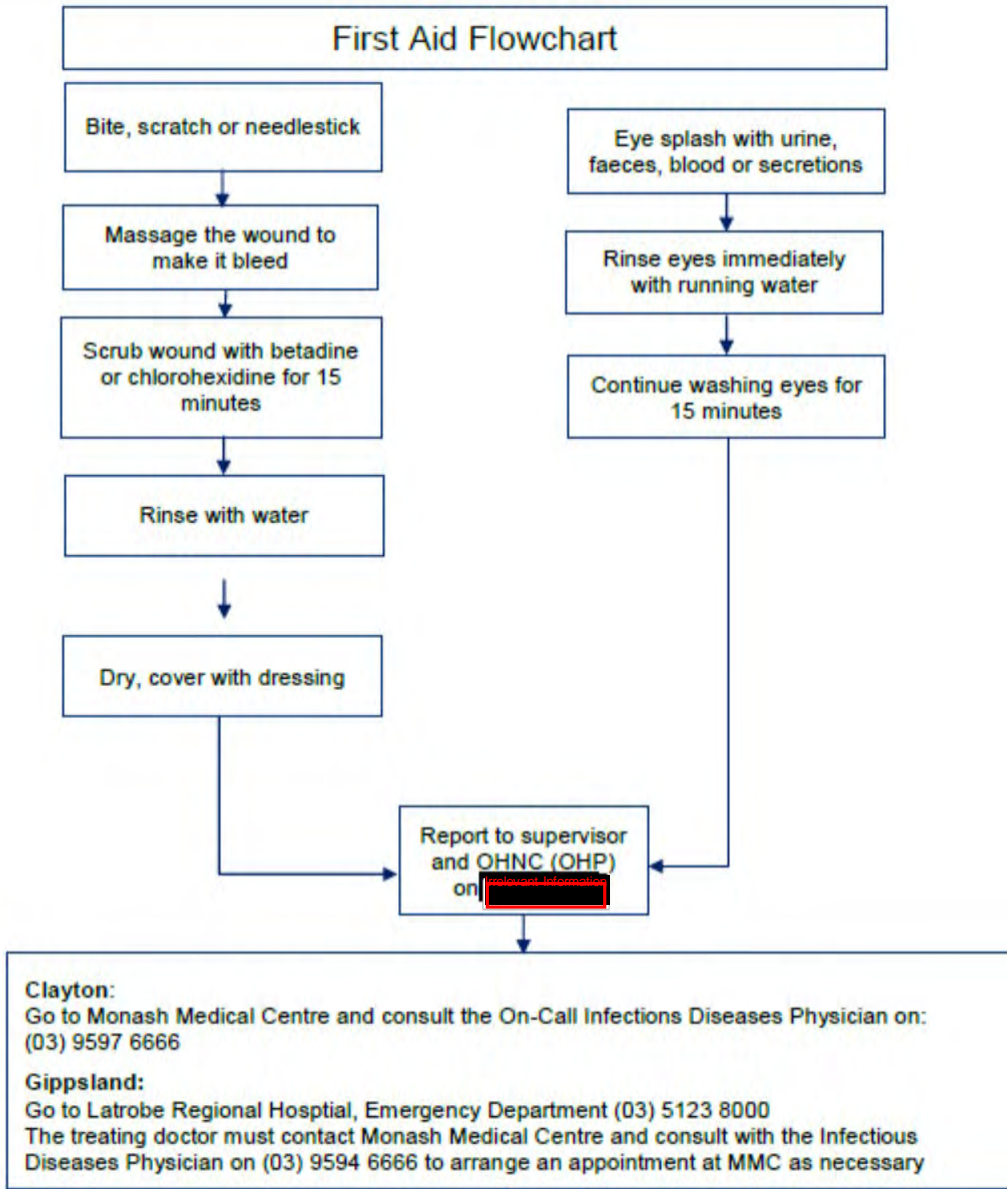
Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment irrelevant

PQMS3-MARP-SOP-0117 Entry and Exit Procedure for Macaque Facilities irrelevant

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the irrelevant information of irrelevant information



5. PREPARING FLEXAGONS FOR CLEANING

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Robertson Wrench
1	Key
1	Large Tub
QUANTITY	MATERIAL DETAILS
Nil	

5.2. Check Health and any births in the group whose Flexagon is to be cleaned and then lock them outside during cleaning (Fig.1).




PQMS3-MARP-SOP-0061 Animal Care and Husbandry – Macaques at 



Fig.1

5.3. Lift the lock bar to release the lever locking the outside chute door and open the door (Fig.2).



Fig.2

5.4. Once all macaques have gone outside, push the lever to close the door and lower the lever so it engages in the notch which prevents the door from opening (Fig.3).



Fig.3

- 5.5. Open all doors of the Flexagon (Fig.4) with a Robertson wrench (Fig.5) and a key for the padlocks.



Fig.4



Fig.5

- 5.6. Remove all pellet hoppers (Fig.4) into a tub for cleaning in the Washroom irrelevant



PQMS3-MARP-SOP-0292 Washroom Operations for Macaques

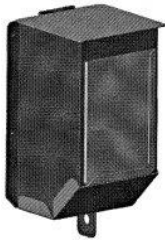


Fig.4



Fig.5

6. REMOVING SUBSTRATE FROM FLOORS IN FLEXAGONS

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Shovel
1	240 litre Wheelie Bin
1	Squeegee
1	Broom
QUANTITY	MATERIAL DETAILS
1	240litre Black Garbage Bag

6.2. Spot clean all wet patches of substrate, any stones, branches, etc. (Fig.1), with a shovel into a 240litre Wheelie Bin (Fig.2).



Fig.1



Fig.2

6.3. Turn on the Vacuum System (Fig.3) by pressing the START Button, collect a vacuum hose from irrelevant (Fig.4) and connect the vacuum hose to an outlet near the Flexagon that is to be cleaned (Fig.5).

 PQMS3-MARP-SOP-0035 Equipment Operations – Vacuum System at irrelevant



Fig.3



Fig.4

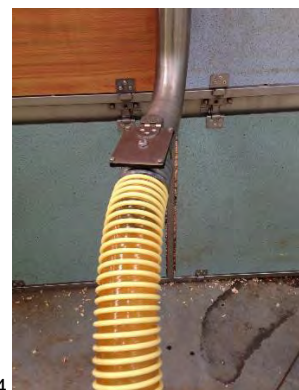



Fig.5

- 6.4.** With a sweeping motion suck up all substrate in the Flexagon with the vacuum (Fig.6).



Fig.6

- 6.5.** Continue step 6.4 until all Flexagons have had their substrate removed by the Vacuum. Then return the vacuum hose to [irrelevant] and turn off the Vacuum System by pressing the STOP Button (Fig.3).

 PQMS3-MARP-SOP-0035 Equipment Operations – Vacuum System at [irrelevant]

- 6.6.** If the Vacuum System is non-operational, use a squeegee or broom to sweep all substrate in the Flexagon into a pile in the middle of the floor (Fig.7).



Fig.7

- 6.7.** Shovel Substrate into a 240litre Wheelie Bin lined with a heavy duty garbage bag (Fig.2).
- 6.8.** When full, tie the garbage bags securely and move Wheelie Bin into Goods Entry Area, next to [irrelevant] ready for collection by Rubbish Disposal Contractors (Fig.8).



Fig.8

- 6.9.** Continue steps 6.6 and 6.8 until all Flexagons have had their substrate removed.

7. CLEANING FLEXAGONS

7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	High Pressure Hose
1	Squeegee
1	Profoaming Gun
1	Wheelie Bin
QUANTITY	MATERIAL DETAILS
varies	F10SC
varies	F919SC
1	Heavy Duty Garbage Bag

7.2. Hose Flexagons with a High Pressure Hose located next to each Flexagon (Fig.1), ensuring that all surfaces are thoroughly cleaned and substrate on the floor hosed to the sides or middle of the building where a drain is located (Fig.2).



Fig.1



Fig.2

7.3. Periodically empty the drain as necessary to ensure no blockages occur. Empty drainage baskets into a Wheelie Bin (Fig.3).



Fig.3

- 7.4.** Substrate hosed to the sides of the Flexagons can be swept up into a pile by a squeegee and shovelled into a 240litre Wheelie Bin (Fig.4).



Fig.4

- 7.5.** Once Flexagons have been hosed enough to loosen or remove all debris attached to the surfaces or floor, they are either disinfected, or degreased with a Biofilm remover on alternate weeks. On week one disinfect the Flexagons with F10SC applied through a Pro-Foaming Gun marked with a F10SC only label and on the alternate week apply F919SC through a Pro-Foaming Gun marked with F919SC only label (Fig.5 & Fig.6).



Fig.5

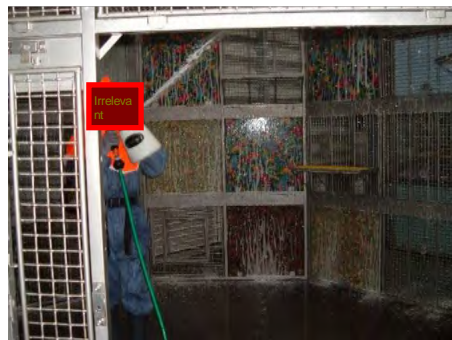


Fig.6

- ☐ Each Pro-Foaming Gun has been configured to apply the correct concentration of either F10SC at 1:125 concentration or F919SC at 1:14 concentration.

- 7.6.** Leave for at least 10 minutes, the rinse the Flexagons with the High Pressure Hose.

- 7.7.** If there is areas of the floor that is slippery, spray the area with F10SC disinfectant or F919SC degreaser, then lightly scrub the area with a broom before rinsing after 10 minutes.



If the area is particularly slippery, then it will need to be cleaned with a pressure cleaner (Section 8.0).

8. CLEANING FLEXAGONS AND FLOORS WITH A PRESSURE CLEANER

8.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Karcher Pressure Cleaner
1	12mm Hose
1	Pair of Ear Plugs
QUANTITY	MATERIAL DETAILS
Nil	

- 8.2. Pressure Cleaning Flexagons and adjacent floors is supplemental to regular cleaning and employed whenever there's an accumulation of grease, grime or scum which makes the flexagons difficult to clean with regular cleaning or makes the adjacent floors slippery.
- 8.3. Wheel the Pressure Cleaner near the nearest power point adjacent to the flexagon being cleaned.
- 8.4. Fully extend the pressure hose from reel of pressure cleaner.
- 8.5. Connect one end of hose to water inlet of pressure cleaner (Fig.1) and the other end to a tap located near the high pressure hose adjacent to each flexagon (Fig.2).



Fig.1



Fig.2

8.6. Turn on tap one turn and check water flow through nozzle by pressing the trigger (Fig.3).



Fig.3

8.7. Turn on power at power point.

8.8. Turn on power on pressure cleaner (Fig.4).



Fig.4

- 8.9.** Turn nozzle at end of pressure gun to fanned spray setting (Fig.5).



Fig.5

- 8.10.** Press trigger to start spraying water.
- 8.11.** In a sweeping motion, using correct posture, clean dirty areas of the flexagon and parts of the floor that are greasy or slippery.
- 8.12.** On completion, turn off Pressure Cleaner (Fig.4), turn of power at power point and turn off water tap.



Fig.4

- 8.13.** Press trigger to release water from pressure reel, disconnect hose from outlet and wind up pressure hose onto reel of pressure cleaner.
- 8.14.** Store Pressure Cleaner in Washroom Area Irrelevant.

9. SETTING UP FLEXAGONS FOR HABITATION AFTER CLEANING

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Squeegee
1	Broom
1	Wheelie Bin
varies	Pellet Hoppers
varies	Padlocks
1	Robertson Wrench
QUANTITY	MATERIAL DETAILS
varies	Environmental scatter
1	Garbage Bag
varies	Wood Shavings

9.2 After finishing rinsing the Flexagons, use a squeegee to remove water on the floors in and around each Flexagon. Squeeze water towards the central drain (Fig.1).



Fig.1

9.3 Sweep the any leftover debris in the drains into a drainage basket with a broom (Fig.2).



Fig.2

9.4 Empty drain baskets into a Wheelie Bin lined with a Heavy Duty Garbage bag.

- 9.5** Place dry, clean Pellet Hoppers onto each Flexagon that was cleaned and lock with a padlock (Fig.3).



Fig.3

- 9.6** Fill Pellet Hoppers with required amount of pellets.

 PQMS3-MARP-SOP-0061 Animal Care and Husbandry – Macaques at relevant info

- 9.7** Place enrichment scatter on floor of flexagon.

 PQMS3-MARP-SOP-0318 Environmental Enrichment for Macaques

- 9.8** Collect bags of Shavings that will be located on a Pallet, which is transferred over to relevant information each week from the storage area in the Storage Shed.

- 9.9** Tip shavings into the Flexagon as indicated on the Animal Group Sheet for the Flexagon. Tip shavings over enrichment scatter (Fig.4).


 PQMS3-MARP-SOP-0128 Macaque Animal Records



Fig.4

- 9.10** Lock all doors of the Flexagon with padlocks and Robertson Wrench. Double check that they are securely locked (Fig.5).





Fig.5

- 9.11** Open the outside access chute door to allow the macaques back inside.

10. ANIMAL MONITORING & WELFARE

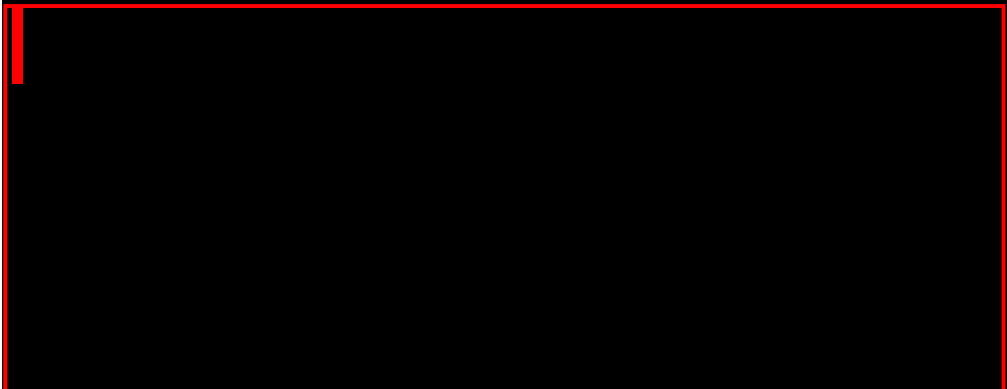
N/A

11. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0035	Equipment Operations – Vacuum System at 
PQMS3-MARP-SOP-0061	Animal Care and Husbandry – Macaques at 
PQMS3-MARP-SOP-0128	Macaque Animal Records
PQMS3-MARP-SOP-0292	Washroom Operations for Macaques
PQMS3-MARP-SOP-0318	Environmental Enrichment for Macaques
EXTERNAL REFERENCES	
Nil	

ANIMAL IDENTIFICATION- MACAQUES (18/07/2022)

PQMS3-MARP-SOP-0114-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from date of issue
	25- Jul - 2022 10: 3 AM AEST
	26- Jul - 2022 8: 28 AM AEST
	25- Jul - 2022 10: 3 AM AEST
	25- Jul - 2022 11: 2 AM AEST

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for micro-chipping macaques.




1.2. Scope

This SOP is to be applied to all staff members working with macaques across MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Ergonomics and Manual Handling Training – Monash OHS
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
-  PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Luer-Lok	A syringe tip design which locks the needle to the syringe
PPE	Personal Protective Equipment
SOP	Standard Operating Protocol – A Controlled Document
Trovan ISO MultiReader	Brand of Hand Held Device for reading Microchips inserted in Animals
Tunnel Adaptor	Flexible tunnel used to connect Non-Human Primates' Caging Systems together

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents relevant to the area they will be working in:

SARAH Ref no. 24354 Macaque Area Risk Assessment - [relevant information]

SARAH Ref No. 39409 MARP- Working with Large Animals and non-human primates.

SARAH Ref No. 38616 MARP - SHARPS

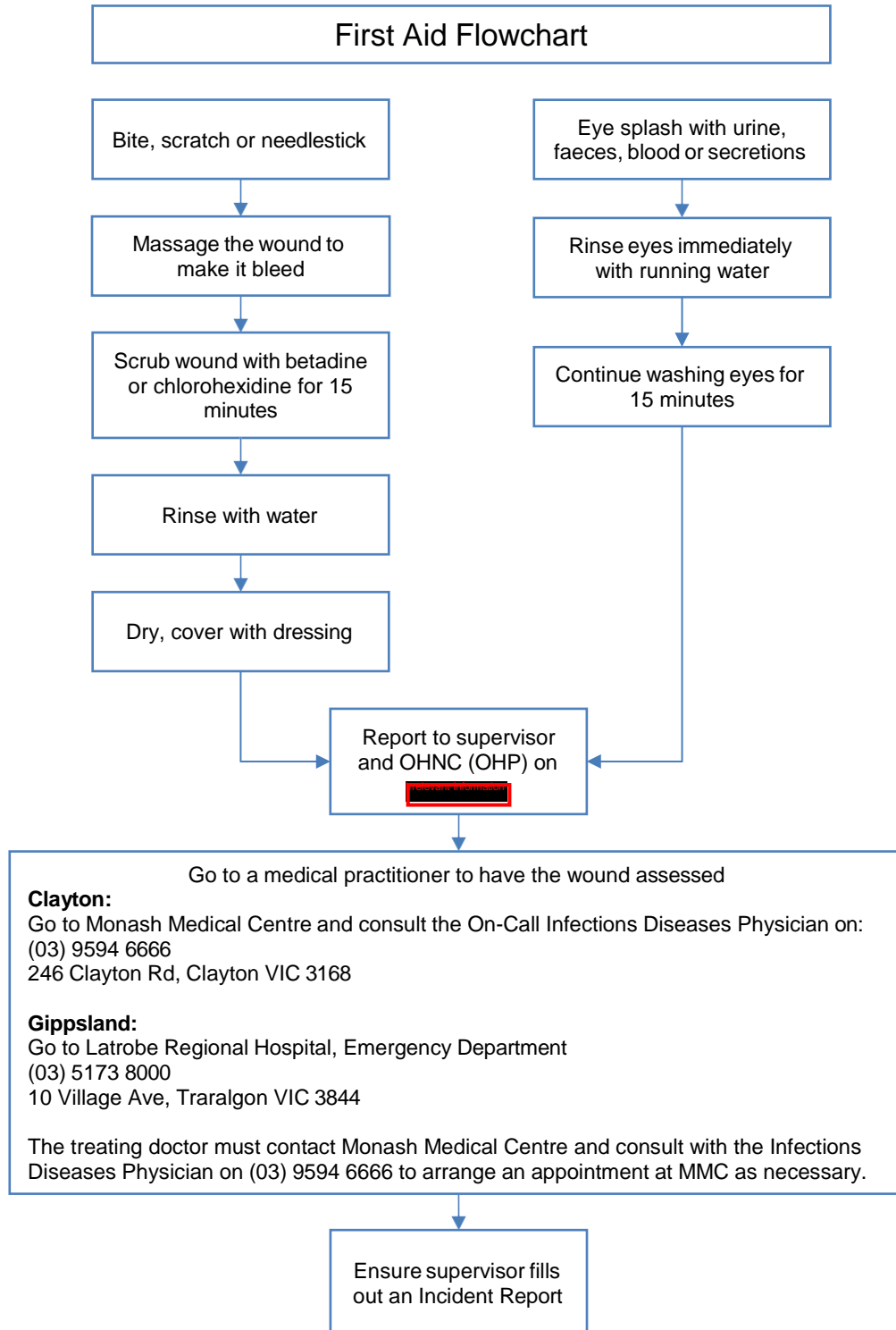
PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities [relevant information]

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility [relevant information]

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
[MANAGEMENT OF SUSPECTED Exposure to Macacine Alphaherpes virus 1 \(B virus\)](#)
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area.

Macaque First Aid Procedure



5. PROCEDURE FOR MICROCHIPPING MACAQUES

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Trovan ISO MultiReader
1	Primate Housing Unit
1	Tunnel Adaptor
1	Animal Hair Clippers
1	Trolley with Flat Surface
1	Heating Pad
1	Tweezers
1	Anaesthetic Machine
1	Trovan microchip implanter
QUANTITY	MATERIAL DETAILS
1	Microchip (per animal)
varies	Macaque Anaesthesia solution
varies	Macaque Reversal Solution
varies	22G needles
varies	1ml luer-lok tip syringes
varies	1 ml syringes
1	Towel
varies	Vetbond tissue adhesive

5.2. The Trovan ISO MultiReader has a circular antenna at the top, a digital LCD display and an operations button (Fig.1).



Fig.1

- 5.3.** Hold the Circular Antenna near the site of the microchip and depress and hold the Red Operation Button so that a “Scanning” message is displayed on the LCD screen (Fig.2).



Fig.2




- 5.4.** Once a microchip is detected the “Scanning” message will be replaced with the make and identification number of the microchip.
- 5.5.** If unused for 20 seconds the reader will automatically turn itself off.
- 5.6.** Setup the Anaesthesia Machine
 Refer to PQMS3-MARP-SOP-0186 Anaesthesia in Macaques
- 5.7.** Capture & restrain the macaque to be microchipped
 Refer to PQMS3-MARP-SOP-0104 Macaques – Capture & Restraint
 Refer to PQMS3-MARP-SOP-0186 Anaesthesia in Macaques
- 5.8.** Once anaesthetized, remove macaque from Primate Housing Unit or its mother, if it’s an infant macaque less than 3 months of age.
- 5.9.** Place the macaque down ventrally on a work bench so its back is easily accessible and with its arms and legs spread outward for balance (Fig.3).



Fig.3

- 5.10** Shave at least a 5x5cm patch on the back of the macaque around the injection site (Fig.1).
- 5.11** A microchip should be inserted subcutaneously in the dorsum between the scapulae. The implant should lie parallel to the skin plane (Fig.4).



Fig.4

- 5.12** Insert the needle in the implanter syringe by screwing the needle clockwise onto the neck of the syringe (Fig.5).



Fig.5

- 5.13** Remove the protective needle sheath.
- 5.14** Using a thumb and forefinger, pinch some loose skin at the injection site and insert the needle subcutaneously under the skin below the pinch (Fig.6).



Fig.6

- 5.15** Push the handle actuator with your thumb towards the neck of the syringe to insert the transponder under the skin. Be sure to fully depress the handle (Fig.7).



Fig.7

- 5.16** As the needle is withdrawn, pinch the injection site with a thumb and index finger to prevent the transponder from being pulled out with the needle (Fig.8).






Fig.8

- 5.17** Place a drop of Vet Bond on the site of the injection and pinch with a pair of tweezers until the Vet Bond has dried.

- 5.18** Hold the Trovan ISO Reader at the injection site to check for correct identification (Fig.9).



Fig.9

-  The Macaque Work Station is usually used to identify macaques from flexagons.
 -  PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station
- 5.19.** Return the macaque to its flexagon after it recovers in a Primate Housing Unit.
-  PQMS3-MARP-SOP-0122 Returning Macaques to Flexagons
- 5.20.** Update the macaque's record by opening LabTracks and selecting Group manager → Current Groups (Fig.10).

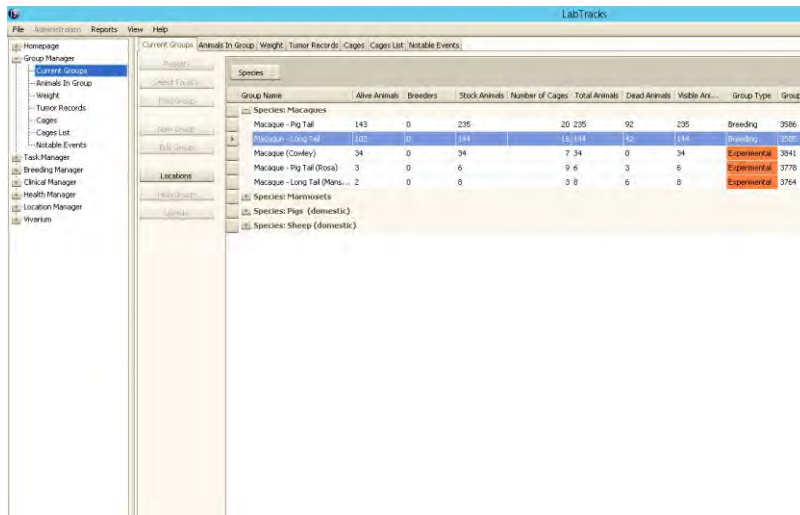


Fig.10

- 5.21.** Select the Group to which the macaque whose microchip will be added belongs to.
- 5.22.** Select Animals in Group Tab to display all of the animals within the selected group (Fig.11).

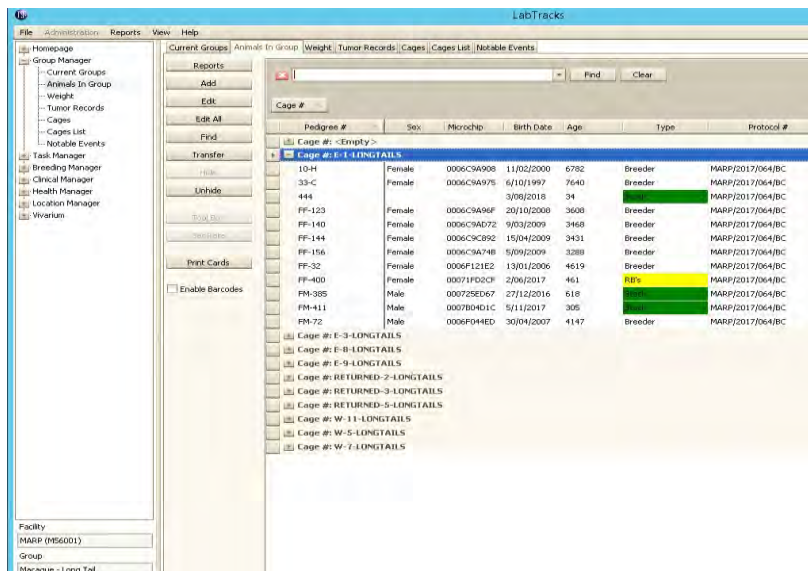


Fig.11

- 5.23.** Locate the animal record for the macaque whose microchip will be added by sorting the records within the columns or by using the Find Panel.
- 5.24.** Click on the Edit Button to open the Edit Animal Window where the macaque's record can be edited (Fig.12).

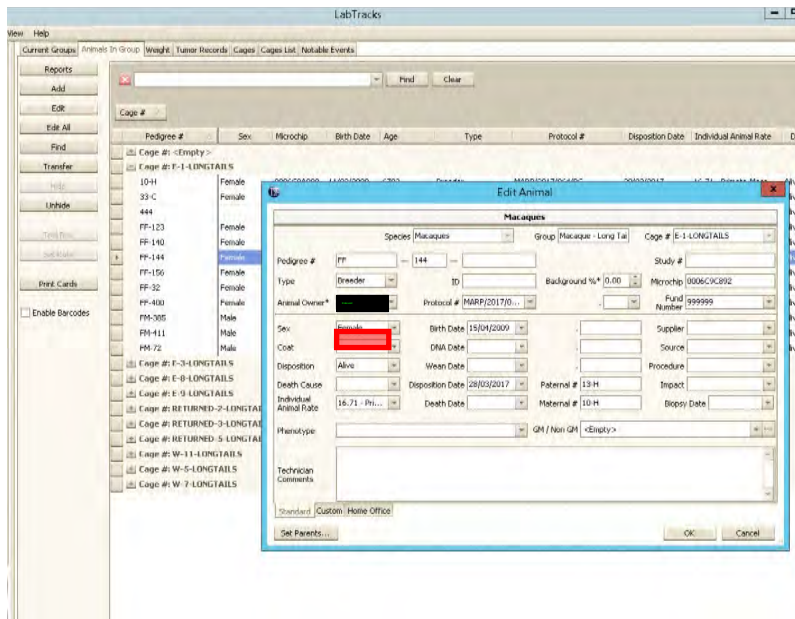


Fig.12

- 5.25. Enter the microchip number in the Microchip field.
- 5.26. Click on the OK Button and confirm in order to save the details and close the Edit Animal Window.

6. PROCEDURE FOR SECONDARY IDENTIFICATION OF MACAQUES

6.1 Studies requiring daily monitoring of individual macaques will usually require secondary identification of macaques which consists of clipping hair of an easily visible part of the animal's body. Secondary identification will usually be performed after grouping when the macaque has its first general anaesthetic.

6.2 The following equipment and materials are required to perform this procedure:


QUANTITY	EQUIPMENT DETAILS
1	Trovan ISO MultiReader
1	Primate Housing Unit
1	Animal Hair Clippers
1	Trolley with Flat Surface
1	Heating Pad
1	Anaesthetic Machine
1	Trovan microchip implanter
QUANTITY	MATERIAL DETAILS
varies	Macaque Anaesthesia solution
varies	Macaque Reversal Solution
varies	22G needles
varies	1ml luer-lok tip syringes
varies	1 ml syringes

6.3 After randomisation, animals will be allocated to cages according to sex and group.

6.4 Secondary identification will be given according to sex and group, starting from 1.

6.5 Capture and anaesthetize the macaque so that it can be clipped.

 PQMS3-MARP-SOP-0104 Macaques – Capture & Restraint

 PQMS3-MARP-SOP-0186 Anaesthesia of Macaques

6.6 Clip the required body part as per table 1.

TABLE 1

ANIMAL NUMBER WITHIN GROUP	BODY PART CLIPPED OF HAIR
1	Right Arm between Shoulder and Elbow
2	Left Arm between Shoulder and Elbow
3	Right Thigh between Knee and Hip
4	Left Thigh between Knee and Hip
5	Right Forearm between Hand and Elbow
6	Left Forearm between Hand and Elbow
7	Right Calf between Knee and Foot
8	Left Calf between Knee and Foot
9	Back between Shoulder and Hip
10	No Fur clipped

6.7 Add the secondary identification marker onto the Animal Identification and Grouping Record, which then can be used to identify the animal for monitoring.

7. ANIMAL MONITORING & WELFARE

- 7.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 7.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 7.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 7.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate within 72 hours of its detection. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

8. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref No. 38616	MARP-Sharps
SARAH Ref no. 24354	Macaque Area Risk Assessment - irrelevant information
SARAJ Ref No. 39409	MARP- Working with Large Animals and non-human primates.
PQMS3-MARP-SOP-0034	Macaque Work Station
PQMS3-MARP-SOP-0104	Macaques – Capture & Restraint
PQMS3-MARP-SOP-0117	Entry and Exit Procedures to Macaque Facilities - irrelevant
PQMS3-MARP-SOP-0122	Returning Macaques to Flexagons
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque Facility irrelevant
PQMS3-MARP-SOP-0186	Anaesthesia in Macaques
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013) https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016) https://www.nhmrc.gov.au/about-us/publications/principles-and-guidelines-care-and-use-non-human-primates-scientific-purposes
MONASH University OHS	MANAGEMENT OF SUSPECTED Exposure to Macacine Alphaherpes virus 1 (B virus)

DOCUMENT HISTORY			PQMS3-MARP-SOP-0114-V3.docx		
Version no.	Date of Issue	Reviewed by: Name		Amendments	
1	24/03/2017	[Redacted: irrelevant information]		Original document	
2	28/10/2019			Update to Animal Monitoring & Welfare Statement	
				Updated name, added secondary identification and LabTracks recording. Updated OHS First Aid flowchart.	
		Removed superseded documents and updated names of SOP 0186			
3	21/06/2022	Changed approver from [Redacted: irrelevant information]		Added OHS column to Document History	
		Updated Document Authorisation and footer formatting		Section 4: Updated reference to risk assessment, updated first aid flowchart, removed reference to superseded SOP-0143. Added reference to Risk Assessment MARP-SHARPS.	
				Section 8: Updated references	

HEALTH MONITORING OF MACAQUES (17/02/2022)

PQMS3-MARP-SOP-0118-V5.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from date of issue
Irrelevant Information	17-Feb-2022 10:47 AM AEDT
	12-Feb-2022 12:20 PM AEDT
	12-Feb-2022 8:18 PM AEDT

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for health monitoring of macaques.











1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Area of [irrelevant information] at [irrelevant information] and the Macaque Areas at [irrelevant information]

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Ergonomics and Manual Handling
-  PQMS-MARP-REF-0030 Non-human Primate Health Monitoring – Clinical Severity Scores
-  PQMS3-MARP-REF-0030 Non-human Primate Health Monitoring – Clinical Severity Scores
-  PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
-  PQMS3-MARP-SOP-0105 Equipment Operations – Primate Housing Units for Macaques
-  PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities [irrelevant information]
-  PQMS3-MARP-SOP-0186 Anaesthesia in Macaques
-  PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility [irrelevant information]
-  PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility [irrelevant information]

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
SOP	Standard Operating Protocol – A Controlled Document
Tunnel Adaptor	Flexible tunnel used to connect Non-Human Primates' Caging Systems together
Luer-Lok	A syringe tip design which locks the needle to the syringe
Transdermally	Route of administration where active ingredients are delivered across the skin
Tubersol	Diagnostic agent for detection of tuberculosis

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment relevant

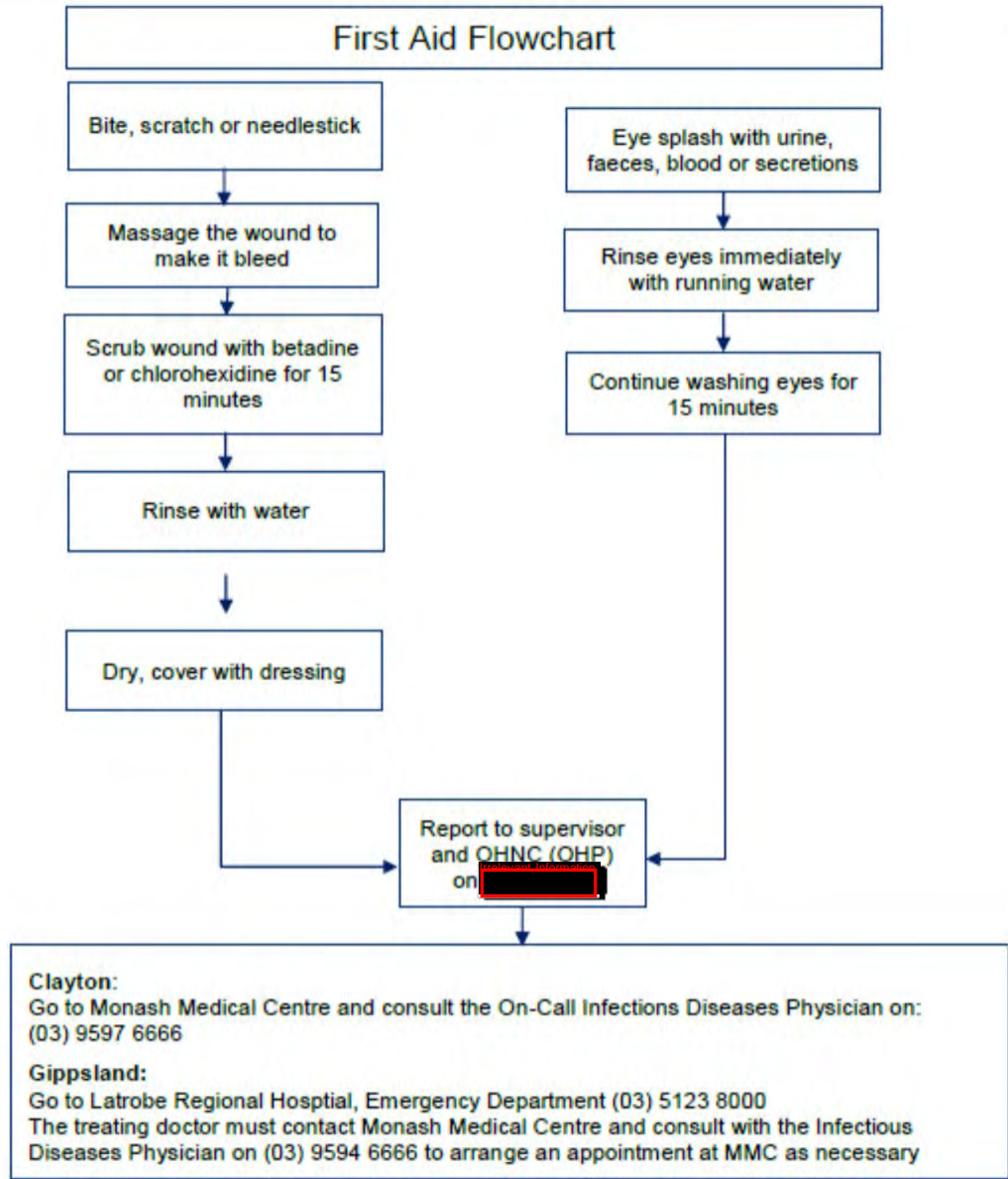
PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities relevant

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility relevant

PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility relevant

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.




5. PROCEDURE FOR DAILY CAGE CHECKS FOR ROUTINE HEALTH MONITORING

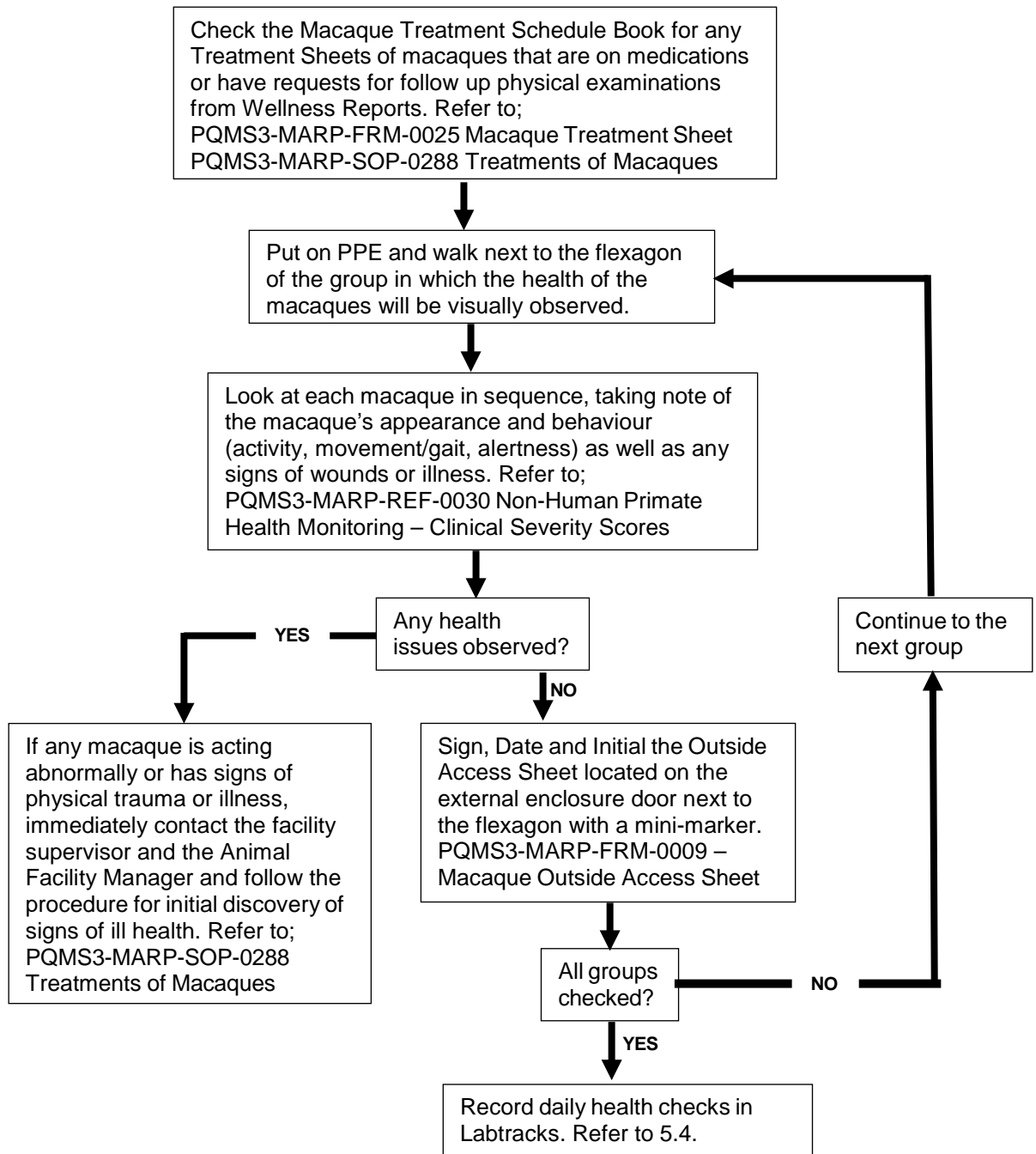
5.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Mini marker pen

5.2 Daily Cage Checks to monitor animals in the cage for health monitoring is conducted as part of the Animal Room Operations for Macaques at [REDACTED] and in conjunction with feeding the morning rations of pellets plus outside access during the week.

 PQMS3-MARP-SOP-0061 Animal Room Maintenance – Macaques at [REDACTED]

5.3 Follow Flow Chart for steps;



- 5.4** Record Daily Health Checks in Labtracks by selecting either Mammal Rooms relevant Information found in the Vivarium > Locations tab under irrelevant Information irrelevant Information found in the Vivarium > Locations tab under irrelevant Information).

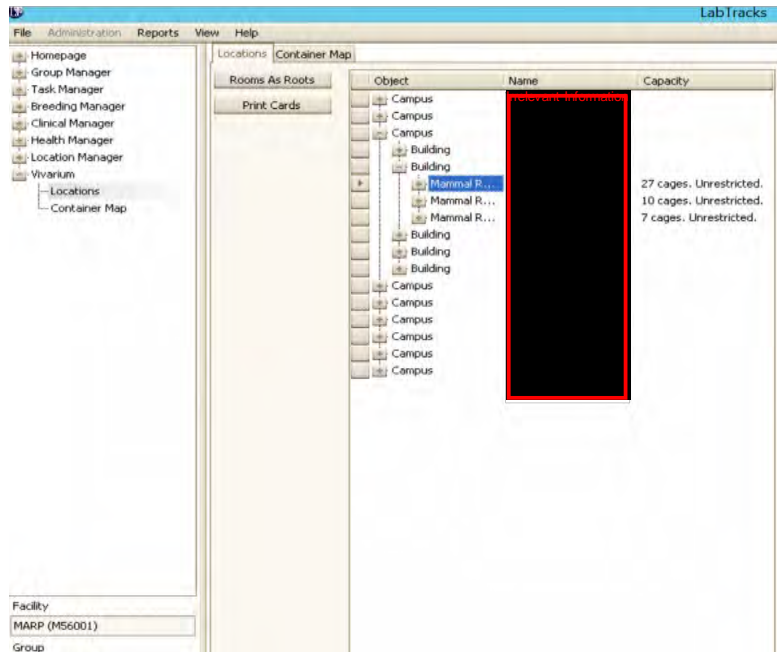




Fig.1

- 5.5** Selecting the Container Map tab will display the cages within the room (Fig.2).



Fig.2

- 5.6** For each cage that has been checked in the room, select the cage and right click to bring up the action menu, then click on Clean Cage to mark the cage as having been health checked.
- 5.7** At the end of the day all animals are monitored again while they are brought inside and locked in for the night. Ensure that all macaques in the group are inside when operating the chute to lock them inside.
- 5.8** Count and check all macaques in the group to determine that all of them are inside and are healthy and free of any injuries as per 5.3 flowchart.

-  PQMS3-MARP-REF-0030 Non-human Primate Health Monitoring – Clinical Severity Scores
-  Daily Health Checks only need to be entered into Labtracks once daily.

6. PROCEDURE FOR ROUTINE PARASITE CONTROL OF MACAQUES

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
1	Trolley with Flat Surface
1	Heating Pad
QUANTITY	MATERIAL DETAILS
varies	Macaque Anaesthesia solution
varies	Macaque Reversal Solution
varies	22G needles
varies	1ml luer-lok tip syringes
varies	1ml syringes
1	Towel
varies	Selamectin (Revolution) 0.1ml/kg

6.2 The anti-parasitic medication used for macaques is Selmectin (brand name Revolution) at a dosage rate of 0.1ml/kg plus an extra 0.1ml added to the total to allow for wastage.

6.3 Macaque are wormed routinely in conjunction with other procedures such as weighing or annual health checks. The Macaque Work Station is used (Fig.3). However if a macaque is anaesthetised for a procedure and it has not been treated with Selamectin in the past 4 weeks, then the opportunity is taken to worm the animal while it is under anaesthesia.

 PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station




Fig.3

6.4 Use a 1 or 3ml syringe to draw up the required dose for each macaque.

6.5 Restrain the macaque with its back facing the operator either by physical restraint in a Primate Housing Unit (Fig.2) or Chemical Restraint through Anaesthesia (Fig.3).

 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

 PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

6.6 Spread the hair apart on the back of the macaque.

6.7 Slowly apply (“squirt”) the contents of the syringe onto the bare skin between the parted hair.

- 6.8** Update Labtracks with the medication and amount applied to the macaque in the RX/TX Tab within the Health Manager by clicking the Add Medication button, which will display the New Rx Window (Fig.4).

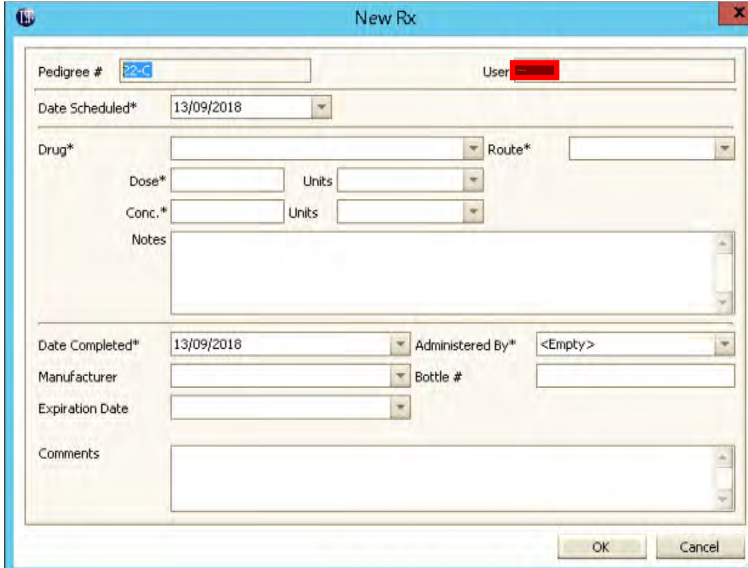


Fig 4.

- 6.9** Enter the details for Date Scheduled, Drug, Route, Dose and units, Conc., Date Completed, Administered By and any Comments. Click OK to confirm the medication and close the New RX Window.


7. PROCEDURE FOR WEIGHING AND PHYSICAL EXAMINATION OF MACAQUES

7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
1	Weighing Scales
QUANTITY	MATERIAL DETAILS
varies	Macaque Anaesthesia solution
varies	Macaque Reversal Solution
varies	22G and 23G needles
varies	1ml luer-lok tip syringes
varies	1ml syringes

7.2 Macaques are weighed routinely every 3-6 months and usually in conjunction with worming so the Macaque Work Station is used. However if the Macaque is anaesthetized for some other procedure (i.e. TB testing, Blood Collection, etc.) the opportunity is taken to weigh the macaque at the same time.

7.3 Whenever macaques are weighed, or are anaesthetised for a procedure, the opportunity is also taken to perform a physical examination. In the case of anaesthesia, this will be a full examination. Where the animal remains conscious, observations will be made only for parameters that can be determined safely.

 PQMS3-MARP-REF-0030 Non-human Primate Health Monitoring – Clinical Severity Scores

7.4 Move the macaque from the Flexagon through the access tunnel to the weigh station.

 PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station

7.5 Record the weight and identification of the macaque in LabTracks as part of a physical examination (Fig.5)

If a percentage bodyweight loss exceeds 8% is noted, then the MARP veterinarian is notified for instructions and a Wellness Report created.

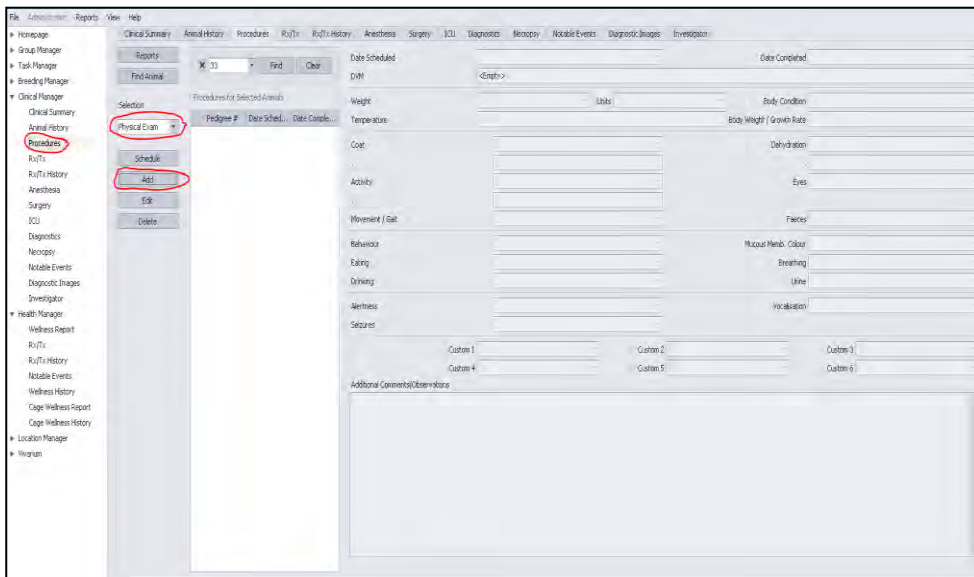




Fig 5: Recording Physical Examination on LabTracks

- 7.6** Once through the Work Station into a Primate Housing Unit, complete the Physical Examination Record in LabTracks, recording observations for coat, activity, movement/gait, behaviour, eating, drinking, alertness and seizures (Fig.6).

-  PQMS3-MARP-REF-0030 Non-human Primate Health Monitoring – Clinical Severity Scores
-  No assumptions or speculations should be made about pregnancy status or condition of the animal from a visual physical examination. See section 8.8 for full physical examination information.

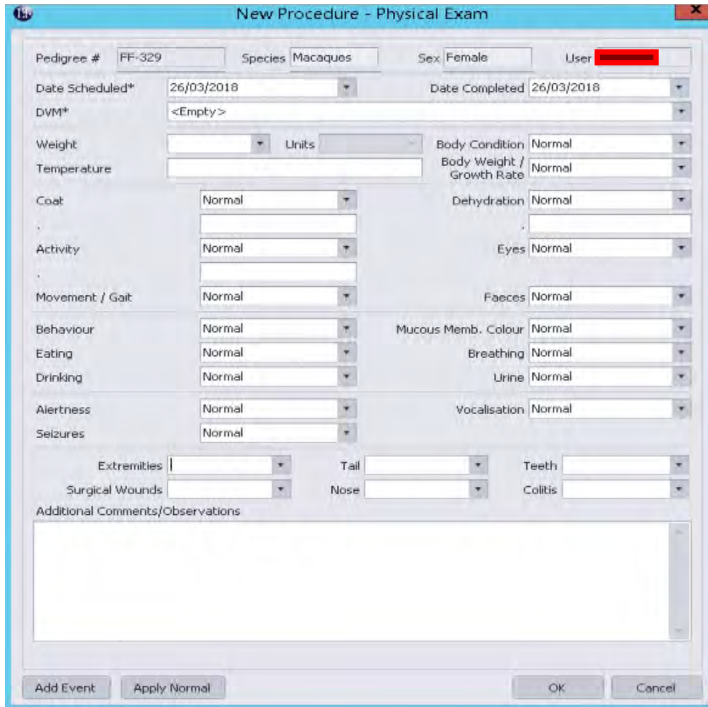





Fig 6. Physical Examination Record

- 7.7** For procedures that require anaesthesia, the macaque is first captured in a Primate Housing Unit and Chemical Restraint is applied intra-muscularly through a syringe.

-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
-  PQMS3-MARP-SOP-0105 Equipment Operations – Primate Housing Units for Macaques
-  PQMS3-MARP-SOP-0186 Anaesthesia in Macaques


- 7.8** Once the macaque is unconscious and sedated adequately to allow safe handling, unlock the door of the Primate Housing Unit.

- 7.9** Carefully grab both arms of the macaque and gently hold them behind its back in a restraint hold.

- 7.10** The macaque can now be safely removed from the Primate Housing Unit and placed on the weighing platform of the Macaque Workstation.

PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station

- 7.11** The macaque is then placed on an examination table and gas anaesthesia instituted.


-  PQMS3-MARP-SOP-0186 Anaesthesia in Macaques


- 7.12** Identify the macaque using a microchip scanner.

-  PQMS3-MARP-SOP-0114 Animal Identification - Microchipping Macaques

- 7.13** Record a full physical examination in LabTracks for weight and observations for coat, growth rate, activity, movement/gait, behaviour, eating, drinking, alertness, seizures, body

condition, extremities, surgical wound, tail, nose teeth, dehydration, eyes, faeces, mucous membrane colour, breathing, urine and vocalisation.

 PQMS3-MARP-REF-0030 Non-human Primate Health Monitoring – Clinical Severity Scores

 If any abnormalities are observed, contact the MARP Veterinarian for instructions and also inform the Animal facility Manager.

8. PROCEDURE FOR BI-ANNUAL PHYSICAL EXAMINATION AND TB TESTING OF MACAQUES

8.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
1	Trolley with Flat Surface
1	Heating Pad
QUANTITY	MATERIAL DETAILS
varies	Macaque Anaesthesia solution
varies	Macaque Reversal Solution
varies	22G needles
varies	1ml luer-lok tip syringes
varies	1ml syringes
1	Towel
varies	Tuberculin syringes
varies	Tubersol

8.2 TB testing is performed on every macaque in the facility once every 2 years. At the same time a physical examination, weighing and worming are performed. See sections 6 & 7.

8.3 Capture the macaque in a Primate Housing Unit and anaesthetise. See:



PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint



PQMS3-MARP-SOP-0105 Equipment Operations – Primate Housing Units for Macaques



PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

8.4 Once the macaque is unconscious and adequately sedated, unlock the door of the Primate Housing Unit.

8.5 Carefully grab both arms of the macaque and gently hold them behind its back in a restraint hold.

8.6 The macaque can now be safely removed from the Primate Housing Unit.

8.7 Using a microchip reader, determine the identification number of the macaque (Fig.7).







PQMS3-MARP-SOP-0114 Animal Identification - Microchipping Macaques



Fig.7.

- 8.8** Weigh the macaque and perform a full physical examination of the oral cavity and dentition, eyes, ears, limbs and digits, joint movement, coat and skin, tail and abdominal palpation is conducted on the macaque. Record in LabTracks as per sections 7.5 and 7.6

-  PQMS3-MARP-REF-0030 Non-human Primate Health Monitoring-Clinical Severity Scores
-  PQMS3-MARP-REF-0512. Body Condition Scoring in Non-Human Primates

-  Aged animals (e.g. over 20 years of age) are anaesthetised and examined once yearly by the MARP veterinarian.
-  If an abnormality is found, further tests such as blood or faecal sampling for a health profile, or imaging, may be performed if deemed necessary by the MARP veterinarian.

- 8.9** Prepare the Tubersol Vial and Insulin Syringes for use (Fig.8).



Fig.8

- 8.10** Draw up 0.1ml of Tubersol in an insulin syringe.
- 8.11** Administer the contents of the insulin syringe via an intradermal injection just above the lateral canthus (outside corner) of the right eye. A small bubble should form.
- 8.13** Discard the used syringe into a sharps container (Fig.9).



Fig.9.

- 8.14** Inject the required amount of anaesthetic reversal agent intramuscularly in the quadriceps muscle.
- 8.15** Prepare a Primate Housing Unit for occupation by opening the compartment door (Fig.10).



Fig.10.

- 8.16** Move the Macaque into the Primate Housing Unit using a restraint hold.
- 8.17** Place the macaque on its side with its neck extended to allow an open airway. The macaque should be facing the outside of the Primate Housing Unit in order to monitor the colour, blink reflex and breathing.
- 8.18** Lock the Primate Housing Unit door with a Robertson Wrench.
- 8.19** Observe the breathing and reflex withdrawal of the macaque until fully conscious and able to stand upright and move around. Contact the facility supervision or a veterinarian immediately if a complication arises or the macaque doesn't show signs of consciousness after 30 minutes.
- 8.20** Record the time of reversal and recovery in LabTracks as well as that it has been TB Tested and wormed if applicable.
- 8.21** The Tuberculin Test can be read 2-3 days after the administration of Tubersol to the macaques.
- 8.22** Observe the site of administration of the Tubersol on each macaque (usually above the right eye).
- 8.23** No inflammation or swelling of the site of administration is a negative result.
- 8.24** Inflammation or swelling of the site of administration is a possible positive result and immediately notify the facility supervisor and veterinarian.
- 8.25** Record the results in LabTracks under Clinical manager > Procedures and selecting the animal and then Procedure TB in the selection box (Fig.11).

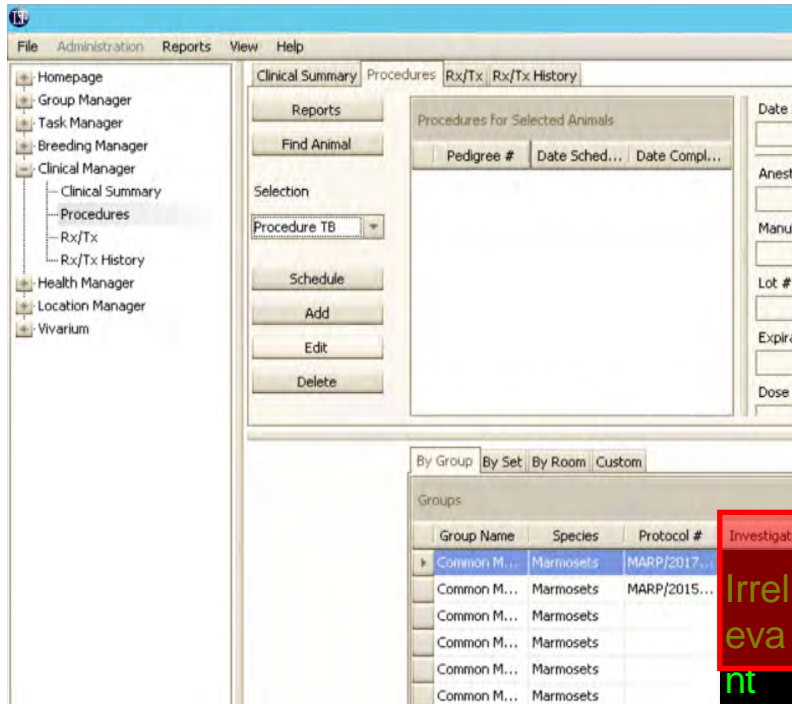


Fig.11.

8.26 Click on the Add Button in the left menu to display the New Procedure – TB Test Window (Fig.12) and enter details for the procedure and o OK to confirm the details and close the window.

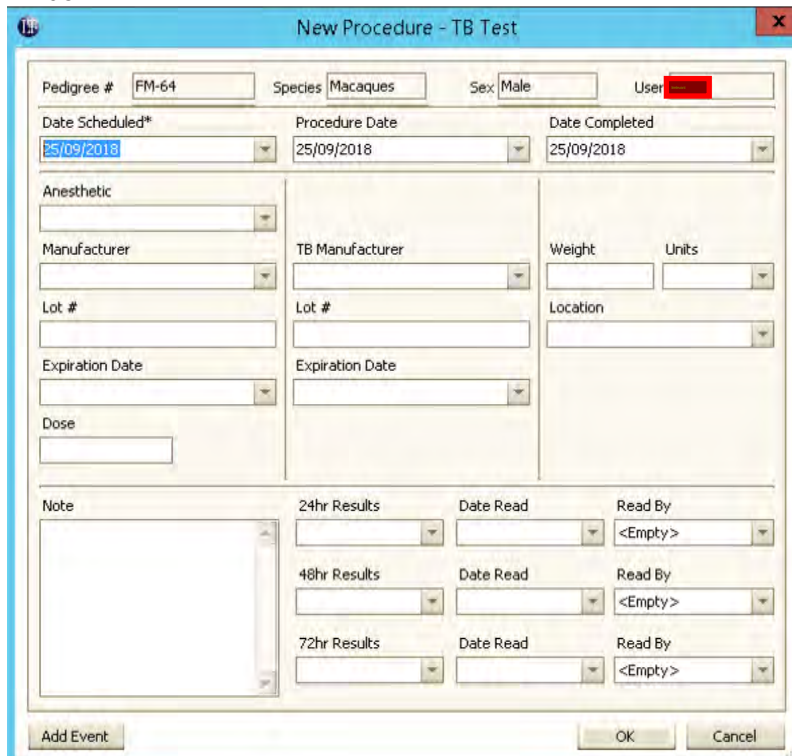


Fig.12.

9. PROCEDURE FOR FAECAL TESTING MACAQUES

9.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Pathology Request Form
QUANTITY	MATERIAL DETAILS
varies	Faecal Collection Container
varies	Plastic Specimen Bag

9.2 Collect a Faecal Collection Container from irrelevant (Fig.13).






Fig.13.

9.3 Faecal testing of macaques requires fresh faeces directly from the animal in order to give valid results and is usually conducted in conjunction with a physical examination and blood collection which requires anaesthesia of the animal.

- If the animal is observed defecating in the cage during anaesthesia then this sample can possibly be used if it can be collected without contamination.

9.4 Capture the macaque in a Primate Housing Unit and apply Chemical Restraint through Anaesthesia.

-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
-  PQMS3-MARP-SOP-0105 Equipment Operations – Primate Housing Units for Macaques
-  PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

9.5 Once the macaque is unconscious and adequately sedated, unlock the door of the Primate Housing Unit.

9.6 Carefully grab both arms of the macaque and gently hold them behind its back in a restraint hold.

9.7 The macaque can now be safely removed from the Primate Housing Unit.

9.8 Place macaque on a trolley or bench.

9.9 Using a new glove, gently pass a gloved, lubricated index finger into the anus and withdraw any faecal material present.

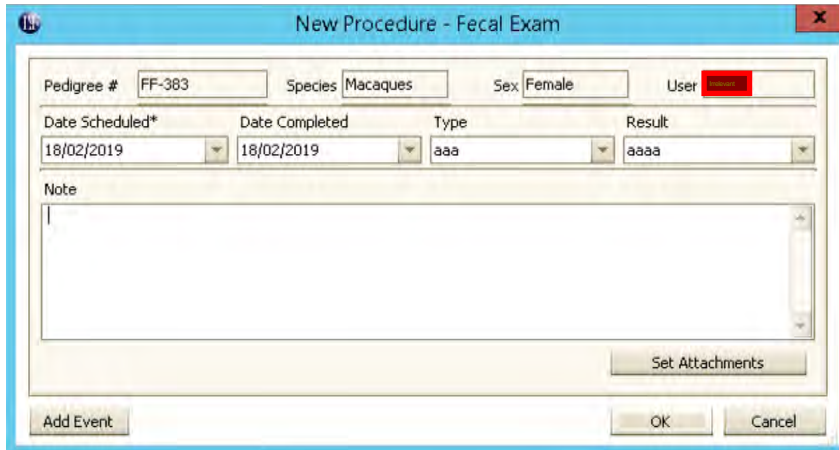
9.10 Scrape any faecal material off the finger onto the top of the faecal collection container.

- 9.11** Tightly close the lid and place the Faecal Collection Container into a Plastic Specimen Bag (Fig.14).



Fig.14.

- 9.12** Fill out a Pathology Request Form and place the form in the pocket of the specimen collection bag.
- 9.13** Take the Bag containing the Samples to the nearest Animal Pathology Pickup Centre.
- 9.14** Record the fecal exam in Labtracks by Opening the Clinical Manager and selecting the animal, then selecting Fecal Exam in the Selection Box. Click on Add to open the New Procedures – Fecal Exam Window (Fig.15). Record details of Type, any Notes and Result of Fecal Exam when known.


 A screenshot of the "New Procedure - Fecal Exam" window in Labtracks software. The window contains the following fields and controls:

Date Scheduled*	Date Completed	Type	Result
18/02/2019	18/02/2019	aaa	aaaa

 The form also includes fields for Pedigree # (FF-383), Species (Macaques), Sex (Female), and User (redacted). There is a large text area for "Note" and a "Set Attachments" button. At the bottom, there are "Add Event", "OK", and "Cancel" buttons.


Fig.15.


10. PROCEDURE FOR BLOOD TESTING OF MACAQUES

10.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	EDTA vacutainer (Purple)
1	Fluoride Oxalate vacutainer (Grey)
1	Serum Gel vacutainer (Gold)
QUANTITY	MATERIAL DETAILS
1	Biological specimen bag
1	Pathology request form

10.2. As requested by the MARP Veterinarian, blood samples may be taken from macaques that may have an underlying condition which could be diagnosed from the blood samples.

 Blood samples for health checking and monitoring must be authorized by a MARP Veterinarian.

 PQMS3-MARP-SOP-0233 Blood Collection in Macaques


10.2 A blood profile diagnosis requires a 4-5ml blood sample in total. This is distributed into three vacutainers as follows;

- 1ml is placed into a purple EDTA tube
- 0.5ml is placed into a grey Fluoride Oxalate tube
- 2.5-3.5ml is placed into a gold serum gel tube.

10.3 Place all tubes in a biological specimen bag.

10.4 Fill out a Pathology Request form, and place in bag.

10.5 Take the Bag containing the samples to the nearest Animal Pathology Pickup Centre.

 Results are sent to the MARP Veterinarian who will make a diagnosis in conjunction with any notes in the report.

10.6 Record the amount of blood collected in Labtracks by opening the Clinical Manager and selecting other procedures in the selection box so that the New Procedures Window opens (Fig.16). Select the method for blood collection in the procedure type selection box, for example Blood Collection – Saphenous.

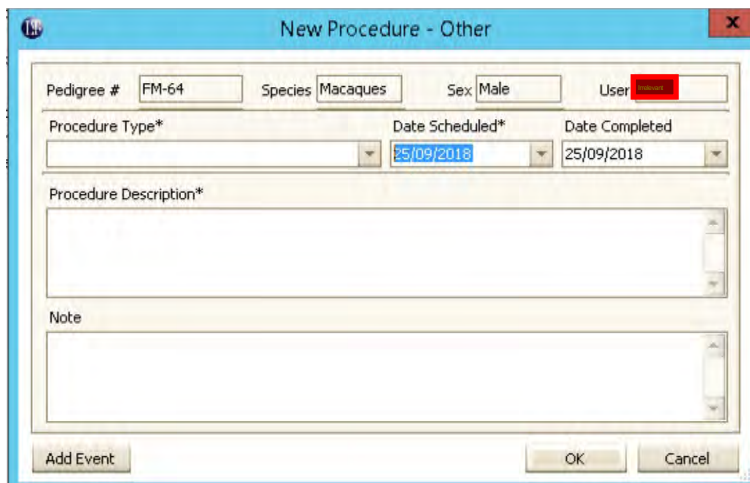


Fig.16.

10.7 Enter Procedure Description, including amount of blood collected, purpose and WDB reference number if collected for a client.

11. PROCEDURE FOR DAILY CHECKS AT relevant Information

11.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	pen
QUANTITY	MATERIAL DETAILS
1	Daily diary – specific to each area

11.2. Animals housed at relevant Information are all under experimentation. Daily visual checks to monitor the animal's health in their cages is conducted each morning and afternoon by the animal technicians.



PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque relevant Information



PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque relevant Information

11.3. Look at each animal, taking note of the macaque's appearance and behaviour (activity, movement/gait, alertness) in addition to any obvious signs of illness or trauma, such as bites, wounds or contusions.

11.4. Once all the macaques have been checked, make note in the diary. This will ensure immediate communication between research staff and MARP staff that the animals have been checked in the morning.

11.5. If any macaque is acting abnormally or has physical trauma or signs of illness, make a note in the diary and immediately notify the facility supervisor, MARP veterinarian/Veterinary Welfare Officer and the Chief Investigator for the animal or the individual responsible for the welfare of the animals according to the approved project.

11.6. If there is anything unusual, also make note in LabTracks and begin a wellness report in Labtracks. See Figure 12 below.

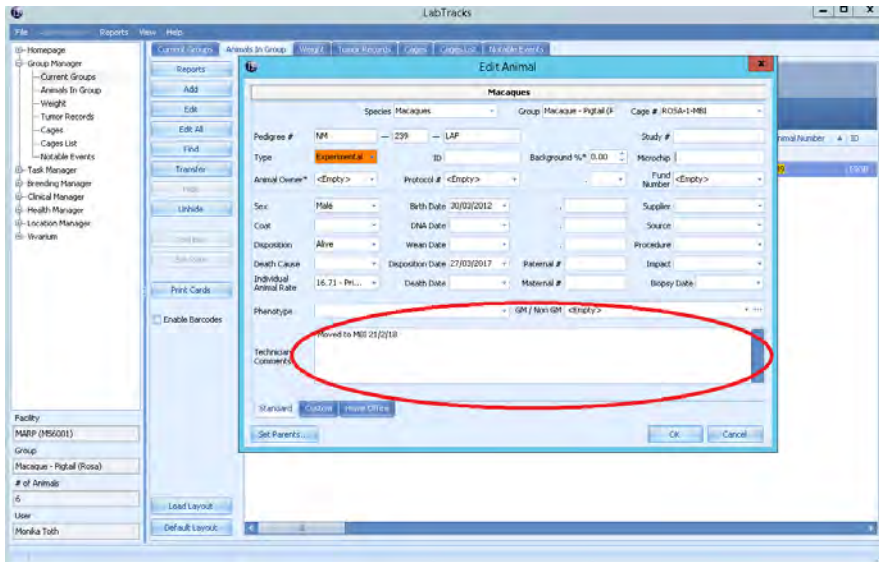


Figure 12.

11.7. At the end of the day, all the animals are visually checked and monitored again prior to the animal technicians leaving for the day.

12. PROCEDURE FOR WEIGHING MACAQUES AT relevant information


12.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Large vet scales
QUANTITY	MATERIAL DETAILS

12.2. Macaques at relevant information are weighed regularly by the researchers in accordance with their approved project.

12.3. In addition to the researchers weighing the animals, they are also weighed during the annual health checks performed by the MARP veterinarian and animal technicians.

12.4. Identify the macaque using a microchip scanner.

 PQMS3-MARP-SOP-0114 Animal Identification - Microchipping Macaques

12.5. To weigh the animal, ensure that the macaque is adequately sedated or anaesthetised and is safe to handle.

PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

12.6. Pick up the animal buy grabbing both arms and holding then behind its back in a restraint hold.

PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

12.7. Place the macaque onto the weighing platform on its side. Ensure that the neck is elongated for a clear airway and arms situated are in front of the body. See figure 13 below of the weighing platform.



Figure 13.

12.8. Once the weight is noted, the animal can be removed from the weighing platform and the health check can be continued.

12.9. At any time which the animal is weighed, the weight must be added in LabTracks. See Figure 14 below.

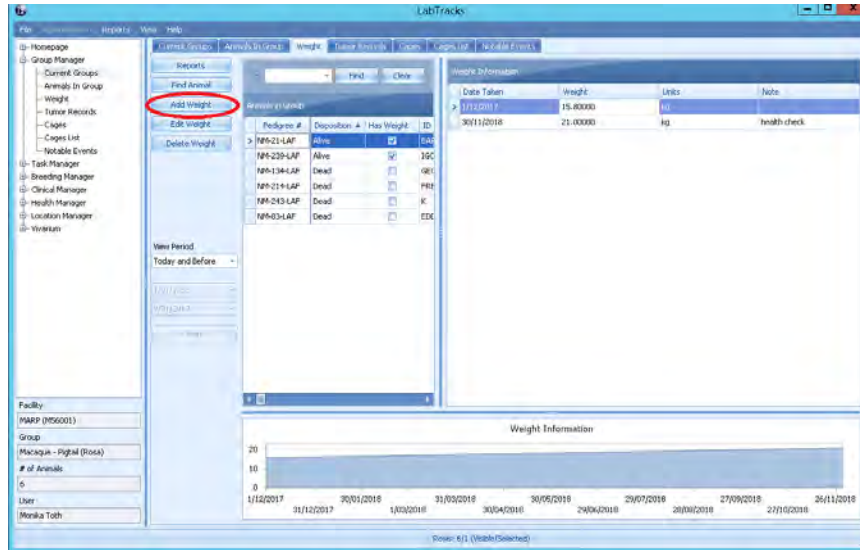


Figure 14.

- 12.10** Record a full physical examination in LabTracks for weight and observations for coat, growth rate, activity, movement/gait, behaviour, eating, drinking, alertness, seizures, body condition, extremities, surgical wound, tail, nose teeth, dehydration, eyes, faeces, mucous membrane colour, breathing, urine and vocalisation.



PQMS3-MARP-REF-0030 Non-human Primate Health Monitoring – Clinical Severity Scores

13. PROCEDURE FOR TB TESTING, FAECAL SAMPLES AND BLOOD COLLECTION OF MACAQUES AT [redacted]

13.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
Varies	See 8.1, 9.1 or 10.1 depending on procedure
QUANTITY	MATERIAL DETAILS
varies	See 8.1, 9.1 or 10.1 depending on procedure

13.2. TB testing, faecal and blood samples are all done during the annual health check, unless otherwise requested by the researcher or MARP veterinarian.

13.3. For TB testing, refer to 8.1 – 8.25. Note the difference in caging at [redacted]; animals are restrained with the squeeze-back mechanism within the cages and the animal is removed via the main entry door directly from the squeeze back cage. See figure 15 and 16 below.

13.4. For faecal testing, refer to 9.1 – 9.13. Note the difference in caging at [redacted] animals are restrained with the squeeze-back mechanism within the cages and the animal is removed via the main entry door directly from the squeeze back cage. See figure 15 and 16 below.

13.5. For blood testing, refer to 10.1 – 10.5. Note the difference in [redacted]; animals are restrained with the squeeze-back mechanism within the cages and the animal is removed via the main entry door directly from the squeeze back cage. See figure 15 and 16 below.



Figure 15.

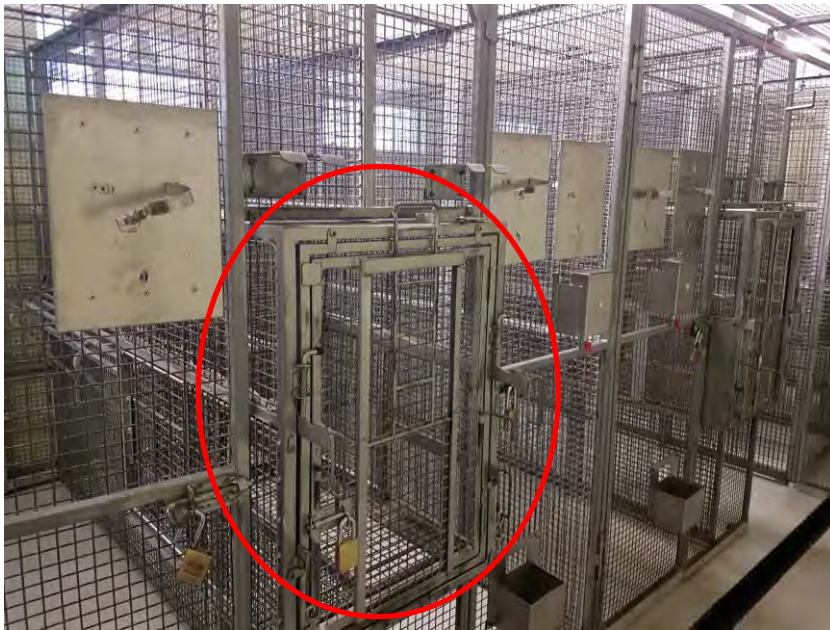


Figure 16.

14. ANIMAL MONITORING & WELFARE

- 14.1 All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 14.2 Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 14.3 Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 14.4 All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

15. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0034	Equipment Operations – Macaque Work Station
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-SOP-0105	Equipment Operations – Primate Housing Units for Macaques
PQMS3-MARP-SOP-0114	Microchipping Macaques
PQMS3-MARP-SOP-0117	Entry and Exit Procedures to Macaque Facilities [REDACTED]
PQMS3-MARP-SOP-0186	Anesthesia in Macaques
PQMS3-MARP-SOP-0233	Blood Collection in Macaques
PQMS3-MARP-SOP-0288	Treatment of Macaques
PQMS3-MARP-REF-0030	Non-human Primate Health Monitoring – Clinical Severity Scores
PQMS3-MARP-REF-0512	Body Condition Scoring in Non-Human Primates
PQMS3-MARP-RAS-0161	Macaque Area Risk Assessment

EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013) http://www.nhmrc.gov.au/files_nhmrc/publications/attachments/ea16.pdf
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016) https://www.nhmrc.gov.au/files_nhmrc/file/health_ethics/animal/guidelines-non-human-primates-sept16_0.pdf
Monash OHSE	Using Biologicals and Animals at Monash University http://www.monash.edu.au/ohs/topics/guidelines/using-biologicals.pdf
Monash OHSE	Monash Move Smart http://www.monash.edu.au/ohs/topics/movesmart.pdf
Monash OHSE	Monash OHSE Immunization http://www.monash.edu.au/ohs/topics/immunisation.pdf
Monash OHSE	Monash OHSE Immunization Grid http://www.monash.edu.au/ohs/topics/procedures/immunisation-grid.pdf
Monash OHSE	Management of suspected exposure to Cercopithecine herpesvirus 1 (B Virus) Procedure https://www.monash.edu/data/assets/pdf_file/0020/147125/monkey-b-virus.pdf



DOCUMENT HISTORY			PQMS3-MARP-SOP-0118-V1
Version no.	Date of Issue		Amendments
1	05/06/2017	[Redacted: irrelevant information]	Old document SOP0118-V2
2	13/04/2018		Reviewed content including all references, and record keeping
3	n/a		Update to Animal Monitoring & Welfare Statement
4	03/06/2019		[Redacted: irrelevant information] added, Labtracks procedures, minor edits
5	17/02/2022		Updated authoriser Updated footer formatting

SEXING MACAQUES (21/03/2022)

PQMS3-MARP-SOP-0119-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
Irrelevant Information	29-Mar-2022 9:21 AM AEDT
	29-Mar-2022 9:47 AM AEDT
	29-Mar-2022 11:15 AM AEDT

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for determining the sex of macaques.




1.2. Scope

This SOP is to be applied to all staff members working with Macaques across MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Ergonomics and Manual Handling
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
-  PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.


3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Luer-Lok	A syringe tip design which locks the needle to the syringe
PPE	Personal Protective Equipment
SOP	Standard Operating Protocol – A Controlled Document
Tunnel Adaptor	Flexible tunnel used to connect Non-Human Primates' Caging Systems together

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents relevant to the area they will be working in:

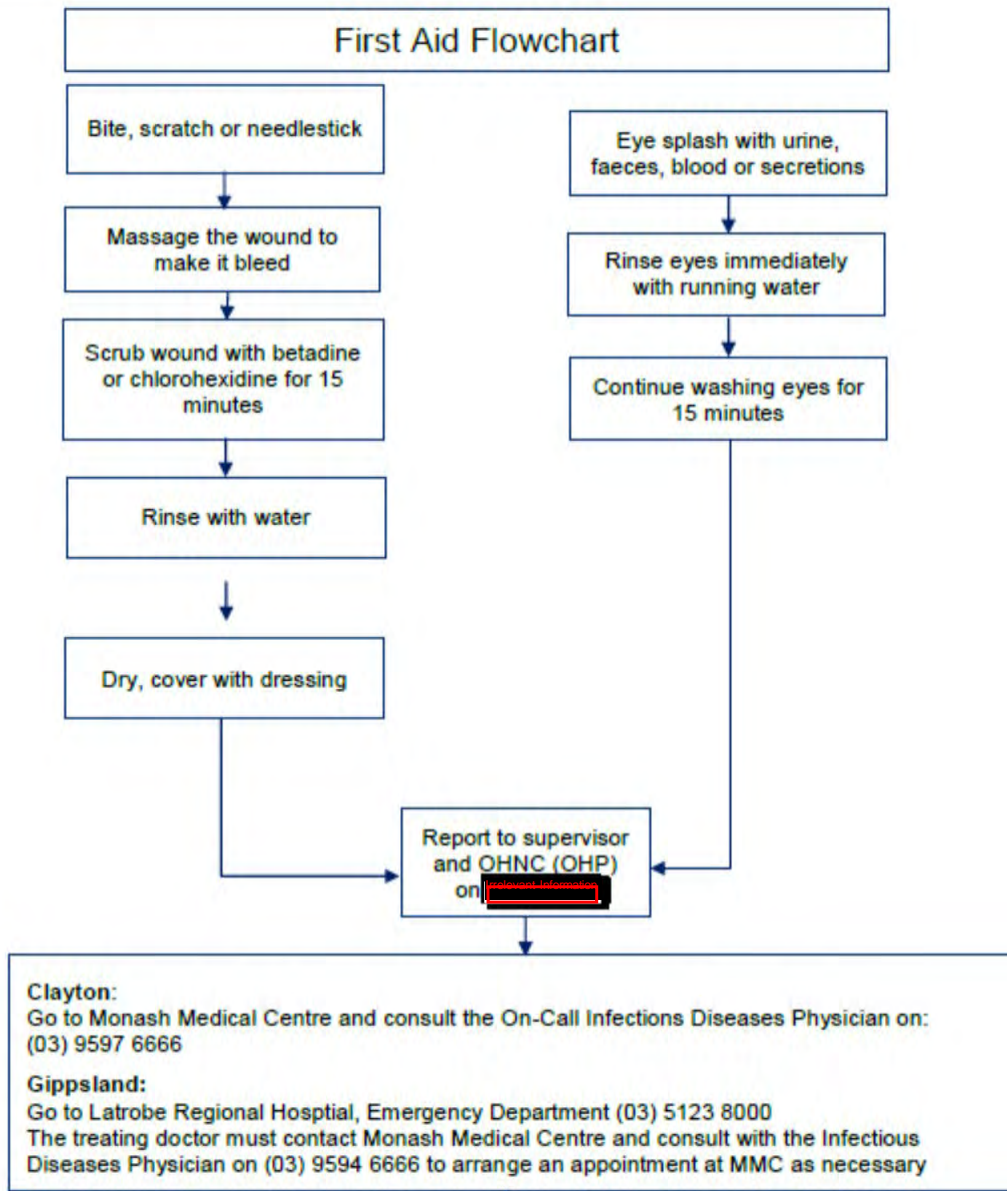
PQMS3-MARP-RA-0161 Macaque Area Risk Assessment 

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities 

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility 

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area.



5. PROCEDURE FOR DETERMINING SEX OF ADULT MACAQUES

5.1 Adult Macaques can be sexed visually from a distance.

5.2 Adult male macaques have the following characteristics;

- Sexually dimorphic and larger than females.
- Have prominent pendulous penis and testes which lie permanently in a well-developed scrotal sac.
- Have well developed canine teeth (Fig.1) that are much larger than female's.



Fig.1

5.3 Adult female macaques have the following characteristics;

- Sexually dimorphic and smaller than males.
- Have prominent labial folds of the vulva and often a prominent clitoris (Fig.2).



Fig.2

- Have two mammary glands located on upper chest (Fig.3).



Fig.3

- Cyclic menstrual cycle with or without obvious signs of menstruation (bleeding).
- Pigtail females exhibit turgidity and colouration of the perineum (Fig.4).



Fig.4

6. PROCEDURE FOR DETERMINING SEX OF IMMATURE MACAQUES

6.1 The following equipment and materials are required to perform this procedure;


QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
1	Capture Net
1	Trolley with Flat Surface
1	Heating Pad
QUANTITY	MATERIAL DETAILS
As needed	Macaque Anaesthesia solution
As needed	Macaque Reversal Solution
As needed	22G needles
As needed	1ml luer-lok tip syringes
As needed	1 ml syringes
1	Towel

6.2 Immature macaques can be difficult to sex so may need to be captured and restrained.

6.3 Infant macaques cling onto their mothers, making sexing extremely difficult so their mothers need to be anaesthetized to allow the infant to be captured for sexing. This is generally coordinated with procedures like micro-chipping or TB testing to avoid too much interference to the infant and its mother.

6.4 Capture and restrain the infant and its mother and apply injectable anaesthesia to the infant's mother.

 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

 PQMS-MARP-SOP-0186 Anaesthesia in Macaques

6.5 Once the mother is unconscious and has no withdrawal reflex, it is safe to begin capture and sexing of the infant.

6.6 Grab infant dorsally under the shoulder blades and carefully and firmly pull infant away from mother or if infant has already moved away from its mother, wait until it is facing away and then grab with same technique.

6.6 Hold infant gently with arms positioned in restraint position dorsally behind its back.

6.8 A second staff member can now view the ventral inguinal region to allow sexing.

6.9 Male macaques have a prominent pendulous penis, though the testes may not yet be descended into the scrotal sac (Fig 5).



Fig.5

6.10 Female macaques have distinctive slit like labial folds of the vulva (Fig.6).



Fig.6

7. ANIMAL MONITORING & WELFARE

- 7.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 7.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 7.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 7.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate within 72 hours of its detection. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

8. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-RAS-0161	Macaque Risk Control Program
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-SOP-0117	Entry and Exit Procedures to Macaque Facilities - [REDACTED]
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque Facility [REDACTED]
PQMS3-MARP-SOP-0186	Anaesthesia in Macaques
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013)
NHMRC Guidelines	Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016)
Monash OHSE	Monash OHSE Immunization
Monash OHSE	Monash OHSE Immunization Grid
Monash OHSE	Monash OHSE Monkey-B-Virus



DOCUMENT HISTORY			PQMS3-MARP-SOP-0119-V3.docx	
Version no.	Date of Issue	Reviewed by: Name		Amendments
		Irrelevant information	OHS	
1	23/03/2017	Irrelevant information		Old document SOP0119-V1
2	21/06/2019			Update to Animal Monitoring & Welfare Statement Remove superseded PQMS3SOP 183 and replace with PQMS3 SOP 186 Removed superseded REF 0350,RAS -0022 and 0013 and external document links Minor edits
3	21/03/2022		Irrelevant information	Removed reference to superseded document PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility Irrelevant information Updated reference table to include PQMS3-MARP-SOP-0117 and PQMS3-MARP-SOP-0154 Changed author from Irrelevant information Changed approver from Irrelevant information Updated document authorisation panel format Added OHS column to document history panel Updated footer format



GROUPING MACAQUES (01/03/2021)

PQMS3-MARP-SOP-0120-V3.docx

DOCUMENT AUTHORISATION	Revision	Effective Date	Time of Issue
Irrelevant Information	1	16-Apr-2021	8:19 AM AEST
	2	17-Apr-2021	9:51 AM AEST
	3	13-Jun-2021	4:47 PM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for organizing macaques into group.

1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Facilities at Monash Animal Research Platform. .

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

Nil

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Allen Key	Tool used to turn hexagonal sockets
Excreta Trays	Sheet Metal Tray placed on the bottom of Primate Housing Units to collect excreta
Hose Connector	Adaptor for fitting water hoses onto Primate Housing Units
Pellet Hopper	Food Container used to hold Old World Non-Human Primate Pellets
PHU	Primate Housing Unit used as portable housing for non-human primates
PPE	Personal Protective Equipment
SOP	Standard Operating Protocol – A Controlled Document
Tunnel Adaptor	Flexible tunnel used to connect Non-Human Primates' Caging Systems together
WIN	Work Instructions – A Controlled Document

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment [REDACTED]

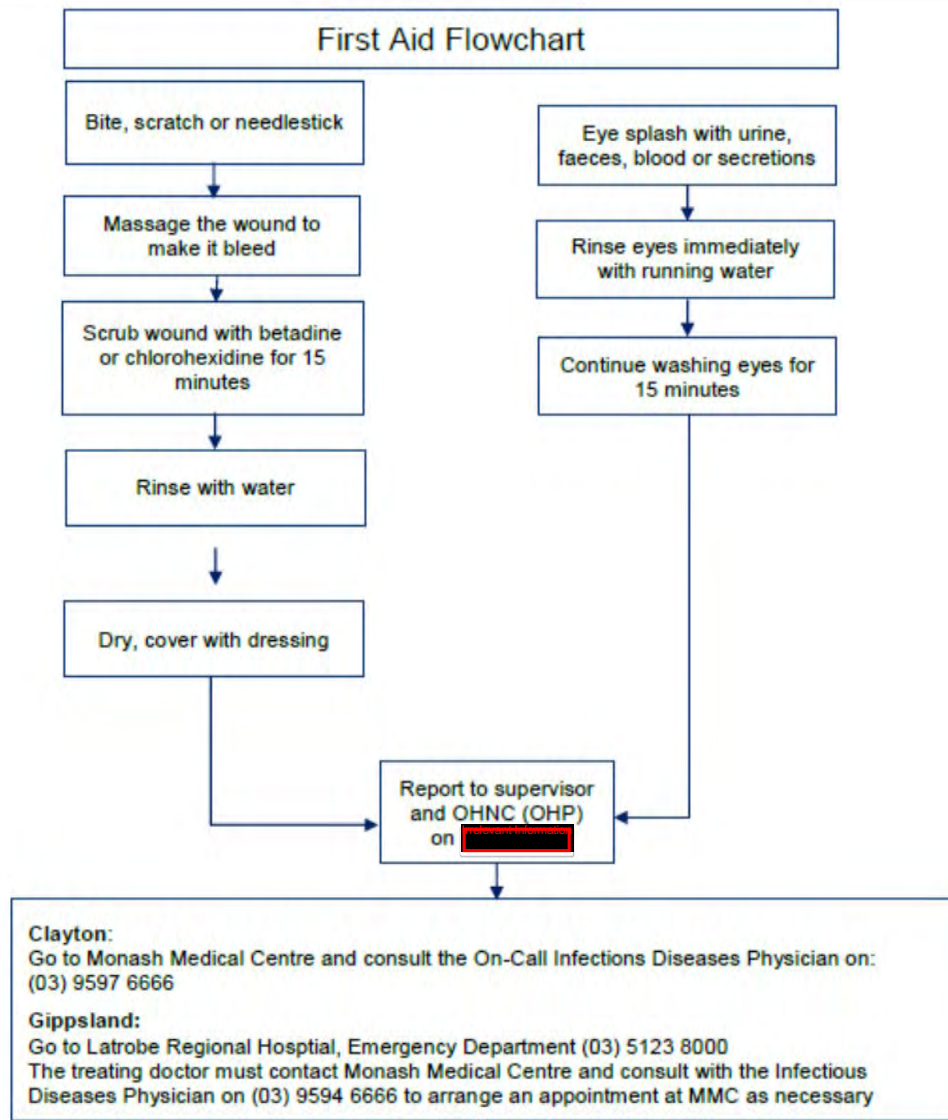
PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facility [REDACTED]

PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility [REDACTED]

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility [REDACTED]


Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the [REDACTED] of [REDACTED] of [REDACTED]



5. DETERMINING WHICH GROUPS TO ASSIGN MACAQUES TO

Determine what group the macaque/s can be introduced to depending on what role they will have and which group has sufficient spare capacity to place them in by looking at the group sheets and comparing them to the reference sheet.

 PQMS3-MARP-REF-0031 Grouping of Macaques

GROUP SIZES USED AT relevant information MACAQUE FACILITY

GROUP CATEGORY ¹	Pigtail Macaque (<i>M.nemestrina</i>)		Longtail Macaque (<i>Macaca fascicularis</i>)	
	Maximum no. of Animals ³	Minimum indoor floor area (m ²) per adult animal ⁴	Maximum no. of Animals ³	Minimum indoor floor area (m ²) per adult animal ⁴
BREEDING GROUP ²	11 (plus up to 15 infants and juveniles)	2.1 m ²	13 (plus up to 17 infants and juveniles)	1.8 m ²
STOCK GROUP	4-8	1.5 to 3 m ²	6-9	1.3 to 2.0 m ²
RETIRED GROUP	5-7	1.7 to 2.4 m ²	5-8	1.5 to 2.4 m ²

¹ Basic group cages are flexagons with 12 m² floor area connected to outdoor enclosures of 26 m² floor area.

² Breeding group cages are connected to outdoor enclosures of up to 52 m² floor area.

³ Maximum numbers of animals able to be housed in each group depends on a number of factors such as;

- Species
- Role
 - Breeding
 - Stock
 - Retired
 - Agistment
 - Allocated
 - Special Requirements
- Sex
 - Male
 - Female
- Age
 - Adult
 - Juvenile
 - Infant
- Availability
- Social Compatibility
 - Hierarchy
 - Dominant
 - Submissive
 - Aggressive
 - Passive
 - Outgoing
 - Timid
- Husbandry
 - Hygiene
 - Cleaning Frequency
 - Time required for Cleaning
 - Organizational
 - Health
 - Veterinary
- Logistical

⁴ While neither the National Health and Medical Research Council's Policy on the care and use of non-human primates for scientific purposes or the Australian code of practice for the care and use of animals for scientific purposes state minimum cage sizes for non-human primates, there are a number of recommendations made by organizations such as the European Convention for the Protection of Vertebrate Animals (2004), Institute for Laboratory Animal Research (1996) and the UK Home Office (1995) on minimum floor areas per animal from 0.4 m² to 2 m² depending on age and weight.

The macaque/s can then be introduced to the group using a socialisation and integration procedure, depending on age and what sort of housing arrangements are present (single or double flexagons).

6. FORMING OR INTRODUCING MACAQUES IN WEANED GROUPS

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
2	Padlock and Key
1	Allen Key
QUANTITY	MATERIAL DETAILS
As required	Group Sheet

6.2. Macaques under 4 years of age can be generally introduced into new groups without special introductory techniques.

6.3. Ideally weaning is performed at the same time for a number of juveniles of the same sex and similar age so they can be placed together in a new group.

6.4. Locate a group of the required characteristics (same species, same sex, similar age, no aggressive group members) for newly weaned juvenile macaques that has available room for additional group members.

6.5. Move the macaque/s into the flexagon



PQMS3-MARP-SOP-0122 Returning Macaques to Flexagons

6.6. Observe interactions between macaques for possible antagonistic behaviour and adverse interactions.



PQMS3-MARP-SOP-0118 Health Monitoring of Macaques



Occasionally there are individuals which are more advanced for their age than normal and antagonistic behaviour can occur. These individuals will have to be introduced to a new group as per section 7.



7. FORMING OR INTRODUCING ADULT MACAQUES INTO GROUPS

7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
2	Padlock and Key
2	Flexagon Panel Inserts
1	Allen Key
QUANTITY	MATERIAL DETAILS
As required	Group Sheet






-  For macaques older than 4 years of age a special procedure must be employed to introduce new individuals to a group to avoid possible serious injury or death
-  The basic principal is to only introduce the new macaque to one individual from the target group at a time. After a couple of days they will have formed a social hierarchy between themselves and the next introduction can occur. This procedure is 95% effective as there can always be incompatible animals.
-  The introductions can occur either in a double flexagon that has been closed off, making two separate cages (Fig.1) or using a primate Housing Unit (PHU) (Fig.2).



Fig.1: Double Flexagon



Fig.2: Primate Housing Unit

-  When using a double flexagon, the door between the two flexagons is locked and insert panels placed in the door frame to stop macaques moving between each flexagon (Fig.3).
-  PQMS3-MARP-SOP-0317 Equipment Operations – Flexagons for Macaques

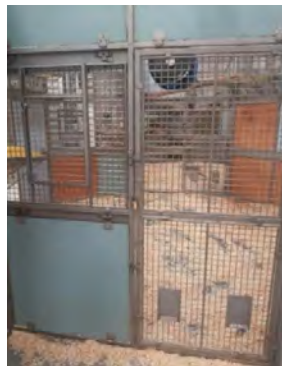


Fig.3: Double Flexagon separated into two partitions

- 7.2.** Isolate one adult macaque from the targeted group into either a divided flexagon or PHU.
- 7.3.** Introduce the new macaque to the isolated macaque referred to in 7.2.
 - Generally this is done by connecting a PHU to the flexagon (fig.4) or attaching 2 or more PHU's together (fig.5)



Fig 4: Transfer tunnel between PHU & Flexagon



Fig 5: Multiple PHUs attached together

- 7.4.** Make sure that food and water is supplied to the two macaques.
- 7.5.** Observe the macaques over a period of 2- 3 days. Immediately separate them if serious fighting occurs, distress or negative interactions result between them.
- 7.6.** Notify the assistant animal facility manager or supervisor immediately if there are any issues with the combining.
- 7.7.** If on the third day both macaques are comfortable and settled with each other then another individual macaque from the targeted group can be introduced to the two macaques.
- 7.8.** Two introductions can be performed each week (generally on Monday and Thursday) to allow proper time for observations of behaviours.
- 7.9.** Continue repeating the above steps until all of the members of the group have been introduced to the new macaque.

8. INTRODUCING ADULT MACAQUES TOGETHER AT [irrelevant information]


- 8.1** Co-housing animals at [irrelevant information] rarely occurs as animals are either individually housed based on the requirements of their approved project or have arrived from [irrelevant information] in already established groups.
- 8.2** Identify the animals that are to be co-housed and check their history on LabTracks/facility database for any behavioural concerns, such as aggression to other animals or fights resulting in serious injury.
- 8.3** Begin the introduction process by housing the two animals next to each other; side by side with a mesh divider – in [irrelevant information] or in adjoining cages – in [irrelevant information].
- 8.4** This way the animals are able to have close contact with each other, even slight touch through the mesh. Allow the animals to familiarise themselves with one another for 4-5 days.
- 8.5** If there aren't any signs of aggression such as yawning/baring their teeth or other concerning behaviour, proceed to allow the macaques access to each other.
- 8.6** In [irrelevant information] open the mesh divider and in [irrelevant information] open the two doors to the joining squeeze back cage to allow contact.
- 8.7** Observe the animals closely for the following hour and the remainder of the day.
- 8.8** Behaviours such as lip smacking, grooming and a neutral face expression are signs of positive behaviour.
- 8.9** Continue to observe the animals for the following days. If there are any concerns, contact the facility manager and the MARP veterinarian.
- 8.10** In the event of serious injury or fighting, separate immediately. Depending on the frequency and severity, possible reintroduction of the two animals should then be reconsidered.
- 8.11** In most cases, the macaques will fight to establish dominance and hierarchy in the cage and within the housing room. Small scuffs, bruises and small puncture wounds are to be expected.

9. PRINCIPLES OF MANAGING AGGRESSION IN MACAQUES

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer with MARP Intranet access
QUANTITY	MATERIAL DETAILS
	n/a

9.2 Macaques at MARP are housed in social groups or pairs in order to promote positive benefits in regards to physical and psychological health, increased repertoire of species-specific behaviours exhibited and reduction of abnormal and unwanted behaviours such as stereotypies.

 PQMS3-MARP-SOP-0388 Breeding Management in Macaques

9.3 Utilizing social grouping for macaques does also allow the probability of increased antagonistic behaviour due to the strong dominance hierarchies exhibited by macaques.

Instances of fighting, or bite wounds, involving male macaques especially, are an inherent risk in social housing of macaques. Injuries can be severe and multiple as a result of lacerations or penetrating wounds caused by the prominent canines present in the adult male (fig. 6, 7 & 8). Occasionally severe wounds require euthanasia of the macaque, or result in death.



Fig 6: Canine teeth of the male








Fig 7: repeat fight wounds







Fig 8: Minor laceration caused by canine teeth

9.4 Such behaviour can cause severe injuries or damage to breeding success unless managed appropriately and there are numerous articles and references published on the effects and management of antagonistic behaviour.

-  Laboratory Primate Newsletter (1995), Vol 34, Number 4: Infant-killing in Pigtailed Monkeys: A Colony Management Concern.
-  American Journal of Primatology (2011), pages 1169-1175: Aggression in pigtail macaque (*Macaca nemestrina*) breeding groups affect pregnancy outcome.
-  Applied Animal Behaviour Science (1976), Vol 2, Issue 3, pages 265-269: Social density and aggression in captive groups of pigtail monkeys (*Macaca nemestrina*).
-  American Journal of Primatology (1988), Vol 14, Issue 2, pages 125-134: Wounding Patterns in Three Species of Captive Macaques.
-  The Development of Science-based Guidelines for Laboratory animal care: Proceedings of the 2003 International Workshop (2003): Housing for Captive Non-Human Primates: The Balancing Act.




10. PROCEDURE FOR MANAGING AGGRESSION IN MACAQUES

- 10.1** The following steps should be followed when over-aggression or ongoing bullying is observed in macaques.
- 10.2** Separate involved animals. All treatments prescribed and applied are recorded on relevant forms and the animal's record.
-  PQMS3-MARP-SOP-0118 Health Monitoring of Macaques
 -  PQMS3-MARP-SOP-0128 Macaque Animal Records
- 10.3** Treat any wounds as per veterinary instruction as required.
- 10.4** Attempt a controlled reintroduction of the separated animal into its original group, according to Sections 7 or 8.
- 10.5** If a particular animal becomes involved in repeated incidents of antagonistic behaviour, either as the aggressor, or as the victim, then remedial action needs to be taken immediately to resolve and manage the situation. The animals involved are kept separated, utilising a spare flexagon or primate housing unit, while the MARP veterinarian is notified and a discussion initiated about the most appropriate way to manage the animal taking in account it's sex, age, status (breeder, stock or aged) and severity of the injuries inflicted.
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
- 10.6** Determine whether there are any other alternative groupings for the individual/s according to Section 5.
- 10.7** If there are no suitable grouping for the animal/s, it may be determined in consultation with the MARP veterinarian, that in order to facilitate housing of mature or aged animals, contraception such chemical castration or vasectomy may need to be considered. Chemical castration will also reduce aggression, which may facilitate continued co-housing of same-sexed macaques. Chemical castration and vasectomy will allow male and female macaques to be co-housed without resultant unwanted pregnancies. See section 7.
-  PQMS3-MARP-SOP-0583 Reproductive Techniques in Non Human Primates
- 10.8** In the uncommon cases where fighting persists, removal of the canine teeth can be considered. In the past it was routine for all mature male macaques in the colony to have their canine teeth shortened. This resulted in tooth root abscesses later in life and the need for subsequent extraction of these teeth.
- The removal of canine teeth involves use of a gingival flap and removal of alveolar bone allowing the canine teeth to be lifted out (similar to impacted wisdom teeth in humans) with concurrent use of analgaesia (local anaesthesia and 3-5 days of NSAID) and antibiotics. This procedure is performed by the MARP Veterinarian. It allows otherwise combative mature male macaques to be group housed. If fighting does occur, the resultant bite wounds do not tear or penetrate as deeply, resulting in relatively minor wounds without significant bodily harm.
- 10.9** Moving the animal/s to another project may also be considered should the animal/s be suitable for the requirements of the project.

11. ANIMAL MONITORING & WELFARE

- 11.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 11.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 11.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 11.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

12. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-RAS-0161	Macaque Area 
PQMS3-MARP-SOP-0118	Health Monitoring of Macaques
PQMS3-MARP-SOP-0122	Returning Macaques to Flexagons
PQMS3-MARP-SOP-0128	Macaque Animal Records
PQMS3-MARP-SOP-0143	Entry and Exit Procedures for Macaque Facility 
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque Facility 
PQMS3-MARP-SOP-0317	Equipment Operations – Flexagons for Macaques
PQMS3-MARP-SOP-0583	Reproductive Techniques in Non-Human Primates
PQMS3-MARP-REF-0031	Grouping of Macaques
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013)
NHMRC Guidelines	Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016)
Monash OHSE	Monash OHSE Immunization
Monash OHSE	Monash OHSE Immunization Grid
Laboratory Primate Newsletter (1995)	Vol 34, Number 4, Infant-killing in Pigtailed Monkeys; A Colony Management Concern
American Journal of Primatology (2011)	Aggression in pigtail macaque (<i>Macaca nemestrina</i>) breeding groups after pregnancy outcome.
Applied Animal Behavioural Science (1976)	Vol 2, issue 3, Social density and aggression in captive groups of pigtail monkeys (<i>Macaca nemestrina</i>).
American Journal of Primatology (1988)	Vol 14, issue 2. Wounding Patterns in Three Species of Captive Macaques
The Development of Science-based Guidelines for Laboratory animal care	Proceedings of the 2003 International Workshop (2003): Housing for Captive Non-Human Primates: The Balancing Act

DOCUMENT HISTORY		PQMS3-MARP-SOP-0120-V1
Version no.	Date of Issue	
1	23/03/2017	Old document SOP0120-V1
2	05/08/201	Update to Animal Monitoring & Welfare Statement Removed superseded references RAS 0013, RAS 0022, REF 0350 Update internal references to reflect document and remove external reference links Added section 9 for Building relevant information into ref docs Added flowchart, corrections
3		Combined SOP-0512 into new section 9 & 10 Animal care note added to 6.6 Fixed formatting errors in 7.1, 7.3, 8.1 & 11.1 Added references to section 12

RETURNING MACAQUES TO FLEXAGONS (21/03/2022)

PQMS3-MARP-SOP-0122-V3.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

Irrelevant Information

29-Mar-2022 | 9:19 AM AEDT

29-Mar-2022 | 9:46 AM AEDT

29-Mar-2022 | 11:13 AM AEDT

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for returning macaques to flexagons.

1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Area of irrelevant information at irrelevant information.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Allen Key	Tool used to turn hexagonal sockets
Pellet Hopper	Food Container used to hold Old World Non-Human Primate Pellets
PPE	Personal Protective Equipment
Scatter	Dry Mix of various treats used as environmental enrichment
SOP	Standard Operating Protocol – A Controlled Document
Tunnel Adaptor	Flexible tunnel used to connect Non-Human Primates' Caging Systems together
WIN	Work Instructions – A Controlled Document
Wood Shavings	120 litre bags of Wood Shavings used as bedding

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

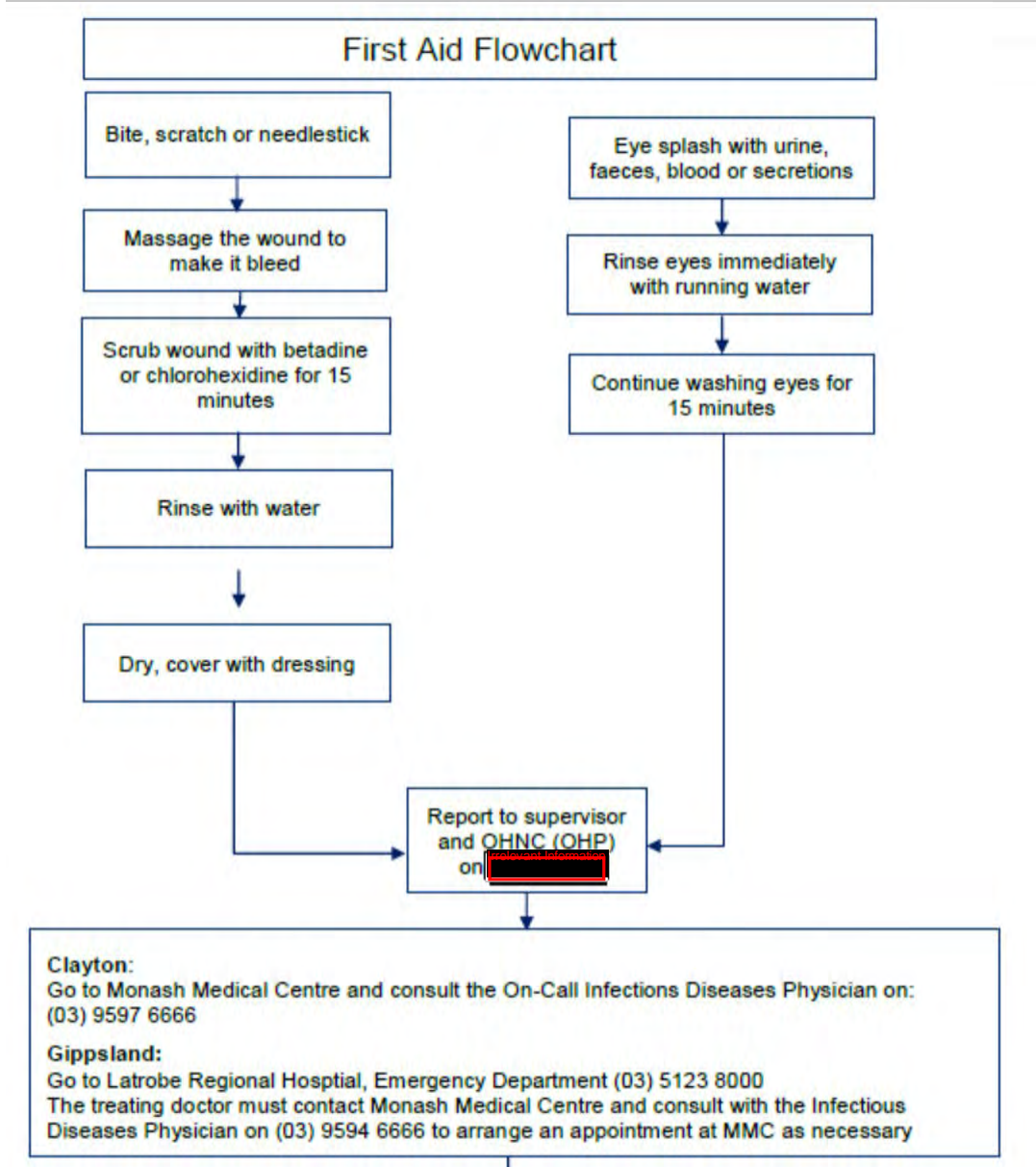
Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment [redacted]

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities [redacted]

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the [redacted] of [redacted]



5. RETURNING MACAQUES TO FLEXAGONS FROM PRIMATE HOUSING UNITS

5.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
2	Lock and Key
2	Slides
QUANTITY	MATERIAL DETAILS
Nil	

5.2 Locate the Flexagon Panel Insert that has an adaptor in it (Fig.1).



Fig.1

5.3 Insert a Slide and lock into position (Fig.2).



Fig.2

5.4 Unlock and Remove Wire Mesh Panel (Fig.3).



Fig.3

- 5.5 Attach end of Transfer Tunnel to Tunnel Adaptor. Lock into position (Fig.4).



Fig.4

- 5.5 Move macaque/s through Transfer Tunnel back into the Flexagon (Fig.5).



Fig.5

- 5.6 Lock the Slide over the Transfer Tunnel.
5.7 Remove the Transfer Tunnel (Fig.3).
5.8 Lock the Flexagon Panel Insert and remove the Slide (Fig.1).

6. RETURNING MACAQUES TO FLEXAGONS FROM OUTSIDE ENCLOSURES

6.1 The following equipment and materials are required to perform this procedure;

QUANTITY	EQUIPMENT DETAILS
Nil	
QUANTITY	MATERIAL DETAILS
1	Outside Access Sheet

6.2 Ensure that all macaques in the group are inside when operating the chute to lock them inside.

6.3 Lift the lock bar up to release the lever (Fig.6).



Fig.6

6.4 Push the lever so the chute door closes the opening in the outside access tunnel (Fig.7).



Fig.7

6.5 Lower the lock bar so it engages the right notch which prevents the lever and door from moving (Fig.6).

6.6 Count and check all macaques in the group to determine that all of them are inside and are healthy and free of injuries (Fig.8).



Fig.8



PQMS3-MARP-REF-0030 Non-Human Primate monitoring-clinical severity scores

6.7 Sign the Outside Access Sheet (Fig.9).

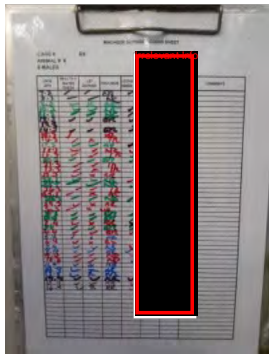


Fig.9



PQMS3-MARP-FRM-0009 Non-Human Primate Daily Checks and Outside Access Sheet

7. ANIMAL MONITORING & WELFARE

- 7.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 7.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 7.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 7.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate within 72 hours of its detection. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

8. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-RAS-0161	Macaque Risk Control Program
PQMS3-MARP-FRM-0009	Macaque Outside Access
PQMS3-MARP-REF-0030	Non Human Primate Health monitoring-clinical severity
PQMS3-MARP-SOP-0117	Entry and Exit Procedures for Macaque Facilities [REDACTED]
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013)
NHMRC Guidelines	Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016)
Monash OHSE	Monash OHSE Immunization
Monash OHSE	Monash OHSE Immunization Grid
Monash OHSE	Monash OHSE Monkey-B-Virus



DOCUMENT HISTORY			PQMS3-MARP-SOP-0122-V3.docx	
Version no.	Date of Issue	Reviewed by: Name		Amendments
		relevant information	OHS	
1	16/03/2017	relevant information		Old document SOP0122
2	05/08/2019			Update to Animal Monitoring & Welfare Statement Update internal references to include all docs Removal of superseded documents SOP 0350,RAS 002, RAS 0013 and removed external document links Added new flow chart, minor edits
3	21/03/2022		relevant information	Changed author from relevant information Changed approver from relevant information Updated document authorisation panel formatting Updated footer formatting

MACAQUE ANIMAL RECORDS (14/12/2020)

PQMS3-MARP-SOP-0128-V3.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from date of issue

Irrelevant Information

18-Mar-2021 |

: 55 AM AEDT

18-Mar-2021 |

1 PM AEDT

18-Mar-2021 |

23 PM AEDT

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for keeping animal records for macaques.



1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Area of irrelevant information at irrelevant information and the macaque areas at irrelevant information

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0345 LabTracks – Manipulating the Data
-  PQMS3-MARP-SOP-0392 LabTracks – LabTracks Basics

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
irrelevant	irrelevant information
LabTracks	Electronic Database for the Collection of Animal Records.
SOP	Standard Operating Protocol – A Controlled Document

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Specific health and safety considerations while performing this procedure are:

- Nil

5. ENTERING AND MANIPULATING DATA IN LABTRACKS

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer with Access to LabTracks
QUANTITY	MATERIAL DETAILS
Nil	


5.2. For the procedures describing how to enter and manipulate data in LabTracks go to the following sections in this SOP;

- ☞ 6. Displaying, adding and editing macaque animal records in LabTracks
- ☞ 7. Recording Macaque Births or Acquisitions in LabTracks
- ☞ 8. Recording Macaques issued to Clients in LabTracks
- ☞ 9. Recording or Editing Weights for Macaques in LabTracks
- ☞ 10. Displaying and Printing Macaque Group Sheets in LabTracks
- ☞ 11. Recording and Editing Wellness Reports for Macaques in LabTracks
- ☞ 12. Recording Physical Exams in LabTracks
- ☞ 13. Recording TB Testing for Macaques in LabTracks
- ☞ 14. Recording and Displaying Other Procedures for Macaques in LabTracks
- ☞ 15. Running and Displaying Built in Reports for Macaques in LabTracks
- ☞ 16. Creating Task Schedules in LabTracks
- ☞ 17. Recording Tasks in LabTracks

6. DISPLAYING, ADDING AND EDITING MACAQUE ANIMAL RECORDS IN LABTRACKS

6.1 Includes editing animal ID, microchip, mortality details, editing parent's records and individual animal rates.

6.2 Refer to LabTracks – Adding/Editing Animal Data

 PQMS3-MARP-SOP-0400 LabTracks – Adding/Editing Animal Data

7. RECORDING MACAQUE BIRTHS OR ACQUISITIONS IN LABTRACKS

7.1 Open LabTracks

7.2 Select Group Manager → Current Groups

7.3 Select the species of macaque for which the new birth or acquisition occurred.

7.4 Select Animals in Group to display all of the animals with the selected group.

7.5 Click on the Add Button to create a new animal record for the selected group (Fig. 1).

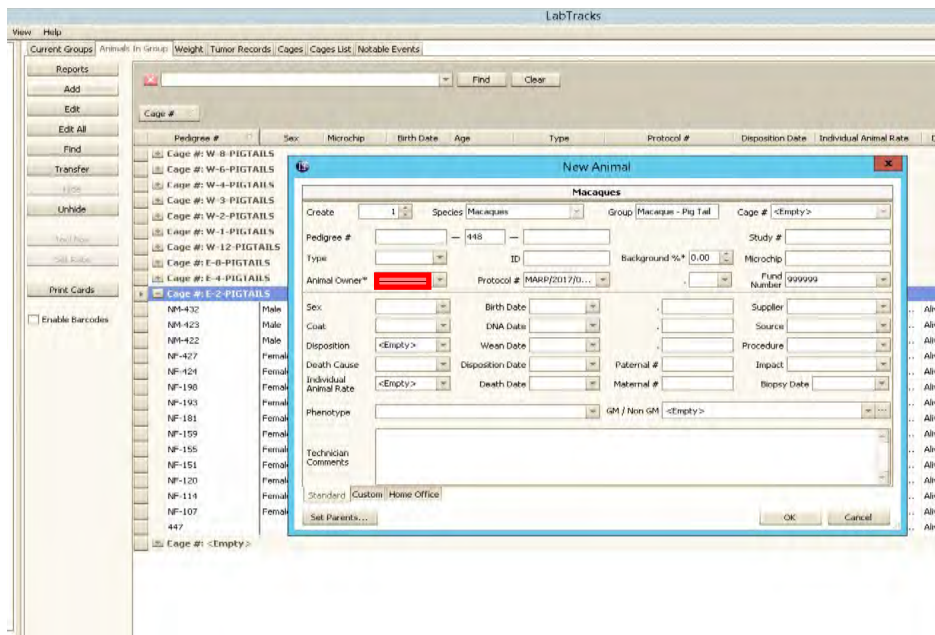


Fig. 1 The screen after you have clicked the Add Button.

7.6 Enter as much information as is known about the new animal. Generally Pedigree #, Birth Date, Disposition, Individual Animal Rate, Maternal # and Paternal # if known.

7.7 Click the OK Button to save the record.

7.8 While keeping the new animal record highlighted, click on the Transfer Button to open a new Window (Fig. 2).

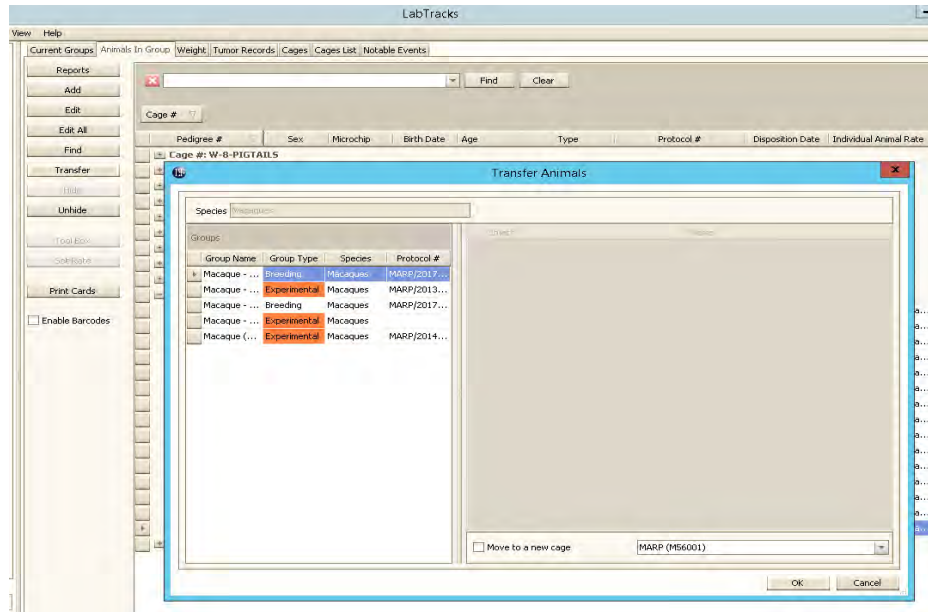


Fig. 2 The screen after clicking the Transfer Button

- 7.9 Click on the Move to a New Cage Box which will highlight the available cages within the Animal Rooms of the Building.
- 7.10 Click the Plus Button to expand the cages within the Animal Room the new macaque was born or placed upon acquisition.
- 7.11 Select the cage in which the new macaque was born or placed upon acquisition and click on the OK Button to confirm the move. The new macaque will now appear within the animal cage it was born or placed in (Fig. 3).

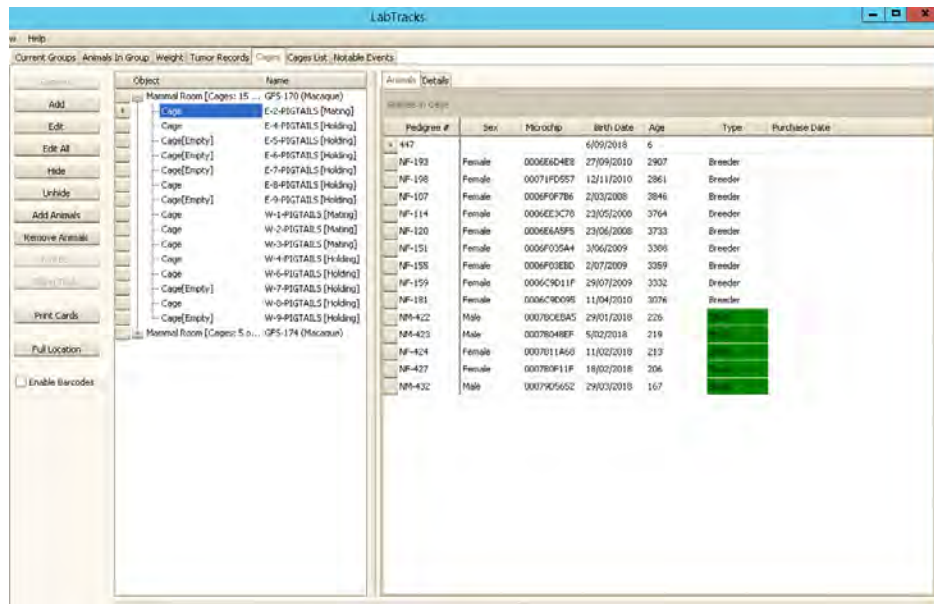



Fig. 3 The screen showing the individual animals in the cage.

8. RECORDING MACAQUES ISSUED TO CLIENTS IN LABTRACKS

- 8.1** Open the record for editing of the macaque that's been issued to a client.
 PQMS3-MARP-SOP-0400 LabTracks – Adding/Editing Animal Data
- 8.2** Change disposition from Alive to Empty. This will update Disposition Date.
- 8.3** Enter Type to Shipped to Client.
- 8.4** Enter any relevant Technician Comments like order number.
- 8.5** Click on the OK button to accept changes and close the Edit Animal Window.
- 8.6** Select the Cages tab.
- 8.7** Select the Cage in which the macaque that's been issued to a client was located in.
- 8.8** Select the macaque that's been issued to a client from the right Window → Animal tab.
- 8.9** Click on Remove Animals Button on left menu, then click on Yes in the Confirmation Window.

9. RECORDING OR EDITING WEIGHTS FOR MACAQUES IN LABTRACKS

9.1 Open LabTracks.

- Weights can also be entered while performing Physical Exams, see section 13. However the previous weights of the animal can't be viewed to check for any changes.

9.1 Select Group Manager → Current Groups.

9.2 Select the species of macaque for which information about animals issued is required.

9.3 Select Weight to display the Weight Information Window (Fig.4).

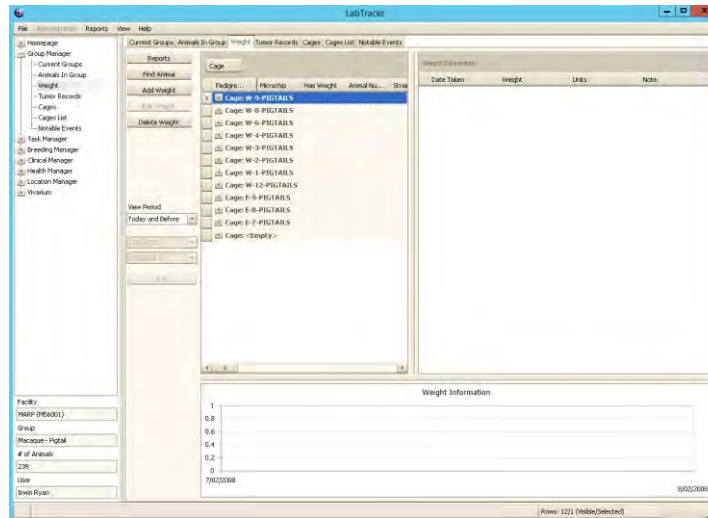


Fig. 4 Screen after selecting weight in LabTracks

9.4 Select the Animal in the left animal listing window to which a new weight will be entered. Any existing weights for the animal will be displayed in the weight information window and a graph in the bottom window.

9.5 Click Add Weight in the left menu to open the New Weight Window (Fig.5).

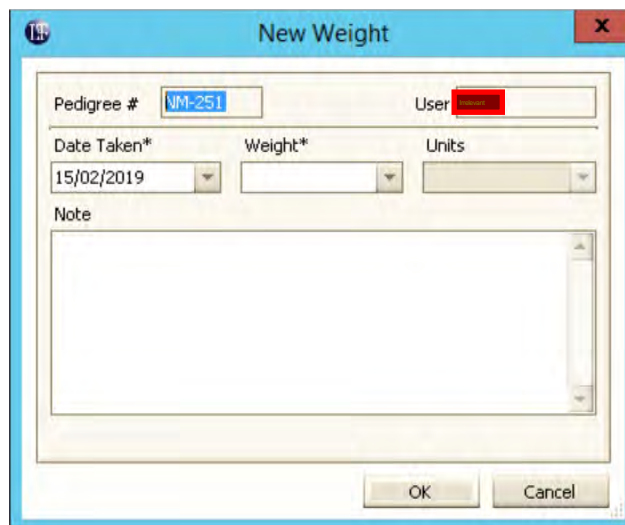


Fig.5 The weight box after selecting out an individual animal to enter its weight.

- 9.6** Select the Weight* Box and either type in the weight number or select from the drop down menu. For the first weight of the animal it will then be necessary to select the Units by clicking on the Units box and selecting kg.
- 9.7** Click OK to confirm the new weight and close the New weight Window.
- 9.8** Weights can also be edited to modify incorrect weights or add details in the Note section, or weights can be deleted if they were added erroneously.

10. DISPLAYING AND PRINTING MACAQUE GROUP SHEETS IN LABTRACKS

10.1 Open LabTracks.

10.2 Click Reports → Run Report in the File Menu at the top of LabTracks (Fig.6).

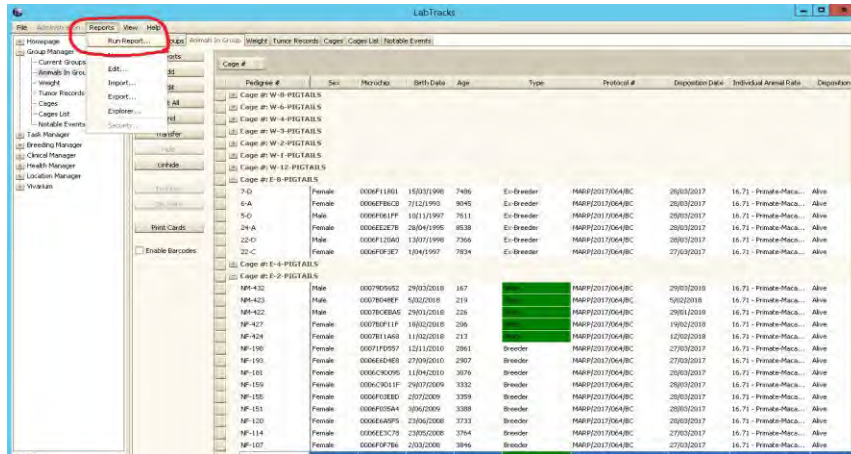


Fig. 6 Screenshot showing where the location of the Report Tab.

10.3 A Select Report Window will open.

10.4 Select MARP – Animal Technicians → Animal Technician – Macaques (Fig.7).

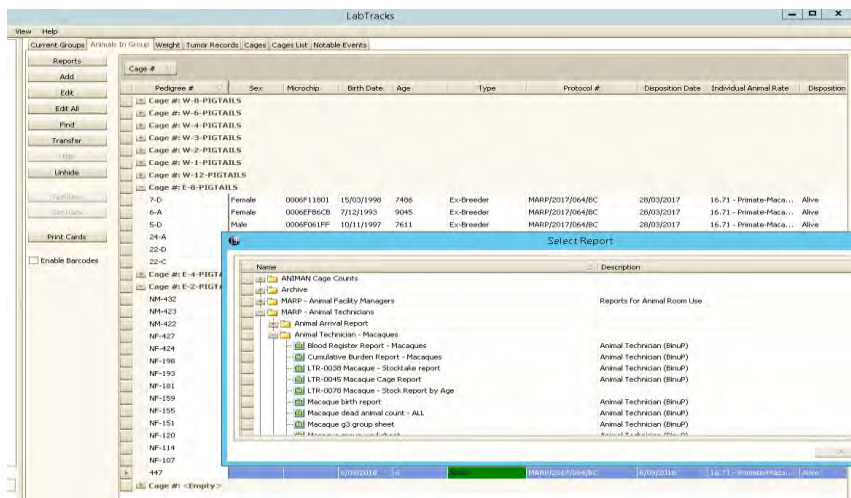


Fig. 7 Screenshot showing the reports available for Technicians in the Macaque Area.

10.4 Click on LTR-0045 Macaque Cage Report, the click OK.

10.5 A Blank View Preview Window will open.

- 10.6** Click on plus sign next to Arguments to expand to ENTER_CAGE (Fig. 8).

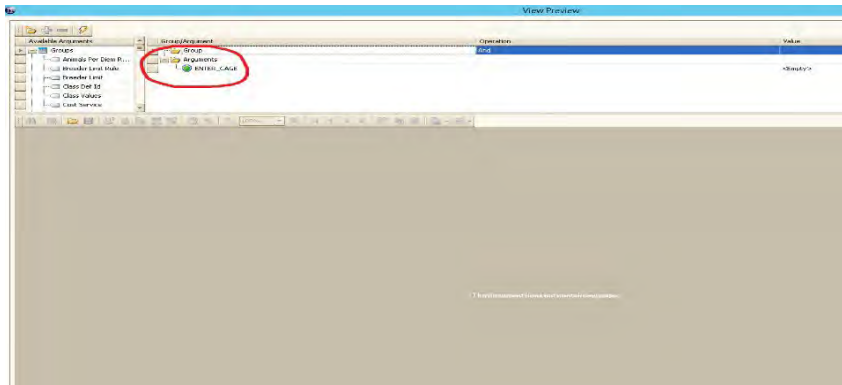


Fig. 8 Screenshot showing the arguments box

- 10.7** Click on the <Empty> line under Value (Fig. 9).

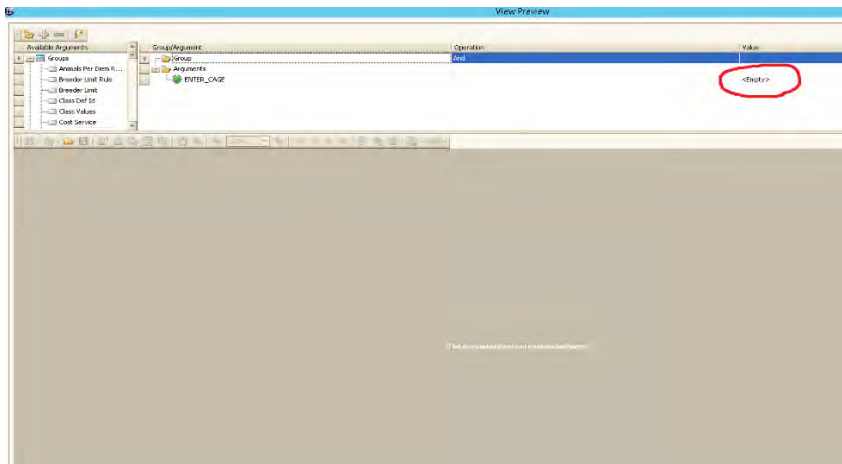


Fig. 9 Screenshot showing to click on the empty value box

- 10.8** A small list box will appear (Fig. 10).

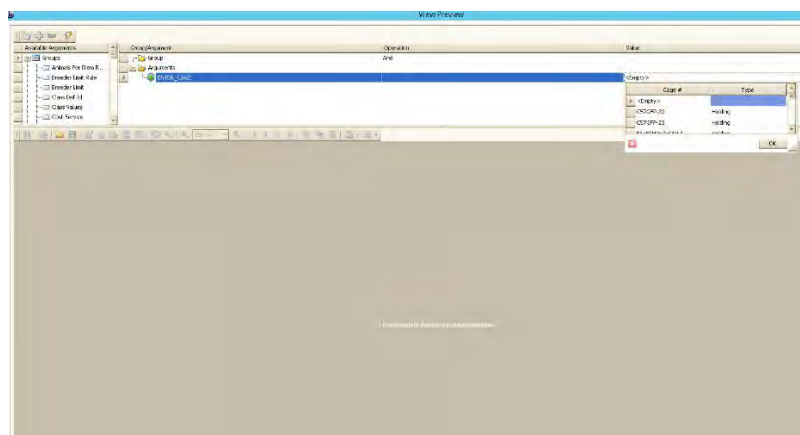
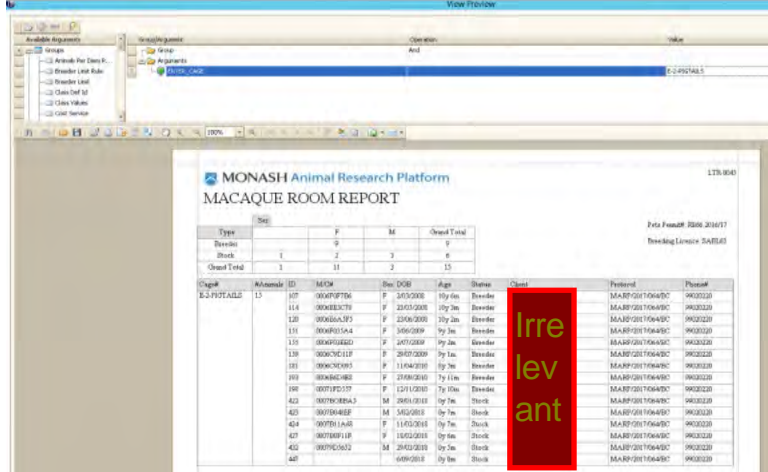


Fig. 10 The drop down box will appear

- 10.9** Enter the name of the group to be displayed.
- It is easier to just type the name of the group to be displayed rather than searching for it in the list box. Format is X-number-species. For example E-2-Pigtails. Typing isn't case sensitive.
- 10.10** Click on the lightning bolt symbol at the top of the menu in the View Preview to display the Macaque Cage Report for the selected group (Fig. 11).



MONASH Animal Research Platform
MACAQUE ROOM REPORT
 Info: Facility: E006 20/04/17
 Reporting Location: SARE01

Type	Sex	F	M	Grand Total
Shuck		9	6	15
Shuck		1	2	3
Grand Total		11	2	13

Group	Macaque ID	MCSM	Sex	DOB	Age	Status	Shuck	Postcode	Phone#
E-2-PIGTAILS	107	0004707106	F	24/03/2010	10y 10m	Shuck		MAARF02106495C	96030220
	114	0004803376	F	23/03/2010	10y 10m	Shuck		MAARF02106495C	96030220
	120	0004803373	F	23/04/2010	10y 10m	Shuck		MAARF02106495C	96030220
	111	0004803344	F	3/06/2010	10y 10m	Shuck		MAARF02106495C	96030220
	135	0004803362	F	2/07/2010	10y 10m	Shuck		MAARF02106495C	96030220
	139	0004803310	F	28/07/2010	10y 10m	Shuck		MAARF02106495C	96030220
	181	0004803305	F	11/04/2010	10y 10m	Shuck		MAARF02106495C	96030220
	193	0004803303	F	27/08/2010	10y 11m	Shuck		MAARF02106495C	96030220
	198	0004803307	F	12/11/2010	10y 10m	Shuck		MAARF02106495C	96030220
	403	0004803303	M	28/01/2011	10y 10m	Shuck		MAARF02106495C	96030220
	403	0004803303	M	28/01/2011	10y 10m	Shuck		MAARF02106495C	96030220
	404	0004803303	F	11/03/2011	10y 10m	Shuck		MAARF02106495C	96030220
	407	0004803303	F	15/02/2011	10y 10m	Shuck		MAARF02106495C	96030220
402	0004803303	M	28/02/2011	10y 10m	Shuck		MAARF02106495C	96030220	
408	0004803303	F	09/09/2011	10y 10m	Shuck		MAARF02106495C	96030220	

Fig. 11 The generated report

- 10.11** The report can be printed or exported to a file.

11. RECORDING AND EDITING WELLNESS REPORTS FOR MACAQUES IN LABTRACKS

- 11.1** Open LabTracks.
- 11.2** Select Health Manager → Wellness Report.
- 11.3** Four Windows will be displayed in LabTracks. The upper left Window displays any open wellness reports, the upper right Window displays details of the selected wellness report, the lower left Window displays the Group Selection and the lower right Window allows selection of an animal from the selected Group (Fig.12)

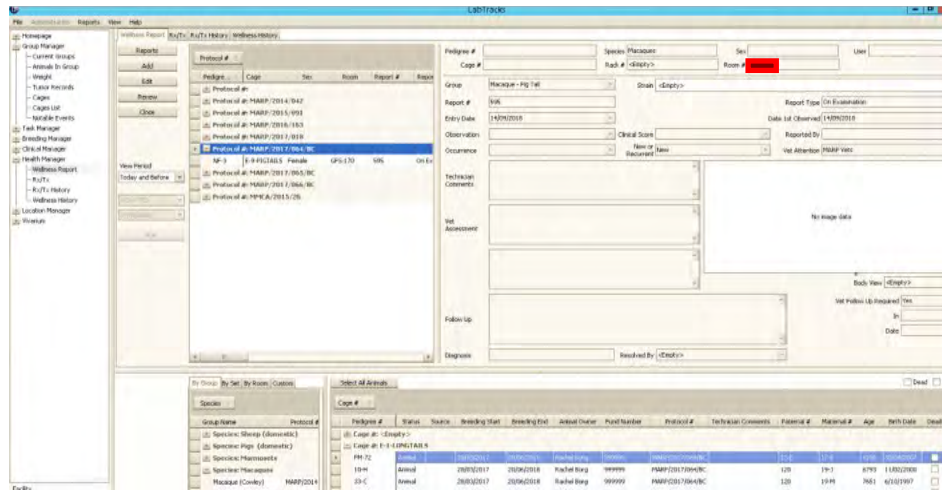


Fig. 12 Screenshot after selecting Wellness Report in Health Manager

- 11.4** To add a new Wellness Report, select an animal from the lower right Window and click on the Add button in the menu.
- 11.5** A New Wellness Report Window will be displayed (Fig.13).

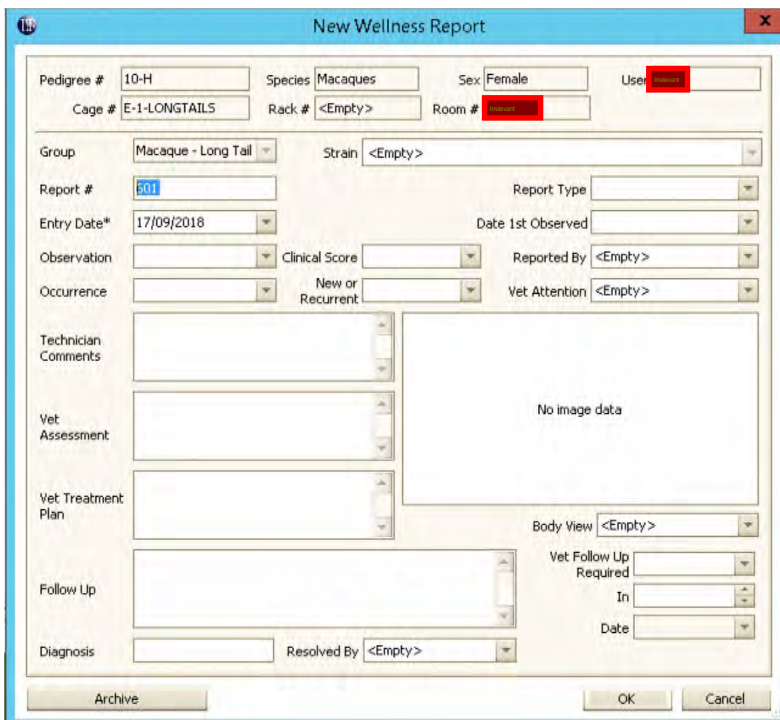


Fig. 13 Screenshot of the new wellness report.

- 11.6** Enter details for Report Type (In Cage Observation or On Examination), Date 1st Observed, Observation, Occurrence, Clinical Score, New or Recurrent, Reported By, Vet Attention (always MARP Vets) and Technician Comments.
- 11.7** After consulting with a MARP Veterinarian, details for the Vet Treatment Plan can also be entered.
 - Details need to be kept minimal and precise.
- 11.8** Click on OK to save the Wellness Report.
 - Wellness Reports will remain open in the upper left Window until resolved and archived.
- 11.9** To Edit a Wellness Report, select it from the upper left Window.
- 11.10** Click on Edit in the menu on the left to open the Edit Wellness Report Window.
- 11.11** Add any extra information as appropriate.
 - The Edit Wellness Report only allows new information to be entered. Existing information can't be changed or removed.
- 11.12** Click on the ok button to close the edit wellness report window.
- 11.13** To Archive a Wellness Report, follow steps 11.9 to 11.11.
- 11.14** Click on the Archive Button to close the Wellness Report. Click the Yes Button in the Confirmation Window.
 - The MARP Veterinarian need to enter the details for Vet Assessment, Follow Up, Diagnosis and Resolved By boxes.

12. RECORDING PHYSICAL EXAMS FOR MACAQUES IN LABTRACKS

- 12.1 Open LabTracks.
- 12.2 Select Clinical Manager → Procedures.
- 12.3 Three Windows are displayed in LabTracks. The upper left window displays procedures for selected animals, the lower left window allows selection of groups and the lower right window allows selecting an animals from the selected group (Fig.14).

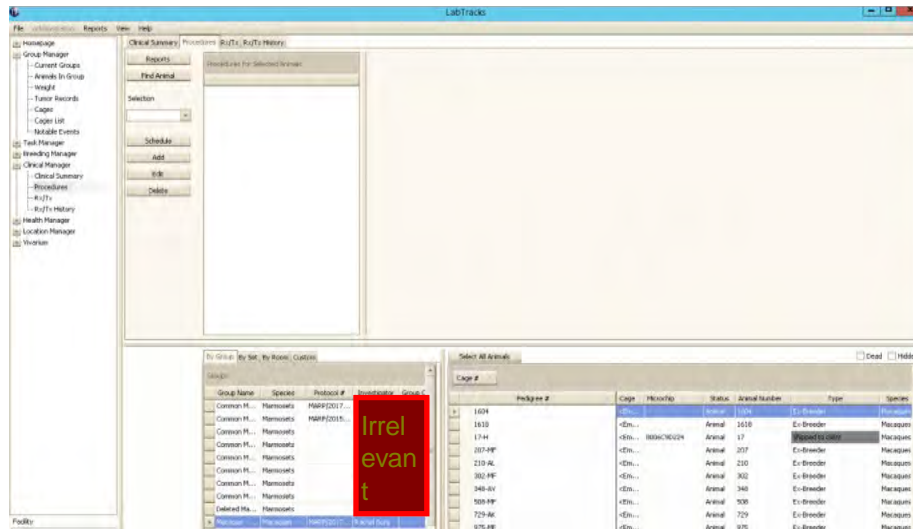


Fig. 14 Screenshot of the procedures tab in Clinical Manager.

- 12.4 To add a new procedure, select a macaque from the lower right Window and click on the Selection box in the menu to choose a procedure.
- 12.5 Click on Physical Exam to display all physical exams for the selected macaque in the upper left window as well as displaying a fourth window in the upper right corner which displays physical exam entries of the selected date from the upper left window.
- 12.6 Click on the Add Button in the left menu to display the New Procedure – Physical Exam Window (Fig.15).

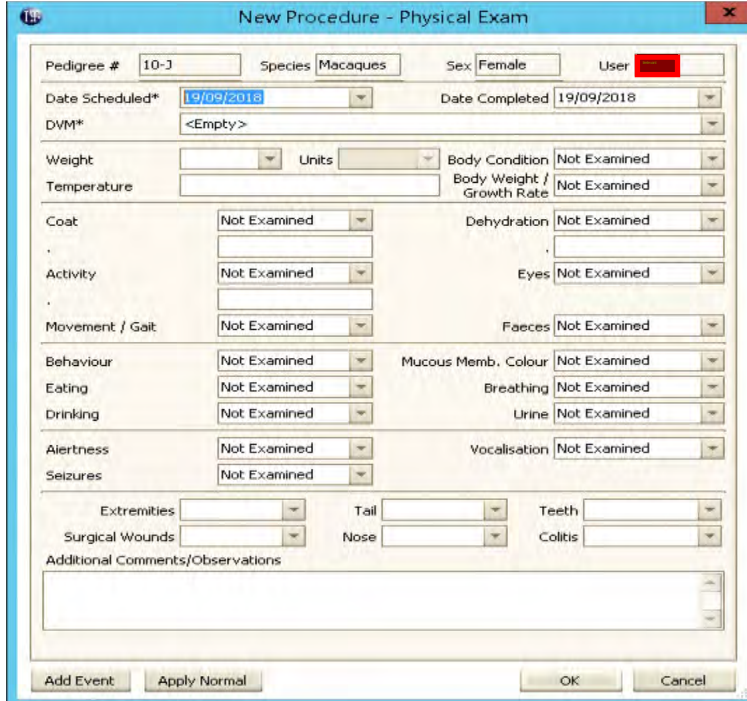




Fig. 15 Screenshot of the new procedure – physical exam window.

- 12.7** Enter details for DVM* (always MARP Vet) and all physical aspects monitored, which is generally Coat, Activity, Movement/Gait, Behaviour, Alertness and Seizures for in cage monitoring of macaques within a group. Choose the appropriate score as per the clinical signs severity score reference.

 PQMS3-MARP-REF-0030 Non-Human Primate Health Monitoring – Clinical Severity Scores

 Macaques under anaesthesia may have additional details entered in the form.

 All abnormalities must be report to the Facility Supervisor and MARP Veterinarian.

- 12.8** Click on OK to confirm the Physical Exam and close the New Procedure – Physical Exam Window.

13. RECORDING TB TESTING FOR MACAQUES IN LABTRACKS

- 13.1** Follow steps 12.1 to 12.4.
- 13.2** Click on Procedure TB to display all TB procedures for the selected macaque in the upper left window as well as displaying a fourth window in the upper right corner which displays physical exam entries of the selected date from the upper left window.
- 13.3** Click on the Add Button in the left menu to display the New Procedure – TB Test (Fig.16).

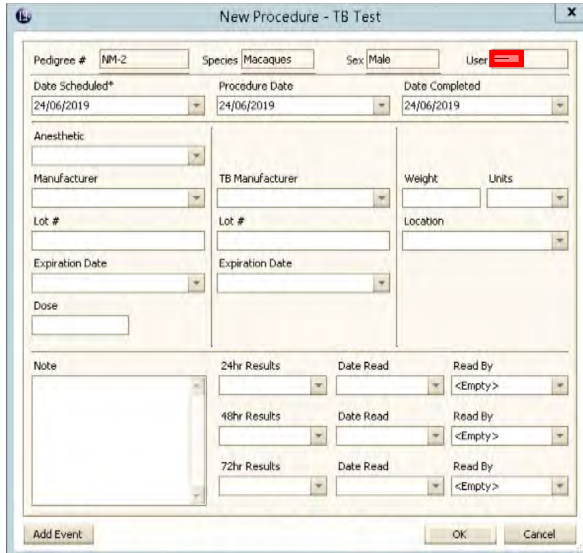


Fig. 16 Screenshot of new procedure window for TB testing record.

- 13.4** Enter details into each field as well as any notes.
- 13.5** Click on OK to confirm the procedure and to close the New Procedure – TB Test Window.

14. RECORDING OTHER PROCEDURES FOR MACAQUES IN LABTRACKS

- 14.1 Follow steps 12.1 to 12.4.
- 14.2 Click on Other Procedure to display all other procedures for the selected macaque in the upper left window as well as displaying a fourth window in the upper right corner which displays other procedure entries of the selected date from the upper left window.
- 14.3 Click on the Add Button in the left menu to display the New Procedure – Other Window.
- 14.4 Click on Procedure Type* drop down button to display various procedures such as Blood Collection – Femoral, Blood Collection – Saphenous, Injection – ID, IM, IV or SC, Post Mortem, Surgery, Surgery – Dental, Surgery – Suturing, Worming, etc. (Fig. 17).

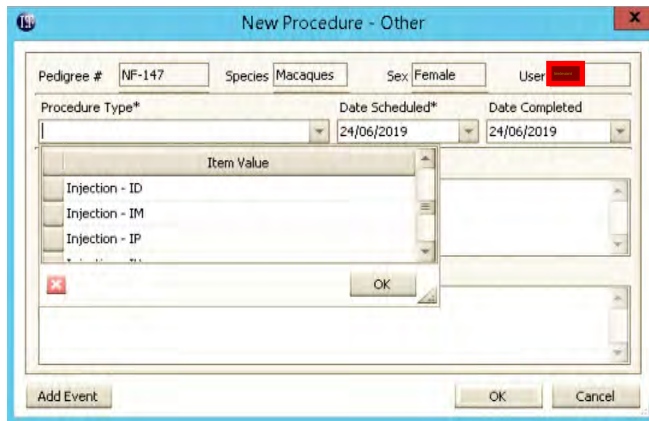



Fig 17 Screenshot of the drop down menu for the procedure type.

- 14.5 Enter date scheduled and completed, Task Number from iLabs if applicable or n/a and any notes.
- 14.6 Click OK to confirm details and to close the New Procedure – Other Window.

15. RUNNING AND DISPLAYING BUILT IN REPORTS FOR MACAQUES IN LABTRACKS

15.1 Running and displaying reports for macaques can be performed by following the LabTracks SOP for running reports.

 PQMS3-MARP-SOP-0413 LabTracks – Running Reports

15.2 Reports can be generated from the following sections of LabTracks;

- Group Manager
 - Births
 - Mortalities
 - Issued Macaques
 - Stocktakes
 - Breeding Reports
 - Pedigree Reports
 - Weights
- Clinical Manager
 - Physical Exams
 - Blood Collections
 - TB Testing
- Health Manager
 - Wellness Reports

15.3 For repetitive reports layouts have been saved that can loaded in the window that appears when the report button is clicked. All of these can be found on the share drive at MNHS-MARP > nhmrc > relevant information > relevant _Macaques > LabTracks

15.4 Layouts exist for the following reports;

- Births Report.xml
- Mortalities Report.xml
- Issued Animals Report.xml
- Current Stocktake Report.xml
- Breeding Maternal Report.xml
- Breeding Paternal Report.xml
- Physical Exam Conducted in Date Range Report.xml
- Physical Exam for Selected Animals Report.xml
- Blood Collections Conducted in Date Range Report.xml
- Blood Collections for Selected Animals Report.xml
- TB Testing Procedures for Selected Animals.xml
- TB Testing Procedures within Date Range for Macaques Report.xml
- Other Procedures Conducted in Date Range Report.xml
- Other Procedures for Selected Animals Report.xml
- Macaque Open Wellness Report.xml
- Wellness History for Macaques within Date Range Report.xml



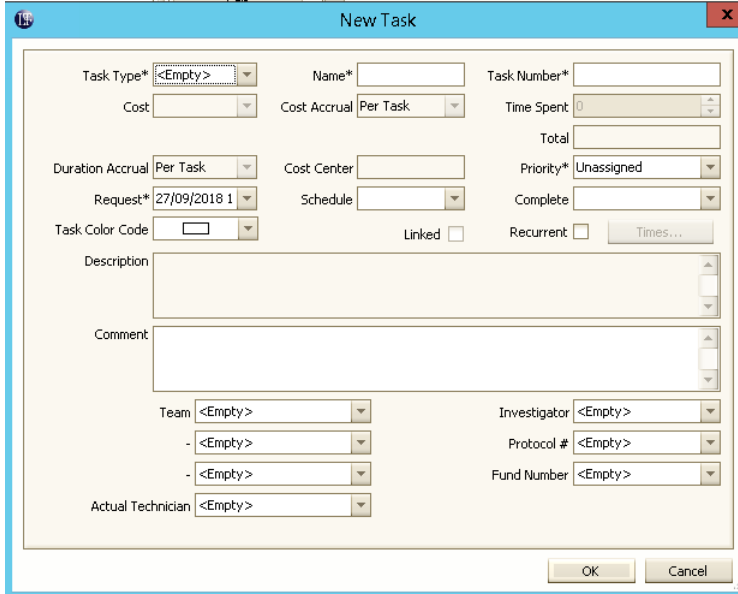
- Wellness History for Selected Animals Report.xml

15.5 Once the layout is loaded, use the Filter Editor to adjust the parameters of the report such as pedigree number, date range, etc.

- Built in Reports lack the ability to total the number of entries in columns.
- In the Weight report, the pedigree number is truncated to just a number. If the report is exported to an xlms file, then the correct pedigree number can be amended.
- For the Breeding Report, the search will only display progeny that have been recorded in LabTracks. For older breeders, it is possible there's progeny not listed because they've never been recorded in LabTracks (i.e. transferred or died before LabTracks was implemented).
- The Ancestry Report can be printed or exported to a pdf file. Other file formats don't work.

16. CREATING TASK SCHEDULES IN LABTRACKS

- 16.1** Select Task Manager.
- 16.2** Select the Add Task Button in the left menu to open the New Task Window (Fig.18).



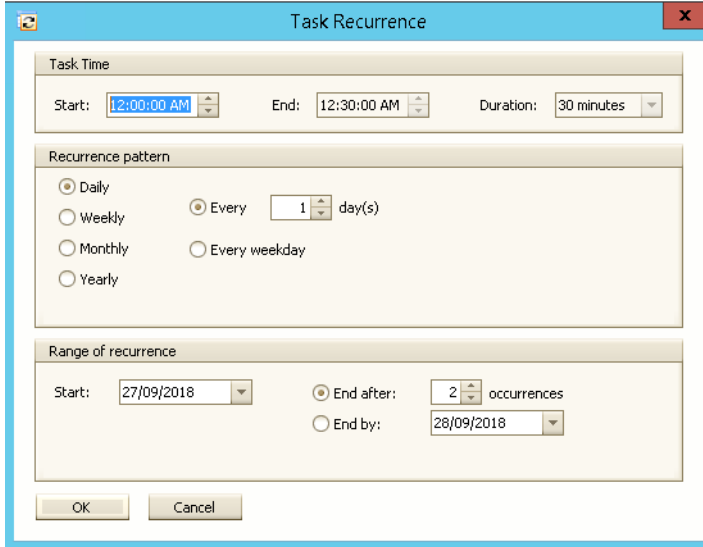
The screenshot shows the 'New Task' window with the following fields and options:

- Task Type*: <Empty>
- Name*: [Text Field]
- Task Number*: [Text Field]
- Cost: [Dropdown]
- Cost Accrual: Per Task
- Time Spent: [Text Field]
- Total: [Text Field]
- Duration Accrual: Per Task
- Cost Center: [Text Field]
- Priority*: Unassigned
- Request*: 27/09/2018 1
- Schedule: [Dropdown]
- Complete: [Dropdown]
- Task Color Code: [Text Field]
- Linked:
- Recurrent: Times...
- Description: [Text Area]
- Comment: [Text Area]
- Team: <Empty>
- Investigator: <Empty>
- Protocol #: <Empty>
- Fund Number: <Empty>
- Actual Technician: <Empty>

Buttons: OK, Cancel

Fig. 18 Screenshot of the new task entry window.

- 16.3** Select Task Type and the task to be scheduled.
- Name and Task Number will be automatically filled.
- 16.4** Select Time Spent to allocate how much time to spend on the task.
- 16.5** Select Priority to set a priority for the task.
- 16.6** Select the Investigator Box and click or type the investigator's name.
- 16.7** Select the Protocol # Box and click or type the Protocol number.
- 16.8** Select the Fund Number Box and click or type the Fund number.
- 16.9** Click the Recurrent Box.
- This will automatically tick the Linked Box and the Times Button will be activated.
- 16.10** Click the Times Button to open the Task Recurrence Window (Fig.19).



Task Recurrence

Task Time

Start: 12:00:00 AM End: 12:30:00 AM Duration: 30 minutes

Recurrence pattern

Daily
 Weekly
 Monthly
 Yearly

Every 1 day(s)
 Every weekday

Range of recurrence

Start: 27/09/2018

End after: 2 occurrences
 End by: 28/09/2018

OK Cancel

Fig. 19 Screenshot of the task recurrence window.

- ☐ Clicking the Times Button before completing steps 16.6 to 16.8 will display the following warning. Clicking Yes will open the Task Recurrent Window (Fig.20).

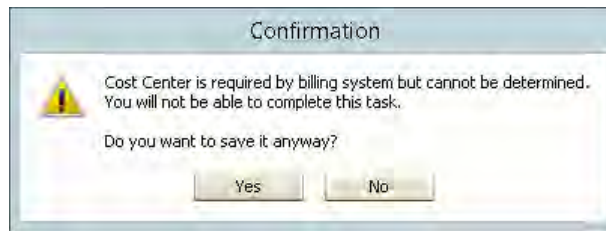


Fig. 20 Screenshot of warning message

- 16.11** Ensure that the recurrence pattern has the Daily and Every Option Buttons selected and day(s) set to 1.
- 16.12** Enter the Start date in the Range of recurrence section.
- 16.13** Click the End by: Option Button and enter the End date.
- 16.14** Click the OK Button to confirm the settings and close the Task Recurrence Window.
- 16.15** Click the OK Button in the New Task Window to confirm the settings and close the window. The tasks will be listed in the Task Manager Window.

17. RECORDING TASKS IN LABTRACKS

- 17.1 Select Task Manager → Tasks.
- 17.2 Select Team: XXXXXXXXXX Macaque (Fig.21).

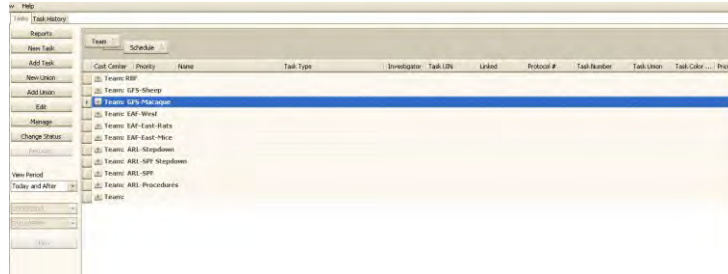


Fig. 21. Screenshot of selecting team.

- 17.3 Click on the Plus Sign next to Team: XXXXXXXXXX Macaque to expand the schedule (Fig.22).

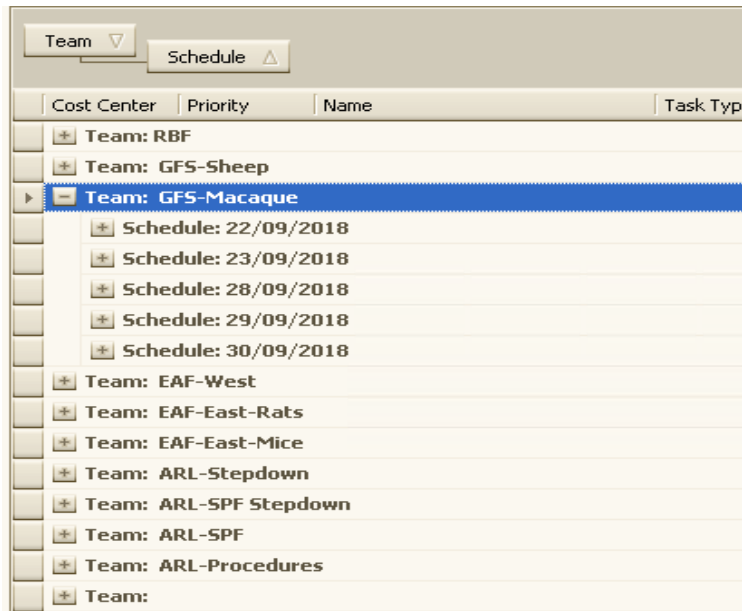


Fig. 22 Screenshot of the dated schedules.

- 17.4 Click on the Plus Sign next to the date containing the task to be updated.
- 17.5 Click on the task to be updated.
- 17.6 Click on the Edit Button in the left side menu to open the Edit Task Window.
- 17.7 Enter Technician's name who performed the task (Fig.23).

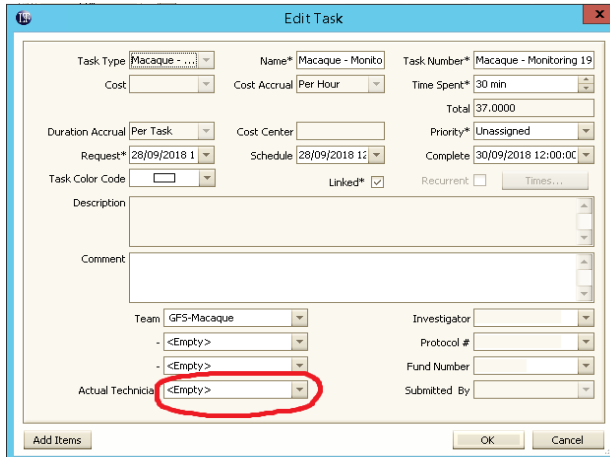


Fig. 23 Screenshot of where to place the Technician's name.

- 17.8** Click on the OK Button to close the Edit Task Window.
- 17.9** Click on the Change Status Button in the left side menu to open an action menu (Fig.24).

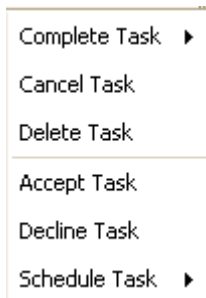


Fig. 24 Screenshot of the status of the task.

- 17.10** Select Complete Task to open a submenu (Fig.25).

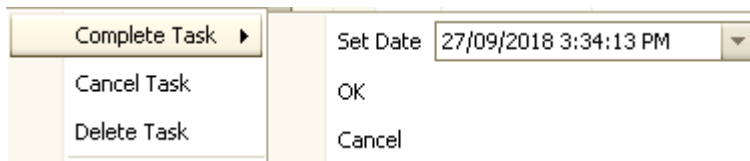


Fig. 25 Completing the task

- 17.11** Click the OK Button to confirm the task, which will disappear from the Scheduled Task List Window.

18. ANIMAL MONITORING & WELFARE

N/A

19. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-REF-0030	Non-Human Primate Health Monitoring Clinical Severity Scores
PQMS3-MARP-FRM-0302	Animal Treatment Form
PQMS3-MARP-SOP-0400	LabTracks – Adding/Editing Animal Data
PQMS3-MARP-SOP-0413	LabTracks – Running Reports
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
nil	



DOCUMENT HISTORY			PQMS3-MARP-SOP-0128-V1
Version no.	Date of Issue		Amendments
1	23/02/2017		Old document SOP0128.V1
2	22/06/2018		Update to Animal Monitoring & Welfare Statement
3	14/12/2020		Update to include LabTracks procedures. Formatting.

ANAESTHESIA IN MACAQUES (03/08/2020)

PQMS3-MARP-SOP-0186-V2.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
Irrelevant Information	10-Aug-2020 12: 36 PM AES
	11-Aug-2020 8: 15 AM AE
	17-Aug-2020 9: 17 AM AE

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used to induce anaesthesia in macaques for medical procedures.






Scope

This SOP is to be applied to all staff members working with Macaques across MARP.

1.2. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-REF-0030 Non-Human Primate Health monitoring-Clinical Severity Scores
-  PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
-  PQMS3-MARP-RAS-0001 Sharps
-  Ergonomics and Manual Handling Training

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.


3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
EAF	Experimental Animal Facility
Irrelevant Information	Irrelevant Information
IM	Intra Muscular
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents relevant to the area they will be working in:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment 

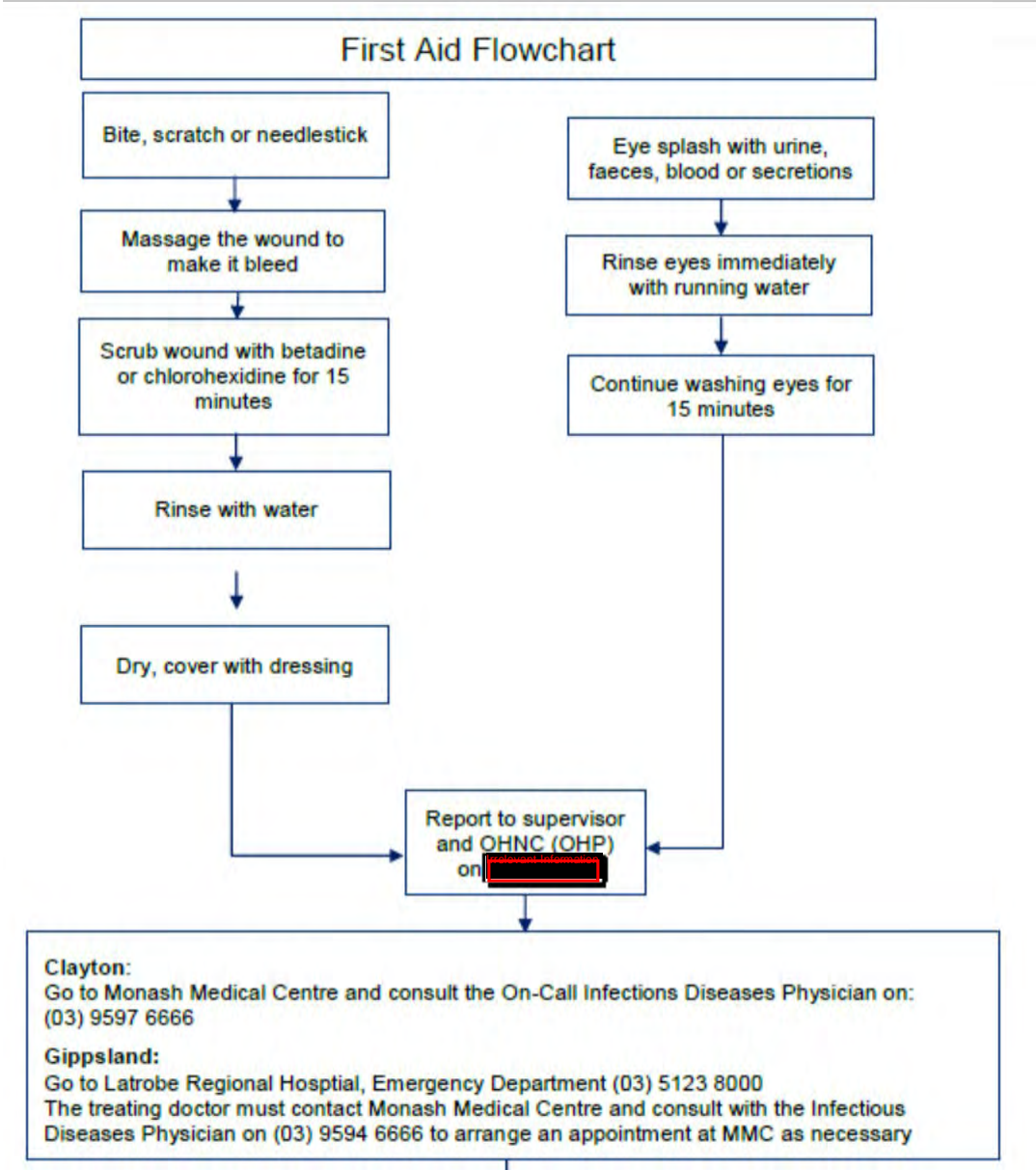
PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities 

PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility 


PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility 

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantIFERON®- Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area.



5. USING ANAESTHESIA ON MACAQUES

- 5.1** Anaesthesia is performed to sedate a macaque adequately for safe handling by the operator. To do this, an injectable anaesthesia is initially used to sedate/anaesthetise the macaque to allow safe handling. Once the animal can be safely handled, it is moved to gaseous anaesthesia to maintain the depth of anaesthesia required. The gas anaesthesia machine provides 100% oxygen, plus Sevoflurane at a level of 0-8% as required. This is to ensure that oxygen saturation of the blood is maintained at appropriate levels, since pulse oximetry demonstrates that oxygen levels often drop below ideal levels with injectable induction of anaesthesia. Gas anaesthesia maintenance or oxygen supplementation is recommended to help prevent anaesthetic death.
- 5.2** Ensure that macaques are fasted (given no food overnight) prior to being anaesthetised.
-  Food in the stomach during anaesthesia increases anaesthetic risk. Macaques can regurgitate or vomit stomach contents during induction of anaesthesia. If this occurs after the swallow reflex is lost, this vomited material can be inhaled causing aspiration pneumonia or obstruction of the airway, both of which can be fatal.
- 5.3** There are several steps in performing anaesthesia on macaques in order of the following sections in this SOP;
- ☞ 6. Preparation of Injectable Anaesthesia solution for Macaques
 - ☞ 7. Preparation for Gas Anaesthesia on Macaques
 - ☞ 8. Performing Injectable Anaesthesia on Macaques
 - ☞ 9. Performing Gas Anaesthesia on Macaques
 - ☞ 10. Recovery of Macaques after Anaesthesia

6. PREPARATION OF INJECTABLE ANAESTHESIA SOLUTION FOR MACAQUES

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Sharps Disposal Container
QUANTITY	MATERIAL DETAILS
6	3ml syringes
6	20G 1" needles
1	Water for Injection
1	Ketamine 100 mg/ml
1	Medetomidine 1mg/ml
1	Butorphanol 10mg/ml
1	Atropine 0.65 mg/ml
1	Atipamezole 5mg/ml
2	Sterile Specimen Containers
1	Red Permanent Marker
1	Green Permanent Marker

6.2 Injectable Anaesthesia for Macaques consists of a combination Anaesthetic Solution, given to induce anaesthesia and a Reversal Solution, given to assist recovery from anaesthesia.

6.3 BDAK Anaesthetic is a combination mixture of 4 drugs:

- Butorphanol
- Medetomidine (Domitor/Medetate)
- Atropine
- Ketamine

in the ratio of 2:2:3:3 parts i.e. 2 parts Butorphanol: 2 parts Medetomidine: 3 parts Atropine: 3 parts Ketamine. Refer to Figure 1.

Example 1: 10mLs of BDAK Anaesthetic would require 2mLs of Butorphanol, 2mLs of Medetomidine, 3mLs of Atropine and 3mLs of Ketamine.

Example 2: 5mLs of BDAK anaesthetic would require 1mL of Butorphanol, 1mL of Medetomidine, 1.5mL of Atropine and 1.5mL of Ketamine.

6.4 The reversal solution is a dilution of Atipamezole 1:4 with sterile saline or water for injection. Atipamezole reverses the effects of the Medetomidine component of the BDAK anaesthetic combination. Refer to Figure 1.

Example 1: 10mLs of Reversal Solution would require 2mLs of Atipamezole and 8mLs of Sterile Water (Water for Injection) or saline.

Example 2: 5mLs of reversal solution would require 1mL of Atipamezole and 4mLs of sterile water (Water for Injection) or saline.

Drug Name	Solution Concentration mg/mL	Formulation %	Formulation Concentration mg/mL	Volume Administered mL/kg	Dose Rate mg/kg
Induction Agents					
Butorphanol	10	20	2	0.05 - 0.1	0.1- 0.2
Medetomidine	1	20	0.2		0.01- 0.02
Ketamine	100	30	30		1.5- 3.0
Atropine	0.6	30	0.18		0.009- 0.018
Reversal Agents					
Atipamezole	5.0	20	1	0.05 - 0.1	0.05-0.1
Sterile Saline or Water for Injection	0.0009	80	n/a		

Figure 1: Injectable Anaesthetic and Reversal Formulations

- 6.5** Mark a sterile specimen container with a Red permanent Marker with red stripes and the date of preparation and words "BDAK Anaes" on the label (Fig.2).



Fig.2

- 6.6** Prepare a 3ml syringe (Fig.3) with a 20G 1" needle (Fig.4) and use it to draw the required

from

volume of
the
Bottle
prepared


into

Fig.3

solution
Discard
sharpsButorphanol
Butorphanol
(Fig.5) into the
BDAK
anaesthetic
container.
used syringe
container.

Fig.4 Fig.5

 PQMS3-MARP-REF-0023 Macaque and Marmoset Injection Guidelines

 Butorphanol is a controlled drug and is stored in a safe. A controlled drug register needs to be signed for the amount of Butorphanol used.

- 6.7** Prepare another 3ml syringe with a 20G 1” needle and use it to draw the required volume of Medetomidine from the bottle (Fig.6) into the prepared BDAK anaesthetic solution container. Discard used syringe into sharps container.



Fig.6

- 6.8** Prepare another 3ml syringe with a 20G 1” needle and use it to draw the required volume of Atropine from the Atropine Bottle (Fig.7) into prepared BDAK anaesthetic solution container. Discard used syringe into sharps container.



Fig.7

- 6.9** Prepare another 3ml syringe fitted with a 20G 1” needle and use it to draw the required volume of Ketamine from the Ketamine Bottle (Fig.8) into the prepared BDAK anaesthetic solution container. Discard used syringe into sharps container.



Fig.8

- Ketamine is a controlled drug and is stored in a safe. A controlled drug register needs to be signed for the amount of Ketamine used.

6.10 The BDAK Anaesthetic Solution is now prepared. Store solution in a lockable drug cabinet when not being used (Fig.9).

- Unused solution should be discarded 3 weeks after preparation.



Fig.9

6.11 Mark a sterile Specimen Container with a Green permanent Marker with green stripes and the date of preparation and words "Reversal Solution" on the label (Fig.10).



Fig.10

6.12 Prepare a 3ml syringe fitted with a 20G 1" needle and use it to draw the required volume of Antisedan from the Antisedan Bottle (Fig.11) into the prepared Reversal Solution Container. Discard used syringe into sharps container.

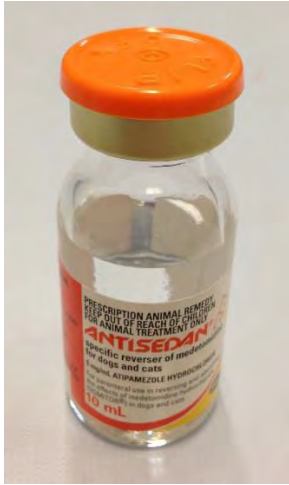


Fig.11

- 6.13** Prepare another 3ml syringe fitted with a 20G 1" needle and use it to draw the required volume of sterile water from the Water for Injection Bottle (Fig.12) into the prepared Reversal Solution Container. Discard used syringe into sharps container.

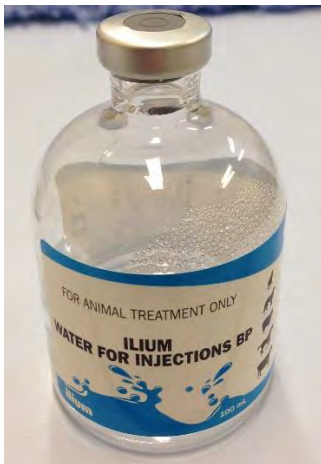


Fig.12

- 6.14** The Reversal Solution is now prepared. Store unused solution in a lockable drug cabinet when not being used (Fig.13).

Unused solution should be discarded 3 weeks after preparation.



Fig.13

7. PREPARATION FOR ANAESTHESIA OF MACAQUES

7.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Mobile Anaesthetic Machine
1	Anaesthetic Gas Masks
1	Heat Pad
1	Pulse oximeter
1	Cocoon Convective Warming Machine
1	Primate Housing Unit
1	Transfer Tunnel
1	Tunnel Adaptor
1	Robertson Wrench
QUANTITY	MATERIAL DETAILS
1	Size D Oxygen Cylinder
As required	Sevoflurane
As required	Saturated Charcoal
1	Woolly Blanket
1	Cocoon SX Warm Air Blanket
1	Lock and Key
1	1ml luer-lok™ tip syringe
1	22G 1" needle
1	Red Marked Specimen Container with Anaesthetic Solution
1	Sharps Container

7.2 Setup the caging for capturing and restraining the macaque/s to be anaesthetized.

 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

- 7.3 Setup the surgery for the procedure
- Warm Heat Pad on surgery table.
 - Place a wet/dry bedding with bluey mat on top.
 - for longer procedures set up the warm air Cocoon Convective Warming Machine, See Section 10

7.4 Set up gas anaesthetic machine. See Fig 14

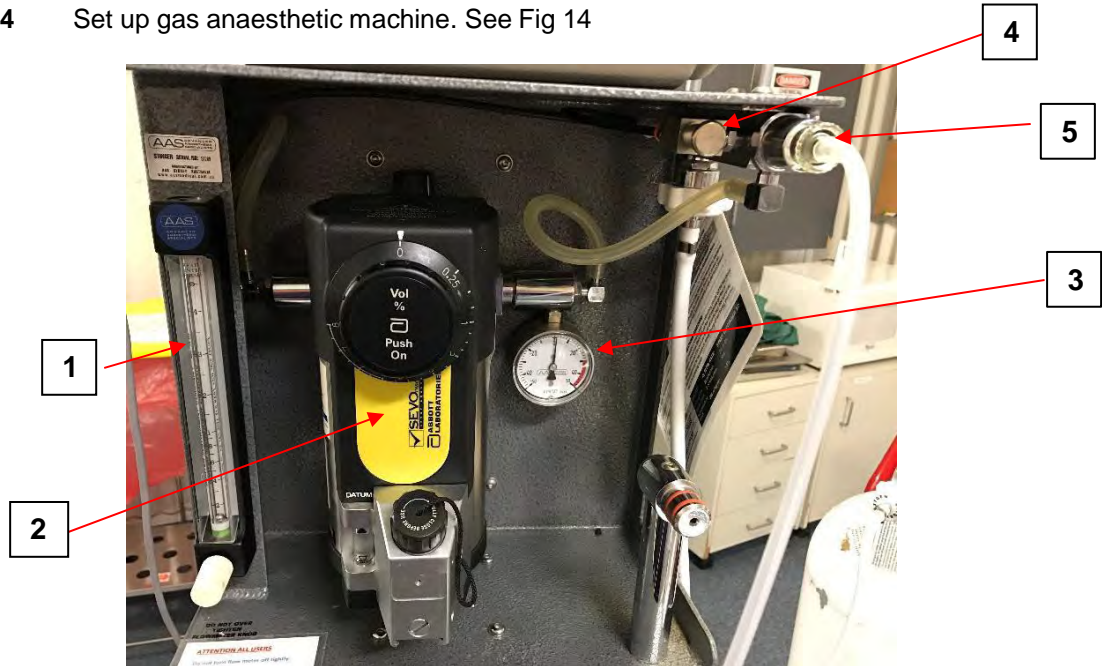



Fig. 14 Anaesthetic Machine

Fig. Key

1. Oxygen Flow Meter
2. Sevoflurane Vaporiser
3. Pressure Meter
4. Oxygen Flush Button
5. Fresh Gas Outflow with circuit attached

7.5 Check the regulator is attached to oxygen cylinder. See Fig 15. If regulator is not attached, refer to Section 6.

 Never open the oxygen flow on the cylinder when the regulator is not attached

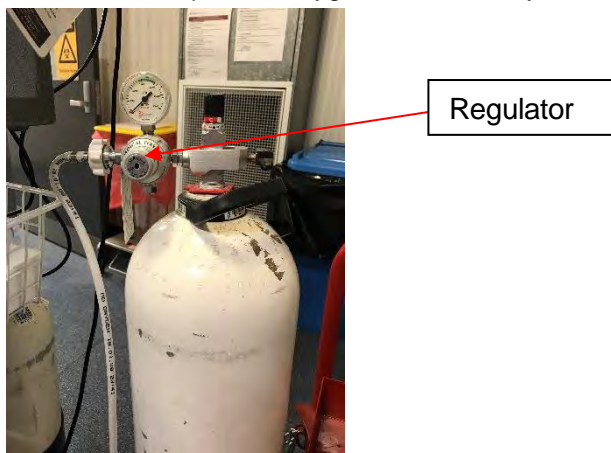


Fig 15. Medical Oxygen Gas Cylinder with Regulator on Trolley

- 7.6** Turn on oxygen flow at the cylinder by turning the knob anti-clockwise. See Fig.16. Observe the pressure gauge on the regulator to check the level of oxygen in cylinder. See Fig.17.

Replace the oxygen cylinder if empty- Refer to section 8.



Fig 16



Fig. 17

- 7.7** Check oxygen is turned off at flow meter on the anaesthetic machine. See Fig. 18



Fig. 18

☐ When turning off the oxygen flow meter, ensure that the white knob is not overtightened, as this damages the valve and results in poor function.

- 7.8** Check level of liquid anaesthesia agent in the vaporiser. Top up if low. Refer to Section 9.
- 7.9** Set up the rebreathing circuit and attach it to the gas anaesthetic machine at the fresh air outlet. See Fig 14, Number 5, and Figure 19 below.



Rebreathing
Bag

Fig 19



Fig 20

Check the position of the APL (adjustable pressure-limiting) valve. It should be in the semi-open position to allow excess gases to escape to the waste anaesthetic gas system. The APL valve is only used during manual ventilation. It limits the amount of pressure buildup that can occur during manual ventilation.



7.10 Attach an appropriate-sized mask to fit the muzzle of the macaque being anaesthetised. See Fig 20.

- Check there is no damage to the rubber diaphragm, and that it will fit snugly over the macaques' nose. This is to make sure that no gas will leak out
- The Size 0 mask is suitable for neonates and small juveniles. See Figure 21.
- The Size 3 mask is suitable for older juveniles and adults. See Figure 22.



Fig.21



Fig. 22

7.11 Ensure the large diameter Scavange tubing is attached to the 3-way valve near the rebreathing bag. See Fig 19.






7.12 Attach the other end of the large diameter scavange tubing to the charcoal canister. See Fig 21




Fig. 21



Fig 22

-  As part of the routine of using the anaesthetic machine, the charcoal absorber is weighed monthly, to ensure it is safe to use.
-  The charcoal granules in the absorber **MUST** be replaced once the cylinder weighs 125g more than the original weight. ie: 575g
-  Using the fume hood – empty the used charcoal into a plastic bag. Tie this plastic bag and then place into a second plastic bag. Securely tie the second bag, and dispose of in the biohazard waste.
-  To refill, place the charcoal canister on the scales, in the fume hood. Fill the canister with charcoal granules to a combined weight of 450g. The refill date is placed on the charcoal absorber container. Reattach the large bore scavenge tubing and place charcoal canister in its holder at the base of the anaesthetic machine
-  The charcoal container must be in its holder to allow gas flow through. See Figure 22.

7.13 Setup of the Anaesthetic Machine has been completed so the macaque to be anaesthetized can be captured and restrained.

-  Refer to PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

8. CHANGING AN EMPTY OXYGEN CYLINDER

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Appropriate tool to remove regulator from oxygen cylinder
QUANTITY	MATERIAL DETAILS
1	Full replacement oxygen cylinder

8.2 Check that the Oxygen flow is turned off at the gas cylinder before this procedure is performed. See Figure 16.

8.3 Depressurise the circuit by pressing the oxygen flush button (Refer Figure 14, #4) until the pressure gauge reads zero. See Figure 17.

8.4 Detach regulator from the empty oxygen cylinder, by turning the black handle anticlockwise, See Fig. 23.

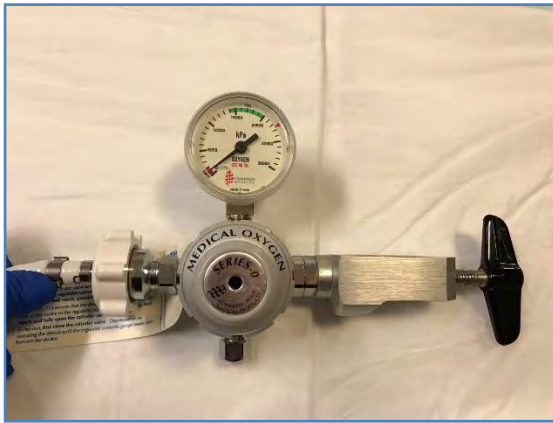



Fig. 23

8.5 Wheel the empty gas cylinder in its holder, to the Gas Cylinder Safety Locker, located outside AS-110

 Care must always be taken when handling gas cylinders as they are a potential hazard.

8.6 Swap the empty cylinder for a full cylinder.

8.7 Place the full cylinder into its holder, and wheel back to the surgery, AS121.

8.8 Remove any plastic wrapping on the oxygen cylinder valve

8.9 To attach the regulator to the full oxygen bottle, first align the valve perpendicular to the inlet on the neck of the gas cylinder by inserting the lugs on the regulator into the holes on the cylinder neck.

8.10 Turn the black handle clockwise to advance the screw, ensuring the tip is located in the indentation in the neck of the cylinder.

8.11 Tighten the black handle to ensure there is no leakage.

- If there is leakage a whistling sound of escaping oxygen is heard when the oxygen flow is turned on at the cylinder.
- Empty cylinders are routinely replaced by the Service Assistant.

9. FILLING VAPORISER WITH SEVOFLURANE

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Sevoflurane Vaporiser
QUANTITY	MATERIAL DETAILS
As needed	Bottle of Sevoflurane

9.2 To fill the sevoflurane vaporiser. Unscrew the cap of the fill point on the vaporizer (See Figure 24), and remove the cap of the sevoflurane bottle. See Fig. 25.

☞ The sevoflurane bottle is specially designed to fill the sevoflurane vaporiser safely.

9.3 Invert the sevoflurane bottle and place it into the fill point of the vaporizer

Press the bottle gently, so that the fill point pin is depressed, and the sevoflurane starts flowing from the bottle into the vaporizer.



Fig.24 Sevoflurane Bottle with cap removed



Fig.25 Sevoflurane Vaporiser

9.4 The glass vial on the left bottom side of the vaporiser, indicates how full the vaporiser is. Once the level in the glass vial, reaches the black triangle, release the pressure on the bottle to stop the flow of sevoflurane, and withdraw the bottle from the fill point.

9.5 Place the caps back on the vaporizer and sevoflurane bottle.

9.6 Return any un-used sevoflurane to the drug cabinet in AS167.

10. SETTING UP THE COCOON CONVECTIVE WARMING MACHINE

10.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Cocoon Convective Warming Machine
QUANTITY	MATERIAL DETAILS
1	Cocoon SX Warm Air Blanket

10.2 If using the Cocoon Convective Warming Machine, collect and unfold a SX Warm Air blanket (Fig.26) and place it on the bench where the macaque will be anaesthetized.



Fig.26

10.3 Move the Cocoon Convective Warming Machine near the bench close to the air inlet port of the SX Warm Air blanket. See Fig.27.



Fig.27

10.4 Connect the air delivery hose from the Cocoon to the blanket by pushing the plastic fitting into the air inlet port and securing it firmly. See Fig 28.



Fig.28

10.5 Plug the mains cable into a power point and switch it on. The green Standby Indicator will illuminate and the Cocoon Convective Warming Machine will beep. See Fig.29.



Fig.29

- 10.6** Select the desired temperature on the control panel by pressing the corresponding temperature selection button on the control panel. See Figure 30 where 40°C is selected. The SX Warm Air blanket will be inflated with air heated to the selected temperature. See Figure 31.



Fig.30



Fig.31

11. INDUCTION OF ANAESTHESIA BY INJECTION IN MACAQUES

11.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Primate Housing Unit
1	Transfer Tunnel
1	Tunnel Adaptor
1	Robertson Wrench
QUANTITY	MATERIAL DETAILS
1	Lock and Key
1	1mL or 3mL luer-lok™ syringe
1	22G 1" needle
1	Red Marked Specimen Container with BDAK Anaesthetic Solution

11.2 Capture the macaque to be anaesthetized and restrain in a Primate Housing Unit. See Figure 32.


 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint




Fig.32

11.3 Determine body weight of the macaque from the Macaque Work Station's digital display. If this is not in use, estimate body weight using last recorded weight as well as visual estimation.

 PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station

 PQMS3-MARP-SOP-0128 Macaque Animal Records

11.4 The correct dose rate is usually between 0.05 to 0.1 ml/kg of the BDAK combination anaesthetic. However information on previous doses and their effects should always be consulted before selecting a dose of injectable anaesthetic for the animal.

 The amount of anaesthesia administered for longer surgical procedures may be higher than for short procedures like blood collection or microchipping.

11.5 Draw up required dose of anaesthesia in a luer-lok™ syringe (Fig.33) and 22G x 1" needle (Fig.34) from the Red Marked BDAK Anaesthesia Solution Container (Fig.2).




Fig.33



Fig.34

 PQMS3-MARP-REF-0023 Macaque and Marmoset Injection Guidelines

 Luer-lok™ syringes are used for administering injectable anaesthesia as it prevents the possibility of the needle dislodging from the syringe if the animal moves suddenly while the injection is being administered.


11.6 Restrain the macaque using the crush mechanism of the Primate Housing Unit and administer the required dose of anaesthesia IM into the gluteal or quadriceps muscle.

11.7 Discard the used syringe and needle into a sharps container (Fig.35).



Fig.35

11.8 Observe the macaque while it is becoming anaesthetized.

 It generally takes 5 to 10 minutes for the macaque to become sufficiently sedated to be handled safely. The macaque must be monitored while becoming unconscious to ensure that it doesn't fall awkwardly or block its airway through being in a constricted position.

11.9 Once the macaque is unconscious and sedated adequately to allow safe handling, unlock the door of the Primate Housing Unit.

11.10 Carefully grab both arms of the macaque, hold them behind its back in a restraint hold and gently remove the macaque from the cage. See Figure 36.

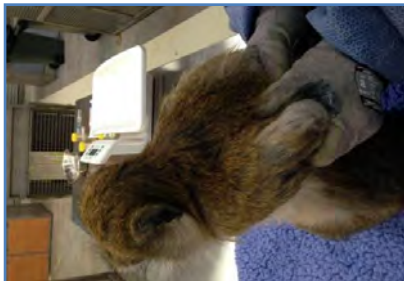


Fig. 36

11.11 Carry the macaque to the bench or table fitted for Gas Anaesthesia. If the macaque's weight is greater than 5kg, place it on a blanket on a trolley to move it.

12. INDUCTION AND MAINTENANCE ANAESTHESIA USING GASEOUS ANAESTHESIA

12.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Anaesthetic machine with oxygen cylinder, appropriate vaporiser and tubing for circuits
1	Facemask
1	Pulse Oximeter
QUANTITY	MATERIAL DETAILS
As needed	Sevoflurane
As needed	Medical Oxygen Cylinder

- The animal to be anaesthetised has been caught, and the anaesthetic machine is prepared, refer to section 5
 - Refer to PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
- Any animal over 6 months of age should receive injectable anaesthetic before being restrained and placed on gas anaesthesia.
- Gas anaesthesia may not be required for shorter procedures e.g. blood collection of small volumes, where the sedation provided by the injectable anaesthetic agents is sufficient.
- Infant macaques below 6 months of age can be restrained by hand while the gas mask is placed over their face for gas anaesthesia. They require a high vaporizer setting of 8% until consciousness is lost, then the vaporizer setting can be set to a lower level e.g. 2-4% for maintenance of anaesthesia.

12.2 Turn on the Sevoflurane vaporiser, and move to the required setting.

12.3 Place the face mask over the animals' nose and mouth, ensuring both the mouth and nostrils are enclosed within the mask. See Fig 37.



Fig.37

12.4 Set the oxygen flow rate to 1 litre per minute.

12.5 Place the animal with face still in the mask, onto the prepared area on the heated table.

12.6 Continue to hold the animal with its face in the mask, until it is unconscious.

- Observe for cessation of movement and relaxation.
- Monitor rate and depth of breathing. Breathing rate should slow and become regular.

12.7 Check the blink and withdrawal reflexes.

- Withdrawal reflex is checked by pinching the foot between your thumb and forefinger to make sure the animal is properly anaesthetised.
- The blink reflex is checked by gently touching the corner of the eye with your finger.

The blink reflex will be abolished before the withdrawal reflex, as the level of anaesthesia deepens.

- 12.8** Check the rebreathing bag. If it is over-filling, adjust the APL valve to be further open. Gently compress the rebreathing bag to check that excess gas is escaping.
- 12.9** Place the Pulse Oximeter probe on the hand, ear, foot or any suitable non-pigmented area, when animal has lost consciousness. See Fig.38 and Fig.39.



Fig.38



Fig.39

- The pulse oximeter will not give a reading if the body part to which it is attached is moving.
- For shorter procedures, where sedation only is used, do not attach the pulse oximeter because it will not read due to movement.
- Some macaques have very dark skin which can make it difficult to get a reading. In these cases it will be necessary to move the Pulsimeter's probe to different parts of the body, wherever there's loose skin such as below the armpits, between the thighs, etc., in order to get a reading.
- The pulse oximeter measures the animals' heart rate and blood oxygenation.

- 12.10** Continue to monitor the withdrawal reflex, blink reflex, heart rate, oxygen levels, breathing rate and character throughout the duration of the procedure.

- 12.11** Maintain a surgical plane of anaesthesia (i.e. absence of pinch reflex) for the duration of the surgical procedure by adjusting the vaporiser setting between 0-8%.

A common vaporiser setting is 2% for maintenance, following injectable induction.

- If respiration slows and becomes laboured, turn vaporiser setting to zero immediately. Flush the system with fresh oxygen, and continue with 100% oxygen until the breathing returns to normal. Then reset the vaporiser setting to a lower value than before.
- If withdrawal reflex returns, turn the vaporiser level up until the withdrawal reflex is abolished.

- 12.12** Once the procedure is finished, turn the vaporiser setting to OFF.

- 12.13** In cases injectable induction with BDAK anaesthetic solution has been used, the injectable reversal solution is now given by intramuscular injection.

- For some procedures, e.g. blood collection, the reversal solution may be given to the macaque immediately the mask is in situ, and the animal is maintained on gaseous anaesthesia alone. Early reversal of the injectable component of the anaesthesia improves peripheral blood pressure and shortens recovery times.

- 12.14** Prepare the required dose of reversal. The required reversal dose will equal the volume of BDAK anaesthetic solution administered in step 11.6. For example, if 0.5ml of injectable BDAK anaesthesia was administered to the macaque, then the required dose of reversal solution would be 0.5mL.

- 12.15** Draw up the required dose of reversal solution with a 1mL syringe and a 23 G x 1” needle from the Green Marked Reversal Solution Container.
- 12.16** Administer the required dose of reversal IM into the quadriceps muscle.
- 12.17** Discard the used syringe into a sharps container
- 12.18** Monitor animal’s breathing and observe for return of blink and withdrawal reflexes, increased muscle tone and elevation of heart rate. Return the macaque to its recovery cage if these signs are observed.
- Hold infants in a restraint hold while they recover and once all physiological responses are normal, they can be returned to a recovery cage and their mother.
- 12.19** Once signs of return to consciousness are noted, turn oxygen flow rate to zero.
- 12.20** Remove face mask.
- 12.21** Using a restraint hold, carry the macaque to the recovery cage (Fig.12).
- Place the macaque in a recovery position facing outwards so that breathing and reflex can be easily observed.
Observe the breathing and reflex withdrawal of the macaque until fully conscious and able to stand upright and move around.
 - Note the time that the macaque was placed back into the recovery cage and contact the facility supervisor or MARP veterinarian immediately if any complications arise or the macaque doesn’t show any signs of consciousness after 30 minutes.
 - Refer to PQMS3-MARP-REF-0030 Non-Human Primate Health Monitoring-Clinical Severity Scores
- 12.22** Once the animal has recovered return it to its home cage, refer to:
- PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
 - PQMS3-MARP-SOP-0122 Returning macaques to Flexagons
- 12.23** If all procedures are completed, turn oxygen off at regulator on the oxygen cylinder, see Fig 3
- 12.24** Purge the system by holding the mask inverted on the tabletop and pressing Oxygen Flush Button until the pressure is fully released.
- Return the Anaesthetic Machine to its storage position.

13. RECORDING ANAESTHESIA DETAILS

13.1 Record anaesthetic and procedure details on hardcopy and/or electronic records as per facility requirements.

14. ANIMAL MONITORING & WELFARE

14.1 All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.

14.2 Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.

14.3 Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.

14.4 All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate within 72 hours of its detection. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

15. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-REF-0023	Macaque and Marmoset Injection Guidelines
PQMS3-MARP-REF-0030	Non-Human Primate Health monitoring-Clinical Severity Scores
PQMS3-MARP-SOP-0034	Equipment Operations – Macaque Work Station
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-SOP-0122	Returning Macaques to Flexagons
PQMS3-MARO-SOP-0128	Macaque Animal Records
PQMS3-MARP-RA-0161	Macaque Area Risk Assessment
PQMS3-MARP-SOP-0117	Entry and Exit Procedures for Macaque Facilities
PQMS3-MARP-SOP-0143	Entry and Exit Procedures for Macaque Facility
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque Facility
PQMS3-MARP-REF-0001	Sharps
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013) https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes
NHMRC Guidelines	Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals https://www.nhmrc.gov.au/about-us/publications/guidelines-promote-wellbeing-animals-used-scientific-purposes
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016) https://www.nhmrc.gov.au/about-us/publications/principles-and-guidelines-care-and-use-non-human-primates-scientific-purposes
Monash OHSE	Using Biologicals and Animals at Monash University https://www.monash.edu/_data/assets/pdf_file/0006/147156/using-biologicals.pdf
Monash OHSE	Monash Move Smart https://www.monash.edu/_data/assets/pdf_file/0006/148596/movesmart.pdf
Monash OHSE	Monash OHSE Immunization https://www.monash.edu/_data/assets/pdf_file/0003/147117/immunisation-procedure.pdf
Monash OHSE	Monash OHSE Immunization Grid https://www.monash.edu/ohs/info-docs/safety-topics/immunisations



DOCUMENT HISTORY		relevant information	PQMS3-MARP-SOP-0186-V2.docx
Version no.	Date of Issue		Amendments
1	0707/2017		Original document
2	03/08/2020		Update to Animal Monitoring & Welfare Statement Remove superseded documents REF0350, Updated internal and external references Updates and clarifications for comments made Corrections, include management of APL valve text and pictures. Remove Generic names of drugs and replace with active constituents. Correct numbering in Section 12. Add comments to cover procedures where injectable sedation only is used.

IDENTIFICATION IN MARMOSETS (01/06/2020)

PQMS3-MARP-SOP-0192-V2.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

Irrelevant Information

8- Jun- 2020

11: 11 AM A

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- Jun- 2020

3: 16 PM AES

1. INTRODUCTION
1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used to microchip marmosets for identification purposes.



1.2. Scope

This SOP is to be applied when microchipping all marmosets at MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0147, Handling and Restraint in Marmosets
-  PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
Microchip	A microchip is an identifying integrated circuit placed under the skin of an animal. The chip, about the size of a large grain of rice, uses passive RFID (Radio Frequency Identification) technology

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

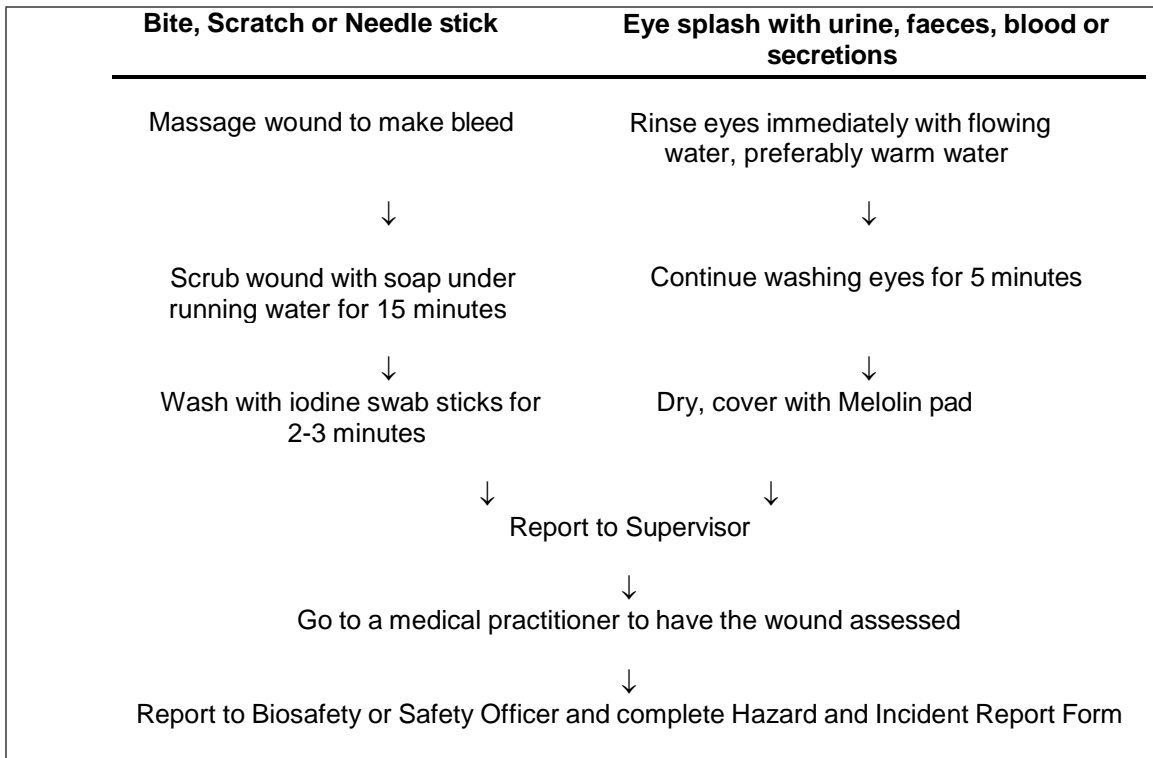
Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-FRM0011 relevant information Conditions of Entry Statement

PQMS3 – MARP-SOP-0132 Marmoset Entry and Exit

Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective of their families. Staff should constantly be aware of the animals in the enclosure by monitoring their behavior, without turning their back.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area as this will cause adverse behavior in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the relevant info relevant information of Building relevant info



5. MICROCHIPPING MARMOSETS

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Anaesthetic Machine with Medical Oxygen & Appropriate Setup for Marmosets
1	Microchip Reader - Suitable RFID Compact Reader or ISO Multireader
1	Clippers
1	Disposable Pad or Bluey
1	Surgery Table
QUANTITY	MATERIAL DETAILS
As required	Gaseous Anaesthetic Agent
As required	Preloaded microchip applicator or midi-chip ISO 11784/85 FDX-B certified
As required	Tissue Adhesive
As required	80% v/v alcohol
As required	Gauze swabs

Microchipping can be a permanent method of electronic identification in marmosets, as each microchip has a unique number that is detected using a microchip reader.

- ☐ The microchip or midi-chip that can be used for marmosets is only 8mm long & 1.4mm diameter.
- 🐒 Marmosets in the colony can be microchipped around 3 months of age.
- ☐ There are some instances including research projects, where this may occur at a younger age.

5.2. Catch the required animal from its cage as per SOP.

📖 PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets

5.3. Using the microchip reader, check that the microchip being implanted is correct.

Refer Figures 1 & 2.



Figure 1 – Example of Microchip reader



Figure 2 – Example of microchip or midi-chip applicator and number

- 5.4** Remove the preloaded microchip applicator from the pouch. Refer Figure 3.



Figure 3 – Preloaded Microchip Implant Device

- 5.5** Anaesthetise the marmoset as per SOP



PQMS3-MARP-SOP-0272 Gas Anesthesia in Marmosets

- 5.6** Place the anaesthetised marmoset onto a disposable pad or bluey, on the heated surgery table.
- 5.7** Clip the hair on the back of the marmoset between the shoulder blades, the approximate size of a ten cent piece. Refer Figure 4.



Figure 4 – Hair clipped between the shoulder blades

- 5.8** Using a gauze swab spray with alcohol and clean the shaved area of the skin.
- 5.9** Tent the skin just above the area to be implanted with the microchip. Refer Figure 5.




Figure 5 – Skin tented for injection of microchip

- 5.10** Remove cap on applicator. With the bevel facing upward, insert the needle under the skin. Refer Figure 6.



Figure 6 – Needle microchip applicator inserted under the skin

- 5.11** Push the plunger of the microchip applicator until it is all the way forward.
 You will feel the microchip under the skin once it comes out of the needle and is implanted correctly.
- 5.12** Hold onto the microchip and slowly remove the needle from the skin.
 The microchip is held to ensure that it does not come out of the skin when the needle is removed.

 Safely dispose of the used needle in the sharps container.




- 5.13** Using Tissue Adhesive, place a drop into the hole of the skin created by the Needle. Refer Figure 7.
-  Tissue Adhesive is used to prevent the microchip being picked out by other animals in the cage.



Figure 7 – Applying tissue adhesive


- 5.14** Using the microchip scanner, check that the implanted microchip is functional.
- 5.15** Allow the marmoset to recover from the gaseous anaesthesia as per SOP
 PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets
- 5.17** Return the marmoset to its cage when recovered from the anaesthetic.
- 5.18** Update animal records by adding microchip number sticker to the paper animal records.
- 5.19** Update Labtracks animal records by adding in the microchip number to the animal record as per SOP
 PQMS3-SOP-MARP 0392 – Labtracks Basics
- 5.20** Check the implantation site is healed on all animals that have been microchipped while performing routine weighing.
- 5.21** Please notify the Senior Animal Technologist of any animals that are found to be missing their microchip. These will be re-microchipped at the next available opportunity.


6. IDENTIFICATION OTHER THAN MICROCHIPPING

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
NILL	
QUANTITY	MATERIAL DETAILS
As required	Food safe colour dyes
As required	Cotton tip

6.2 Food Safe Colour Dyes

 Food safe colour dyes are used to mark marmosets' ear tufts for a temporary visual identification.

 This identification method is performed during regular procedures such as weighing, to reduce handling stress of catching an animal unnecessarily in error.

6.2.1 Remove lid from food safe colour dye container, and dip cotton tip into dye container. Allow the cotton tip to take up a small amount of dye.

6.2.2 Restraining marmoset as per SOP, gently stroke the marmoset's tuft with the dyed cotton tip, transferring a small amount of colour from the cotton tip, to the marmoset's tuft. See figure 8 below.

 PQS3-MARP-SOP-147 – Handling and Restraint in Marmosets



Figure 8: Marmosets tuft dyed blue with food safe dye

6.2.3 Return marmoset to its cage as described in the above SOP once the marking is complete.

6.3 Marmosets less than 3 months of age

Marmosets that are less than 3 months of age that are not yet microchipped are identified by hair clipping. This procedure is described in the following SOP

 PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

7. ANIMAL MONITORING & WELFARE

- 7.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 7.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 7.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 7.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

8. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0272	Gas Anaesthesia in Marmosets
PQMS3-MARP-SOP-147	Handling and Restraint in Marmosets
PQMS3-MARP-SOP-0056	Specialised Care of Marmoset Neonates
PQMS3-MARP-SOP-0392	Labtracks- Basics
EXTERNAL REFERENCES	
List any relevant references including those from which reference ranges may have been derived, those used in the preparation of the document or in the establishment of the method	
http://www.microchips.com.au/	
Australian code for the care and use of animals for scientific purposes	
Principles and guidelines for the care and use of non-human primates for scientific purposes	

DOCUMENT HISTORY		PQMS3-MARP-SOP-0192-V2.docx
Version no.	Date of Issue	Amendments
1	26/06/2017	AS.GIPPS.049 Marmoset Techniques
2	01/06/2020	Update to Animal Monitoring & Welfare Statement Removal of superseded doc REF 0350, update of external references Revised document

EUTHANASIA METHODS IN MACAQUES (18/07/2022)

PQMS3-MARP-SOP-0208-V3.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

Irrelevant Information

06- Sep- 2022 | 8: 40 PM AEST

08- Sep- 2022 | 1: 21 PM AEST

19- Sep- 2022 | 2: 08 PM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used for euthanizing a macaque.

1.2. Scope


This SOP is to be applied to all staff members working with Macaques across MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

 PQMS3-MARP-SOP-0186 Anesthesia in Macaques

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained. Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
ARL	Animal Research Laboratory
EAF	Experimental Animal Facility
Femoral vein	A large vein found in the upper thigh
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents relevant to the area they will be working in:

SARAH Ref no. 24354 Macaque Area Risk Assessment - relevant information

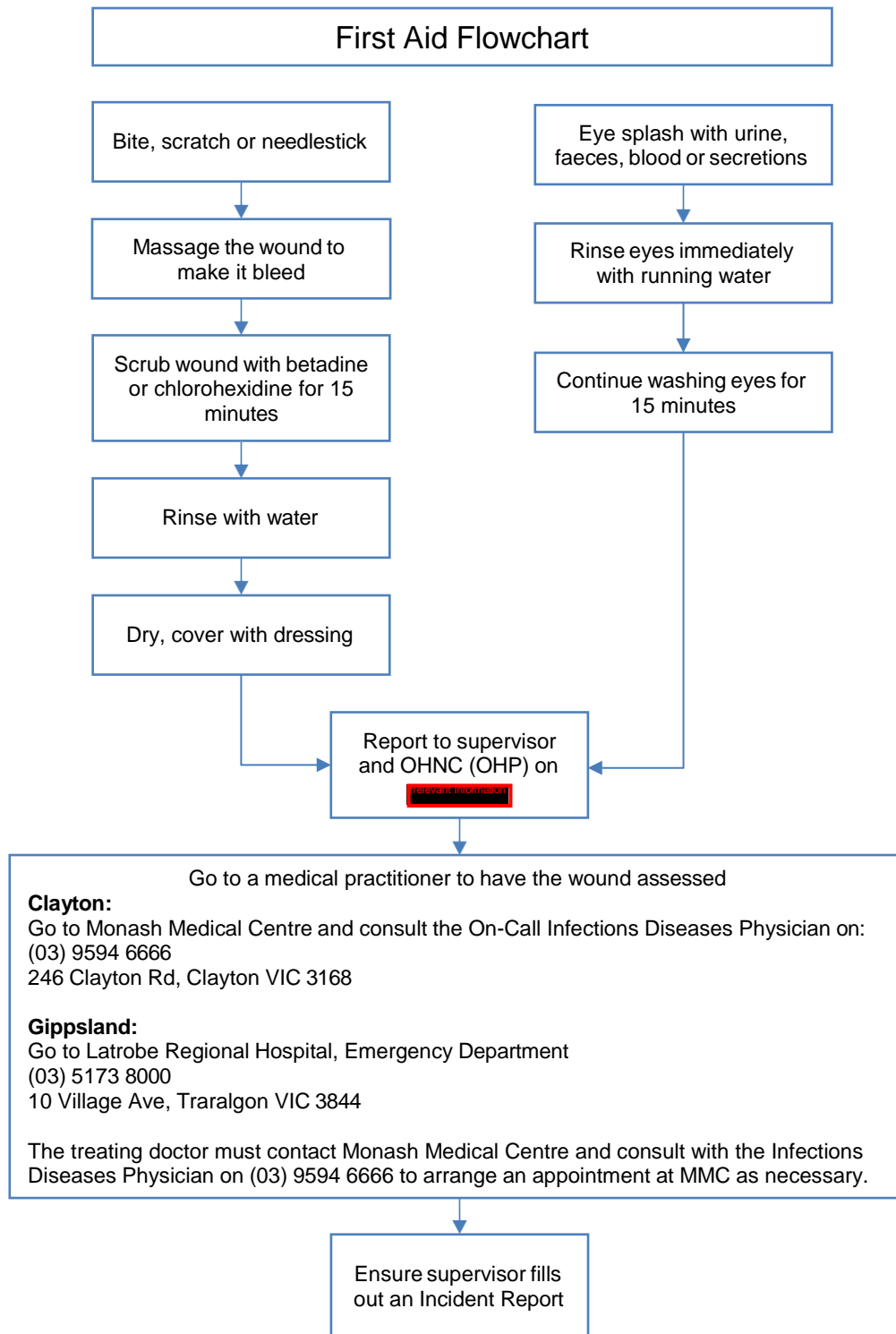
SARAH REF no. 39409 MARP- Working with Large Animals and Non-human Primates.

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities relevant information

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility relevant information

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantIFERON®- Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque. [MANAGEMENT OF SUSPECTED Exposure to Macacine Alphaherpes virus 1 \(B virus\)](#)
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area.



5. MACAQUE EUTHANASIA


5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Examination Table or Bench
1	Heat Pad
1	Towel
QUANTITY	MATERIAL DETAILS
As required	Sodium pentobarbitone (Lethabarb) 325 mg/ml
As required	Anaesthesia Solution (BDAK)
1	5 or 10ml syringe
1	22G 1" needle

5.2. All drugs and equipment to be used in procedure should be prepared before capturing the macaque.

5.3. Prepare the BDAK anaesthetic dose using 0.1ml/kg plus an extra 0.1ml/5kg to ensure a deep plane of anaesthesia.

Example: a 10kg macaque would require $0.1\text{ml} \times 10 + 0.2\text{ml} = 1.2\text{ml}$ total.

 PQMS3-MARP-SOP-0186 Anesthesia in Macaques

5.4. Prepare the examination table or bench to be used for euthanizing the macaque by placing a heat pad on it and a towel or woolly blanket over the heat pad. Turn on the heat pad and allow to warm (Fig.1).




Fig.1

5.5. Capture and restrain the macaque.

 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint.

 Two technicians are required

5.6. Anaesthetize the macaque.




 PQMS3-MARP-SOP-0186 Anaesthesia in Macaques.

 Two technicians are required

5.7. Monitor depth of anaesthesia and once macaque is unconscious with no withdrawal or blink reflex is present, carefully grab both arms of the macaque and gently hold them behind its back in a restraint hold (Fig.2).



Fig.2

- 5.8.** Carry it to the bench or table. If the macaque's weight is greater than 5kg, place it on a blanket on a trolley to move it. Place it on its back.
-  Use gas anaesthesia to maintain or deepen level of anaesthesia if required.
 -  PQMS3-MARP-SOP-0186 Anaesthesia in Macaques
- 5.9.** Prepare required dose of Sodium pentobarbitone (Lethabarb) using previously recorded weight and visual estimation if current weight is unavailable at a dosage rate of 1ml/2kg.
Example: a 4kg macaque would require 2ml of Sodium pentobarbitone (Lethabarb).
- Sodium pentobarbitone (Lethabarb) is a controlled drug and is stored in a safe. A controlled drug register which is also located in the safe, needs to be signed for the amount of Sodium pentobarbitone (Lethabarb) used by an authorized person listed in the drug register. Enter date, brief description and id of animal (i.e. euthanasia of XX111), amount used, balance of drug left in bottle, prescriber's signature and name, and procedure performed (i.e. IV euthanasia).
 -  PQMS3-MARP-REF-0023 Macaque and Marmoset Injection Guidelines
- 5.10.** Locate the saphenous vein. Insert the syringe with Sodium pentobarbitone (Lethabarb) bevel up into the vein. Draw back on syringe plunger to observe flash of blood to confirm needle is in vein. Press plunger to inject the Sodium pentobarbitone (Lethabarb) into vein.
- For small animals, a catheter can also be used to administer Sodium pentobarbitone (Lethabarb).
 - The femoral vein can alternatively be used if the saphenous vein is too collapsed.
- 5.11.** Confirm death by absence of heart beat and breathing. Pupils will be fixed and dilated.
- 5.12.** A post mortem is now conducted.
- 5.13.** Once post mortem completed, dispose of the carcass correctly (section 6 & 7).
- 5.14.** All needles and syringes must be place into a sharps bin.
- 5.15.** Samples from the post mortem are sent to the approved Veterinary Pathologist for diagnosis together with a submission form. Copies of the submission form for the PM are kept in the Submission Forms Book.
- 5.16.** Update the details for the macaque in LabTracks. Change disposition to dead and Death Cause to the appropriate selection. Note that disposition date and death date will be entered automatically
- 5.17.** Open the Cages tab in Group manager and select the macaque in the animal's window for the cage it belonged to. Click on Remove Animals button in the menu and click on Okay in the confirmation box. This will remove the macaque from the cage.

6. PROCEDURE FOR DISPOSAL OF MACAQUE CARCASSES AT REDACTED

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Black Marker
QUANTITY	MATERIAL DETAILS
1	Heavy Duty Garbage bag
1	Clinical Waste Disposal Bag

6.2 Place the macaque carcass for disposal into a heavy-duty garbage bag and tie securely.

6.3 Then place the heavy-duty garbage bag into a yellow biohazard bag and tie securely.

6.4 Write "For incineration only" clearly on the bag with a black marker.

6.5 Place in freezer designated for biohazard waste for disposal by approved contractors.

7. PROCEDURE FOR DISPOSAL OF MACAQUE CARCASSES FOR PC2/BC2

7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	MATERIAL DETAILS
2	Quarantine waste bags

7.2. It is the Animal Facility Manager's responsibility to ensure that macaque carcasses are collected and handled by either an Approved Arrangement Accredited Person or by a staff member directly supervised by an Approved Arrangement Accredited Person.

7.3. Macaque Carcasses are double bagged in a clinical waste bag marked "Quarantine waste for disposal only" and placed in a designated freezer until they are ready for disposal by an Agriculture Victoria's approved waste disposal company such as Sterihealth.

7.4. The carcasses are incinerated in high temperatures as per Agriculture Victoria's approved method of waste disposal.

7.5. A Quarantine Waste Log book authorized for the PC2/BC2 Project, needs to be kept for waste disposal and can be found in the Animal Facility Manager's Office. This must include the disposal method, the quantity and content of the bags placed in the Quarantine Waste Bin and should be able to be reconciled with certificates received from the approved waste disposal company.

7.6. A date of disposal should be noted against all macaque carcasses and a final collection date should be recorded to match the date of the carcasses being collected and taken away by the approved waste disposal company.

7.7. This must correspond to the receipt for the collection of the waste as provided by the approved waste disposal company.

7.8. All receipts should be kept on file in the Animal Facility Manager's Office.

8. ANIMAL MONITORING & WELFARE

- 8.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 8.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 8.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 8.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for Reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

9. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref no. 24354	Macaque Area Risk Assessment - [REDACTED]
SARAH REF no. 39409	MARP- Working with Large Animals and Non-human Primates.
PQMS3-MARP-REF-0023	Macaque and Marmoset Injection Guidelines
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-SOP-0117	Entry and Exit Procedures to Macaque Facilities - [REDACTED]
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque Facility [REDACTED]
PQMS3-MARP-SOP-0186	Anaesthesia in Macaques
EXTERNAL REFERENCES	
Monash OHSE MANAGEMENT OF SUSPECTED EXPOSURE TO MACACINE ALPHAHERPES VIRUS 1 (B VIRUS) PROCEDURE	



DOCUMENT HISTORY			PQMS3-MARP-SOP-0208-V3.docx	
Version no.	Date of Issue	Reviewed by: Name		Amendments
		Irrelevant Information	OHS	
1	29/03/2017	Irrelevant Information		Original document
2	28/10/2019			Updated Animal Monitoring and Welfare statement Section 1: Reference to correct anaesthesia SOP Section 2: SOP-0298 superseded. Section 4: REF-0350 superseded, correct name for TB screening and new macaque first aid flow chart. Section 7: Corrected reference to macaque anaesthesia.
3	20/06/2022		Irrelevant Information	Changed approver from Irrelevant Information Added OHS column to Document History Updated Document Authorisation and footer formatting Section 4: Updated reference to risk assessment, Removed reference to superseded document SOP-0143 Added new Monash OHS policy document Section 5: Altered 5.13 to refer to new sections 6 & 7 Added Sections 6 & 7 from SOP-0042 which is now no longer required. Section 9: Updated references Added SARAH Ref no. 39409

BLOOD COLLECTION IN MACAQUES (01/06/2020)

PQMS3-MARP-SOP-0233-V2.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

Irrelevant Information

4- Jun- 2020 |

05- Jun- 2020 |

5: 33 PM AES

10: 49 AM AES

9: 14 AM AES

1. INTRODUCTION
1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for collecting blood from macaques.






1.2. Scope

This SOP is to be applied to all staff members working with Macaques across MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Weigh Station
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
-  PQMS3-MARP-SOP-0118 Health Monitoring of Macaques
-  PQMS3-MARP-SOP-0186 Macaque Anaesthesia
-  Ergonomics and Manual Handling

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.


3. DEFINITIONS


DEFINITION	BRIEF EXPLANATION
Occlude	To close, obstruct or prevent the passage
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents relevant to the area they will be working in:

PQMS3-MARP-RA-0160 Macaque Area Risk Assessment 

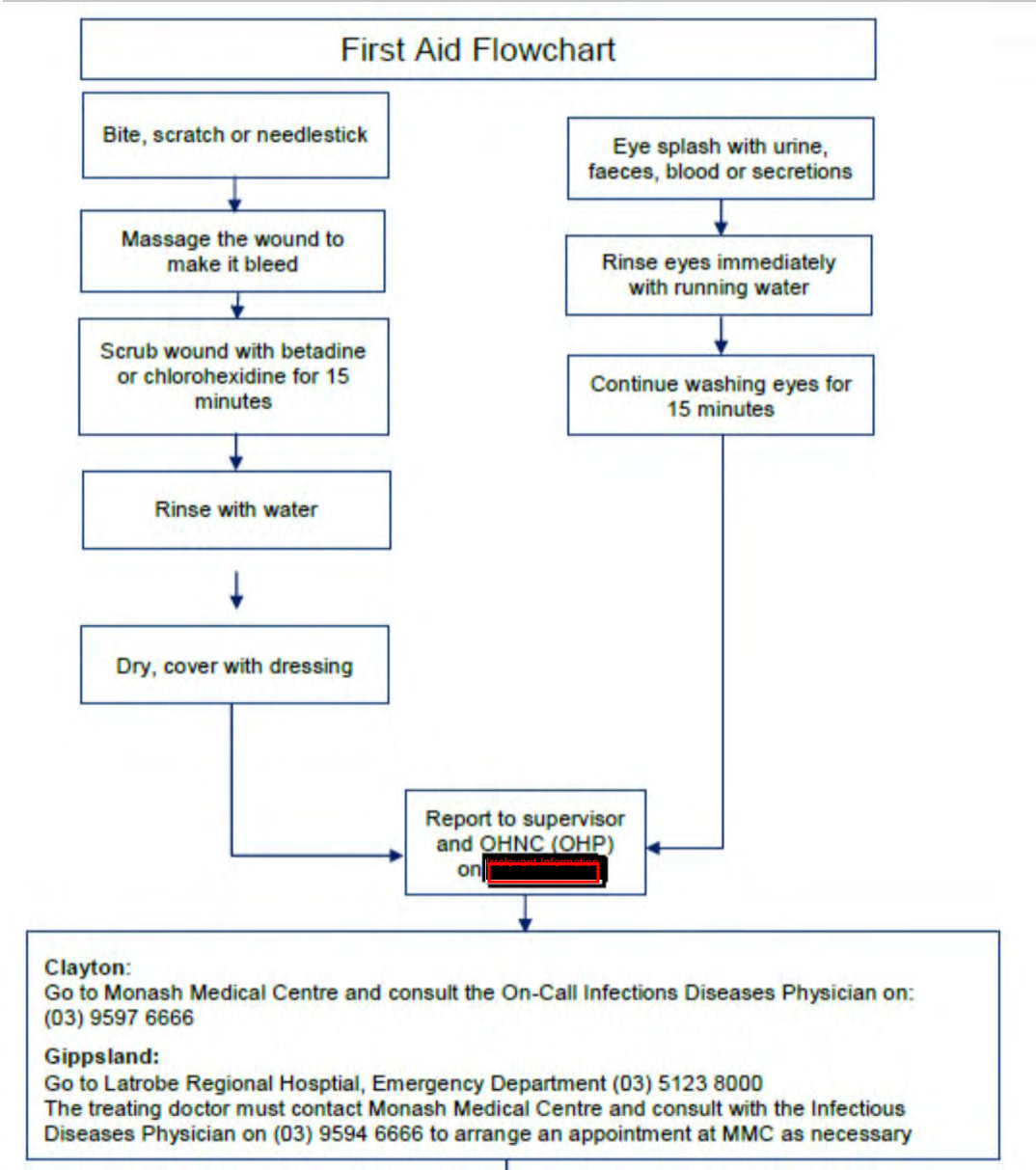
PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities 

PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility 

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility 

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area.




5. PREPARATION FOR COLLECTING BLOOD FROM MACAQUES

5.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As needed	Vacutainers: serum (yellow), plain (red), EDTA (purple), Lithium heparin (green), Sodium citrate (blue)
1	Fine tip permanent marker
1	Computer with internet access
QUANTITY	MATERIAL DETAILS
	Nil


5.2 Determine amount of blood required to be collected and any request for the blood to be collected under sterile aseptic conditions.


5.3 From the amount of blood required to be collected, determine which macaque/s will be selected for the blood collection based on the specifications of the request.

 PQMS3-MARP-SOP-0128 Macaque Animal Records

5.4 Check table for acceptable blood collection volumes for each procedure.

Weight (kg)	Total Circulatory Blood (ml) (weight x 7%)	7% <u>Minor Bleed</u> (1 week recovery)	10% <u>Moderate Bleed</u> (2 week recovery)	15% <u>Severe Bleed</u> (3 week recovery)
4.0	280	19.6	28.0	42.0
6.0	420	29.4	42.0	63.0
8.0	560	39.2	56.0	84.0
10.0	700	49.0	70.0	105.0
12.0	840	58.8	84.0	126.0
14.0	980	68.6	98.0	147.0
16.0	1120	78.4	112.0	168.0






 PQMS3-MARP-REF-0024 Macaque and Marmoset Blood Volumes and Frequency Guidelines

 These recommendations make no allowance for pregnancy, lactation, illness or the effects of genetic manipulation. Diehl KH, 2001

5.5 From the amount of blood required, the macaque/s selected for the blood collection and the acceptable blood collection volumes allowed and recovery times, determine the technique that will be utilized for the collection of blood.

TECHNIQUE	ANAESTHESIA REQUIRED	VOLUME	FREQUENCY
Saphenous vein with syringe and needle	Yes	Small (1 ml)	Allow 4 weeks between anaesthesia for animals routinely used as blood donors
Cephalic vein with syringe and needle	Yes	Small (1-2 ml)	Allow 4 weeks between anaesthesia for animals routinely used as blood donors
Femoral vein with syringe and needle	Yes	Moderate (2-10 ml)	Allow 4 weeks between anaesthesia for animals routinely used as blood donors

Saphenous vein with catheter	Yes	Large	Allow 4 weeks between anaesthesia for animals routinely used as blood donors
Femoral vein with vacutainer	Yes	Large	Allow 4 weeks between anaesthesia for animals routinely used as blood donors

-  PQMS3-MARP-REF-0024 Macaque and Marmoset Blood Volumes and Frequency Guidelines
-  The determining factor for frequency of blood collection in macaques is often the cumulative burden of anaesthesia required.
-  Excessive blood loss can have immediate or long lasting physiological effects on the animal.
-  Bleeds of 20% require replacement of blood volume with equal amounts of warmed sterile isotonic saline.
-  Poor technique can cause bruising and inflammation of the vein.

5.6 Using a permanent marker, label vacutainers with the required information, e.g. identification number, sex, date.

5.7 The most common vacutainers used for macaques are as follows (Fig.1);

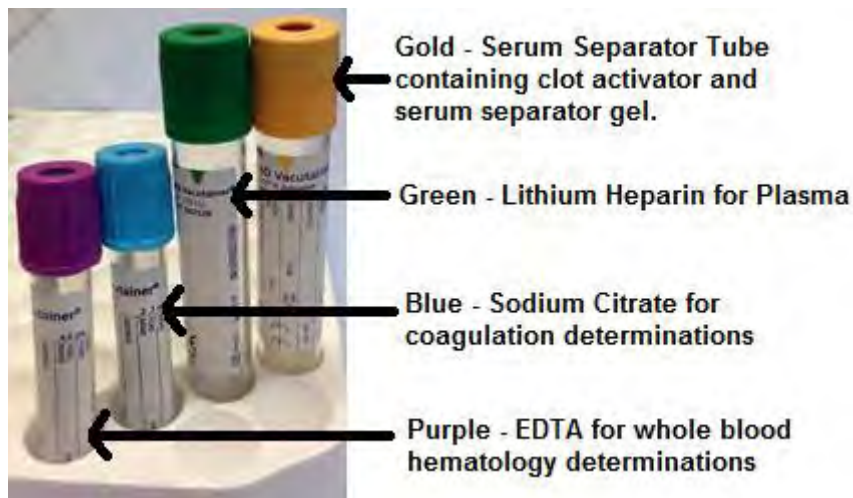


Fig.1


5.8 See section 6: Collecting Blood from Macaques using a Syringe and Needle or Section 7: Collecting Blood from a Macaque using a Catheter for blood collection technique.

6. COLLECTING BLOOD FROM MACAQUES USING A SYRINGE AND NEEDLE

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Anaesthetic Machine
1	Weighing Scales
1	Primate Housing Unit
1	Transfer Tunnel
1	Robertson Wrench
1	Heat Pad
QUANTITY	MATERIAL DETAILS
As required	Swabs
As required	70% Ethanol
As required	Tourniquet (Rubber band or forceps)
As required	Vacutainers: serum (yellow), plain (red), EDTA (purple), Lithium heparin (green), Sodium citrate (blue)
As required	Gauze or tissue
As required	22 or 23G 1" needle
As required	1 to 10 ml syringe
As required	Towel or blanket
As required	BDAK anaesthetic solution
As required	Reversal Solution

6.2 Setup Anaesthetic Machine and Table for performing blood collection.

 PQMS3-MARP-SOP-0186 Macaque Anaesthesia

6.3 Prepare needles (Fig. 1) and syringes (Fig. 2) depending on amount of blood to be collected.

SITE	NEEDLE	SYRINGE
Cephalic or Saphenous Vein	27G x 1"	1 ml
Femoral Vein	22G x 1" or 23G x 1"	3, 5 or 10 ml

 PQMS3-MARP-REF-0023 Macaque and Marmoset Injection Guidelines



Fig. 1



Fig. 2

6.4 If possible, weigh and identify the macaque with the Macaque Work Station (Fig.3) prior to proceeding with capture and restraint.

 PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station



-  The macaque is weighed before the procedure to avoid an unnecessary anaesthetic.




Fig.3

- 6.5** If significant weight loss is noted from previous weight records (>10%), then withdraw the animal from procedure.

-  Immediately contact the supervisor or MARP veterinarian.

- 6.6** Capture and restrain the macaque, then apply injectable anaesthesia (Fig.4).

 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint


 PQMS3-MARP-SOP-0186 Macaque Anaesthesia




Fig.4


- 6.7** Once unconscious or adequately sedated to safely handle, carefully grab both arms of the macaque and gently hold them behind its back in a restraint hold (Fig.5).





Fig.5

- 6.8** Weigh the macaque if it hasn't already previously been weighed in the Macaque Work Station.


 PQMS3-MARP-SOP-0118 Health Monitoring of Macaques

-  Immediately contact the supervisor or MARP veterinarian.


-  Immediately give the required dose of reversal solution.

 PQMS3-MARP-SOP-0186 Macaque Anaesthesia

- 6.9** Place the macaque on its side, tilt the head slightly to maintain an open airway and place on gas mask for anaesthetic machine.

 PQMS3-MARP-SOP-0186 Macaque Anaesthesia

6.10 Apply the required dose of reversal solution as soon as maintenance on gas anaesthesia is instituted.

 PQMS3-MARP-SOP-0186 Macaque Anaesthesia

6.11 Locate the appropriate point of vena puncture (cephalic, femoral or saphenous) (Fig.6 & 7).

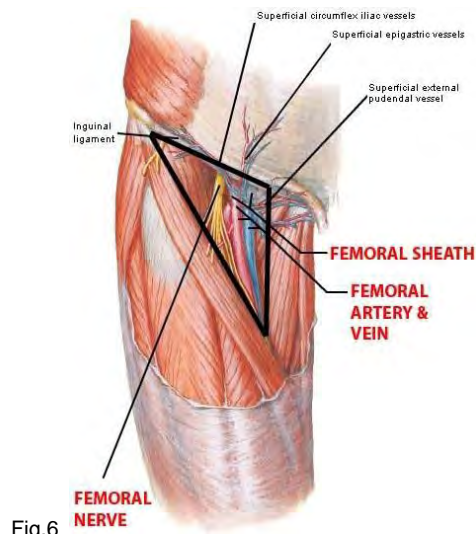
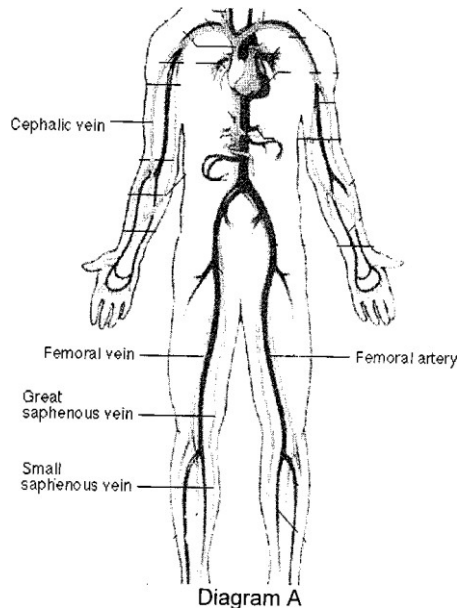


Fig.7

6.12 Swab skin at collection site with 70% ethanol.

6.13 For cephalic and saphenous veins, raise the vein by applying pressure to the vein by occluding blood flow to the limb through applying digital pressure on the vein above the site for needle insertion.

6.14 Insert needle into the vein with point down and bevel up.

Hold the needle and syringe at a very low angle when penetrating cephalic or saphenous veins.

For femoral veins a slightly higher angle may be required for mature macaques but shouldn't exceed 20 degrees.

6.15 Apply gentle withdrawing pressure to the plunger of the syringe.

A flash of blood should appear in the hub of the needle when the needle is in the cephalic or saphenous vein while the femoral vein generally has a spurt of blood appearing in the syringe.

6.16 Continue gently withdrawing the plunger of the syringe until desired amount of blood has been obtained (Fig.8).



Fig.8


- 6.17** Remove syringe and needle and insert needle into rubber top of marked vacutainer and allow the negative pressure of the vacutainer to draw blood from the syringe until vacutainer is full.
- 6.18** Discard used syringe and needles into a sharps container. Gauze, swabs and examination gloves should be disposed into biological waste bin.
- 6.19** Apply pressure to puncture site with gauze until bleeding has stopped.
- 6.20** Turn off gas vaporizer, oxygen and pulsimeter.
- 6.21** For recovery of a macaque after blood collection see section 8. *Recovery of Macaques after blood collection.*

7. COLLECTING BLOOD FROM A MACAQUE USING A CATHETER

7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Anaesthetic Machine
1	Veterinary hair clippers
1	Surgical sponge bowl
1	Weighing Scales
1	Primate Housing Unit
1	Transfer Tunnel
1	Robertson Wrench
1	Sharps Container
1	Biological waste bin
QUANTITY	MATERIAL DETAILS
As required	Swabs
As required	70% Ethanol
As required	Chlorhexidine anti-bacterial skin cleanser
As required	Iodine spray
As required	21G to 23G Butterfly catheter
As required	3ml or 5ml syringe
As required	22G needle
As required	Vacutainers: serum (yellow), plain (red), EDTA (purple), Lithium heparin (green), Sodium citrate (blue)
As required	Gauze or tissue
As required	BDAK anaesthetic solution
As required	Reversal Solution

7.2 Setup Anaesthetic Machine and Table for performing blood collection.

 PQMS3-MARP-SOP-0186 Macaque Anaesthesia

7.3 Prepare butterfly catheter (Fig. 1) and syringes (Fig. 2) depending on amount of blood to be collected.




Fig. 1



Fig. 2

7.4 Prepare chlorhexidine solution in a surgical sponge bowl.

7.5 If possible, weigh and identify the macaque with the Macaque Work Station (Fig.3) prior to proceeding with capture and restraint.

 PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Work Station


 The macaque is weighed before the procedure to avoid an unnecessary anaesthetic.



Fig.3

- 7.6** If significant weight loss is noted from previous weight records (>10%), then withdraw the animal from procedure.



Immediately contact the supervisor or MARP veterinarian.

- 7.7** Capture and restrain the macaque, then apply injectable anaesthesia (Fig.4).



PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint



PQMS3-MARP-SOP-0183 Macaque Anaesthesia



Fig.4

- 7.7** Once unconscious or adequately sedated to safely handle, carefully grab both arms of the macaque and gently hold them behind its back in a restraint hold (Fig.5).

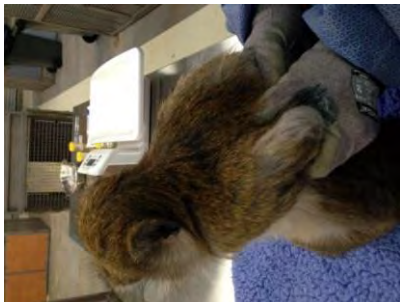


Fig.5

- 7.8** Weigh the macaque if it hasn't already previously been weighed in the Macaque Work Station.



PQMS3-MARP-SOP-0118 Health Monitoring of Macaques



The macaque is weighed before the procedure to avoid further unnecessary anaesthetic.



Immediately contact the supervisor or MARP veterinarian.




Immediately give the required dose of reversal solution.




PQMS3-MARP-SOP-0186 Macaque Anaesthesia

- 7.9** Place the macaque on its front, tilt the head slightly to maintain an open airway and place on gas mask for anaesthetic machine.

 PQMS3-MARP-SOP-0186 Macaque Anaesthesia


7.10 Apply the required dose of reversal solution as soon as maintenance on gas anaesthesia is instituted.

 PQMS3-MARP-SOP-0186 Macaque Anaesthesia

7.11. Shave the hair down the back of the leg and to the sides of the saphenous vein.

7.12. Disinfect the skin by spraying area with 70% ethanol, then wipe area with chlorhexidine solution in an outwards progression, without going over the same area twice. Dry skin by repeating the pattern with dry swabs, then lightly spray area with iodine spray and then 70% ethanol. Allow to dry thoroughly before continuing with blood collection.


7.13. Apply pressure to the vein by occluding blood flow to the limb through applying digital pressure on the vein above the site for needle insertion.

 Ensure that there's no contact with the disinfected area where blood collection will take place.


7.14. Remove cap and sheath from butterfly catheter and then insert needle of the catheter into the vein with point down and bevel up at a low angle of penetration.


7.15. Once blood starts flowing in tube, flatten out angle of catheter and gently push it along the vein until most of catheter's needle is under the skin.

7.16. Attach a 3ml or 5ml syringe to end of catheter and gently withdraw plunger of the syringe to draw up blood.

 Only apply minimal pressure when withdrawing plunger of syringe in order to avoid collapse of the vein.

7.17. Once syringe is full, decant contents of syringe into marked vacutainer by attaching a 22G needle to the syringe and pushing through rubber cap of the vacutainer.

 Ensure that the vacutainer is resting securely in a holder. Do not hold the vacutainer while inserting the needle into it.

 Allow the negative pressure within the vacutainer to draw the blood out of the syringe. If pressure is required to fill the vacutainer with blood, gently push the plunger of the syringe to dribble the blood onto the side of the vacutainer.

7.18. If more blood is required, attach another syringe and continue withdrawing blood through catheter.

7.19. Once required amount of blood has been collected, withdraw catheter from puncture site and apply pressure to puncture site with gauze until bleeding has stopped.

7.20. Discard used catheter into a sharps container. Gauze, swabs and examination gloves should be disposed into biological waste bin.

7.21. Turn off gas vaporizer, oxygen and pulsimeter.

7.22. For recovery of a macaque after blood collection see section 8. *Recovery of Macaques after blood collection.*

8. COLLECTING BLOOD USING STERILE ASEPTIC TECHNIQUE

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Sharps Container
1	Biological waste bin
QUANTITY	MATERIAL DETAILS
As required	Catheter Dressing (IV3000 standard or equivalent)
As required	21 or 23G Butterfly Catheter
As required	3ml or 5ml syringe
As required	22G needle
As required	Pair of sterile gloves
As required	70% Ethanol
As required	Vacutainers: serum (yellow), plain (red), EDTA (purple), Lithium heparin (green), Sodium citrate (blue)
As required	Gauze or tissue

8.2 Follow all steps from section 7 with the following differences.

8.3 Spray tops of vacutainers with 70% ethanol.

Allow to dry thoroughly before use.

8.4 The operator taking the blood samples will wear sterile gloves, ensuring that they are put on correctly so to avoid contamination.

8.5 Prior to step 7.13, the assistant opens a catheter dressing for the operator, who carefully removes the dressing and applies it onto the site for collection.

Ensure that the sterile catheter dressing is only handled with the sterile gloves of the operator.

8.6 The assistant will then open a catheter pack for the operator, who carefully removes the catheter and inserts it into the vein as for step 7.14.

Ensure that the catheter is only handled with the sterile gloves of the operator.

8.7 After step 7.15 is completed, the assistant will then open a syringe pack for the operator, who carefully removes the syringe and attaches it to the catheter.

Ensure that the syringe is only handled with the sterile gloves of the operator.

8.8 Once syringe is full of blood as per step 7.16, the syringe is passed by the operator to the assistant, who will decant the contents of the syringe into a vacutainer as per step 7.17.

Ensure that the end of the syringe doesn't touch any surfaces before being attached to a needle and then doesn't touch any surfaces before being inserted into a vacutainer.

8.9 Continue steps 8.7 and 8.8 until the required amount of blood is collected.

8.10 Follow steps 7.19 to 7.22 to complete blood collection under sterile aseptic conditions.

9. RECOVERY OF MACAQUES AFTER BLOOD COLLECTION

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Primate Housing Unit
1	Transfer Tunnel
1	Robertson Wrench
QUANTITY	MATERIAL DETAILS
Nil	

9.2 Open the compartment door of the recovery cage (Fig.1).



Fig.1

9.3 Using a restraint hold, carry the macaque back to recovery cage (Fig.2).



Fig.2


9.4 Place the macaque in a recovery position facing outwards of the cage so that breathing and reflex can be observed and lock the door.

9.5 Observe the breathing and reflex withdrawal of the macaque until fully conscious and able to stand upright and move around. Contact the facility supervisor or MARP veterinarian immediately if a complication arises or the macaque doesn't show any signs of consciousness after 30 minutes.

 PQMS3-MARP-REF-0030 Macaque Health and Signs of Illness

9.6 Once the macaque is moving around and acting normally return to its group.

 PQMS3-MARP-REF-0030 Macaque Health and Signs of Illness

 PQMS3-MARP-SOP-0122 Returning macaques to Flexagons

10. ANIMAL MONITORING & WELFARE

- 10.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 10.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 10.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 10.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate within 72 hours of its detection. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

11. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-REF-0023	Macaque and Marmoset Injection Guidelines
PQMS3-MARP-REF-0024	Macaque and Marmoset Blood Volumes and Frequency Guidelines
PQMS3-MARP-REF-0030	Macaque Health and Signs of Illness
PQMS3-MARP-SOP-0034	Equipment Operations – Macaque Work Station
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-SOP-0105	Equipment Operations – Primate Housing Units for Macaques
PQMS3-MARP-SOP-0118	Health Monitoring of Macaques
PQMS3-MARP-SOP-0122	Returning Macaques to Flexagons
PQMS3-MARP-SOP-0128	Macaque Animal Records
PQMS3-MARP-SOP-0186	Macaque Anaesthesia
EXTERNAL REFERENCES	
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013) https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes
NHMRC Guidelines	Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals https://www.nhmrc.gov.au/about-us/publications/guidelines-promote-wellbeing-animals-used-scientific-purposes
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016) https://www.nhmrc.gov.au/about-us/publications/principles-and-guidelines-care-and-use-non-human-primates-scientific-purposes
Veterinary Guidelines	Diehl, K.-H. et al., "A Good Practice Guide to the Administration of Substances and Removal of Blood, Including Routes and Volumes", <i>J. Appl. Toxicol.</i> , 21 , 15–23 (2001)
Monash OHSE	Using Biologicals and Animals at Monash University https://www.monash.edu/_data/assets/pdf_file/0006/147156/using-biologicals.pdf
Monash OHSE	Monash Move Smart https://www.monash.edu/_data/assets/pdf_file/0006/148596/movesmart.pdf
Monash OHSE	Monash OHSE Immunization https://www.monash.edu/_data/assets/pdf_file/0003/147117/immunisation-procedure.pdf
Monash OHSE	Monash OHSE Immunization Grid https://www.monash.edu/ohs/info-docs/safety-topics/immunisations
Monash OHSE	Monash OHSE Monkey B-virus https://www.monash.edu/_data/assets/pdf_file/0020/147125/monkey-b-virus.pdf



DOCUMENT HISTORY		irrelevant information	PQMS3-MARP-SOP-0233-V2.docx
Version no.	Date of Issue		Amendments
1	02/06/2017	[Redacted]	Original document
2	01/06/2020		Updated Animal Monitoring and Welfare statement Updated first aid flowchart, added section for sterile aseptic blood collection, added steps to blood collection using a catheter

TRANSPORT OF MACAQUES (21/03/2022)

PQMS3-MARP-SOP-0284-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
Irrelevant Information	29-Mar-2022 9:20 AM AEDT
	29-Mar-2022 9:47 AM AEDT
	29-Mar-2022 11:14 AM AEDT

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used for transporting macaques at Monash Animal Research Platform facilities.




1.2. Scope

This SOP is to be applied to all staff members working with macaques.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:



-  Biosafety 2 Course: Monash University.
-  PQMS3-MARP-REF-0679. Biosecurity Operations Manual 

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
AA	Approved Arrangement (Formerly known as QAP)
AA Accredited Staff	Staff that have successfully completed either the AA Online Training or the Monash Biosafety 2 Course.
ARL	Animal Research Laboratory
BC1	Biosecurity Containment Level 1 (Animal Only Containment)
BC2	Biosecurity Containment level 2 (Animals and Microbiologicals Containment)
EAF	Experimental Animal Facility
 Irrelevant Information	

PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

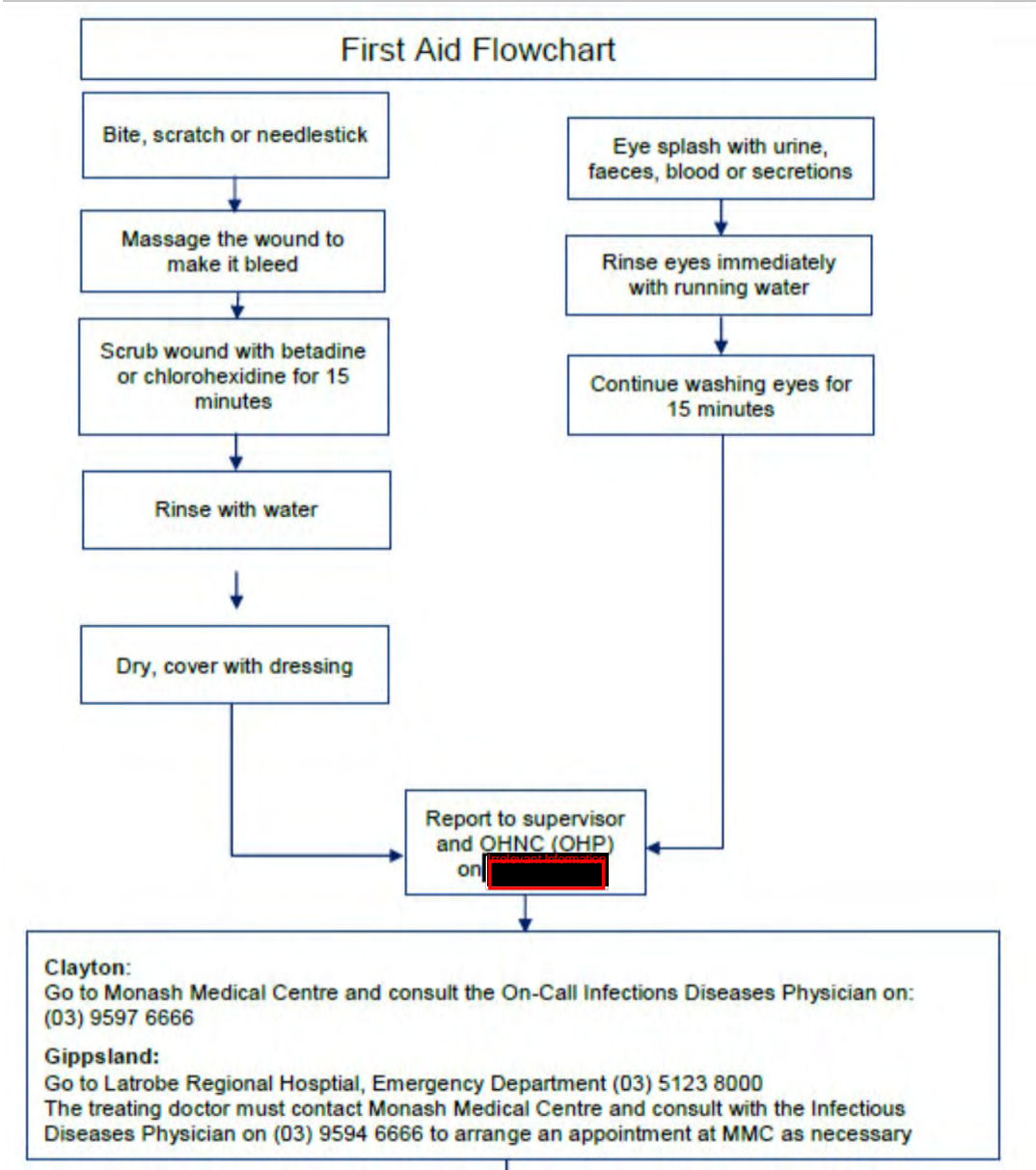
Persons performing this SOP must have read and understood the following documents relevant to the area they will be working in:

PQMS3-MARP-RA-0160 Macaque Area Risk Assessment REDACTED

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities REDACTED

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantIFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area.





5. TRANSPORTING MACAQUES INTO THE FACILITY

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Primate Housing Units
1	40cm length of small gauge chain
1	Robertson Wrench
QUANTITY	MATERIAL DETAILS
As required	F10 Sc

5.2 Macaques transported into the Macaque Facility [irrelevant information], must go into the AA BC1 Containment Area [irrelevant information] approved as a Class 5.1 indoor/outdoor animal containment for post arrival quarantine under requirements set out in the criteria for AA premises and any other conditions the Department of Agriculture and Water Resources (DAWR) may set out.

 Department of Agriculture and Water Resources Approved Arrangement for 5.1: Biosecurity containment level 1 (BC1) <http://www.agriculture.gov.au/SiteCollectionDocuments/biosecurity/import/arrival/approved-arrangements/class-5.1.pdf>

 PQMS3-MARP-REF-0679. Biosecurity Operations Manual [irrelevant information]

Any non-disposable items or equipment that may have come into contact with quarantine material must be sterilised or disinfected by wiping with 80%v/v ethanol or F10 Sc (1:125 dilution) before removal from the facility.

If staff have not completed the online Biosecurity Course or the Biosafety 2 they must be supervised by an Accredited AA staff member.


A registered veterinarian must inspect the BC1 Area before entry of any animal to ensure it has been cleaned and disinfected to his/her satisfaction.

5.3 Upon arrival into Australia and once cleared through Customs and Quarantine, macaques will be collected by AA Accredited Staff from Monash University to be transported to the BC1 Approved Arrangement [irrelevant information]

The vehicle used for transport must have a closed compartment for transporting macaques.

The vehicle used for transport must be disinfected prior to being used for transport using F10SC (dilution 1:125) and allowed to soak for 30 minutes before being rinsed off with water.

The vehicle used for transport needs to be able to maintain a constant temperature of 20°C.



 Extremes of temperature need to be avoided as the macaque is already likely to be under some stress as a result of transit.

5.4 The transport boxes holding the animals will be loaded into the vehicle and then driven from the airport to the BC1 Approved Arrangement [irrelevant information] by the most direct route.

5.5 Once at the BC1 Approved Arrangement, the vehicle will park as close as possible to the entrance to the BC1 Approved Arrangement.

5.6 The transport boxes will be lifted from the back of the transport vehicle and carried into [irrelevant information] and into the animal cages.

 Two staff are required for carrying the transport boxes.

-  Primate Housing Units will have been set up within the animal cages to temporarily house the macaques.
-  PQMS3-MARP-SOP-0105 Equipment Operations – Primate Housing Units for Macaques

5.7 Attach a small piece of small gauge chain to the sliding door of the lower compartment of the Primate Housing Unit (Fig.1).

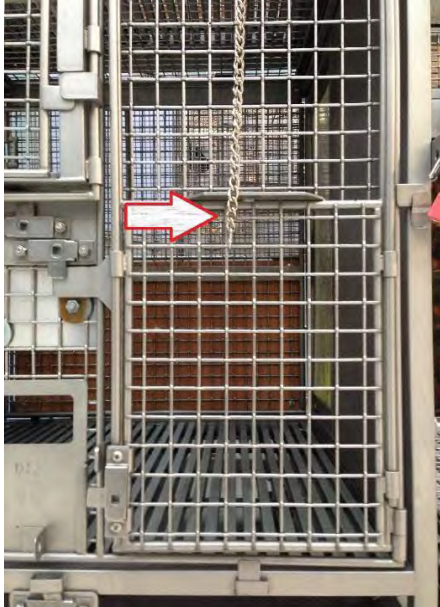


Fig.1

5.8 Once the transport boxes are within the animal cages, manoeuvre the transport box against the lower section of the Primate Housing Unit so that the entry door of the transport box can be pushed against the sliding door of the lower compartment of the Primate Housing Unit (Fig.2).

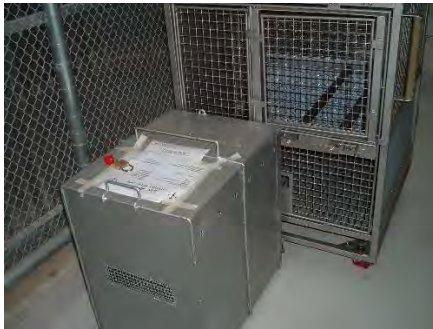








Fig.2

- 5.9** Ensure that the transport box is firmly pressed against the Primate Housing Unit, then open the sliding door of the Primate Housing Unit by pulling up the chain.
- 5.10** Then open the door of the transport box, allowing the macaque to run into the Primate Housing Unit (Fig.3).



Fig.3

- 5.11** Push down the door of the Primate Housing Unit and lock it with a Robertson Wrench.
- 5.12** The macaque/s are housed in the Primate Housing Unit for several days to allow them to recover from their trip.
-  Within this time the animals are closely monitored for health and behaviour. Before they are released into the larger cages within the QAP Area, faecal and blood samples are taken for analysis.
 -  PQMS3-MARP-SOP-0118 Health Monitoring of Macaques
 -  PQMS3-MARP-SOP-0233 Blood Collection in Macaques
- 5.13** Then the macaque/s are released into the larger cages within the QAP Area which have indoor/outdoor access.
-  Animals must serve a 30 day Post Arrival Quarantine period within the QAP Area.
 -  While in Post Arrival Quarantine, each animal must be tested for tuberculosis for negative results using intradermal mammalian tuberculosis testing.
 -  PQMS3-MARP-SOP-0118 Health Monitoring of Macaques
- 5.14** Vehicles for transporting animals must not leave the Approved Arrangement Area until thoroughly cleaned and disinfected inside with F10 Sc (1:125 dilution).
- 5.15** Transport Boxes used for quarantine purposes must either be disposed of by an approved quarantine method or thoroughly cleaned and disinfected with F10 Sc (dilution 1:125).

6. TRANSPORTING MACAQUES OUT OF THE FACILITY


6.8 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Transport Boxes (Small Plastic or Large Metal)
1	Flatbed Trolley
1	Foaming Gun
1	Hose & Nozzle
1	40cm length of small gauge chain
As required	Padlocks and keys
As required	Food Dish
QUANTITY	MATERIAL DETAILS
As required	F10 Sc
As required	Labels
As required	Cable Ties 370mm x 7.6mm
As required	Shredded Paper
As required	Sterile Moisture Tube Sachets
As required	Macaque pellets

6.9 Macaque Transport Boxes are stored in the relevant information.

- Transport Boxes should be cleaned out by the client before they are returned.
- They should be checked to see if they're empty and then hosed out with hot water in the Wash Area relevant information before F10SC is applied with a Foaming Gun at a dilution rate of 1:250. They are allowed to stand for 30 minutes before being rinsed with hot water and allowed to dry. Then they are stored in the Hay Shed.

6.10 There are two types of Transport Boxes used for transporting macaques. The smaller, lighter plastic version is suitable for macaques up to 7kg (Fig.1). Macaques larger than 7kg should be transported in the Larger Metal Transport Boxes (Fig.2).

-  The Metal Transport Boxes are heavy and require two staff to move safely.

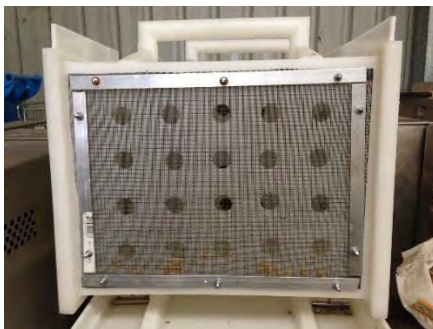



Fig.1



Fig.2

6.11 Collect the required number of transport boxes from the Hay Shed, depending on what size macaques are being transported and unload them at the Loading Bay entrance of the macaque facility.

- Use the Toro Club Car
-  Two staff are required if transporting the metal transport boxes.

6.12 The transport boxes should be stacked on a low flatbed trolley for moving within the macaque facility.

- 6.13** Move them into the Wash Area (irrelevant) and hose each transport box with hot water, before F10SC is applied with a Foaming Gun at a rate of 1:250. Allow the boxes to stand for 30 minutes before rinsing with hot water and allow to dry.
- 6.14** Prepare and print out a delivery label including:
- Client name and address
 - Our address for box return
 - Emergency contact details: name and mobile number
- 6.15** Attach label to top of each transport box.
- 6.16** Cover floor of each transport box with 3cm of shredded paper.
- 6.17** Open a sterile moisture tube sachet into each transport box. The transport boxes are ready for use.
- For animals travelling distances of over 5 hours, a food dish is filled with macaque pellets and placed within the transport box. The amount of pellets supplied depends on the age of the macaque being transported.
- 6.18** Place a transport box onto the flatbed trolley and wheel it to near the flexagon of the macaque/s to be transported.
- 6.19** Attach a Primate Housing Unit to the Flexagon.
- PQMS3-MARP-SOP-0105 Equipment Operations – Primate Housing Units for Macaques
- 6.20** Capture the macaque/s to be transported in the Primate Housing Unit.
- PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
- 6.21** Attach a small piece of small gauge chain to the sliding door of the lower compartment of the Primate Housing Unit (Fig.3).

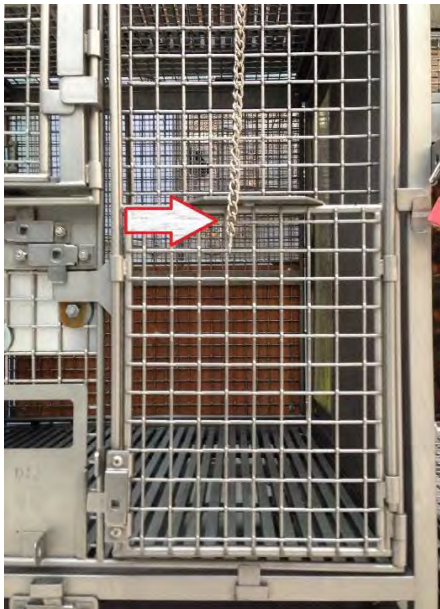


Fig.3

- 6.22** Manoeuvre the transport box against the lower section of the Primate Housing Unit so that the entry door of the transport box can be pushed against the sliding door of the lower compartment of the Primate Housing Unit (Fig.4).




Fig.4

- 6.23** Ensure that the transport box is firmly pressed against the Primate Housing Unit, then open the door of the transport box (Fig.5).



Fig.5

- 6.24** Then open the sliding door of the Primate Housing Unit by pulling up the chain, allowing the macaque to run into the transport box.
- 6.25** Once the macaque has run into the transport box, close the door of the transport box and either lock it with a padlock for the metal transport boxes or release the latch for the smaller plastic transport boxes.
- The doors of the small plastic transport boxes are additionally secured by the use of cable ties.
- 6.26** Push the flatbed trolley containing the transport box with the macaque inside, to the loading bay doors of the macaque facility, ready for pickup by an approved animal courier such as Dogtainers or JetPets.
- The vehicle used for transport needs to be able to maintain a constant temperature of 20°C.
 -  Extremes of temperature need to be avoided as the macaque is already likely to be under some stress as a result of transit.
 - The vehicle used for transport must have a closed compartment for transporting macaques.

7. UNLOADING MACAQUES TO AND FROM [redacted]

7.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Primate transport boxes
1-2	Octopus straps
1	Step ladder

7.2 Incoming macaques only arrive from the [redacted] Facility.

7.3 Macaques that are held at [redacted] are usually long term with the occasional short distance travel to the [redacted] for MRI scanning, for loading animals, see section 8 below.

7.4 Ensure that its new cage is ready and made up prior to its arrival. Lock out any other animals to the outside access area to avoid disruption.

7.5 Unload the transport boxes from the vehicle onto the hydraulic trolley, pictured in figure 6. Only one box may fit at a time. To raise the trolleys platform, pump the lever with your foot until the desired height is achieved. To lower the platform, use the hand lever on the top of the handle and squeeze.




Figure 6.



Two staff are required for lifting.

7.6 Once in the facility, the hydraulic trolley will be utilised to ensure that the transport boxes align with the cage doors.

7.7 Once the cage has aligned, hook the octopus strap on the cage and around the transport box. This helps keep the box in line with the cage and secure. See figure 7 and 8 below which also highlights the difference in caging between [redacted].

Figure 7. Caging in Figure 8. Caging in 

- 7.8** Only unlock the door on the transport box once the cage is lined up, secured and safe. A technician is to hold both the cage door and the transport box door up at the same time. A step ladder may be required if the trolley and box height is too high for the operator. See figures 9 and 10 below.



Figure 9.



Figure 10.

- 7.9** Once the doors are open, the animal is able to enter the cage.
- 7.10** Close both doors and ensure that the cage door is locked with the padlock.

8. LOADING MACAQUES INTO TRANSPORT BOXES relevant information

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Primate transport boxes
1-2	Octopus straps
1	Step ladder
QUANTITY	MATERIAL DETAILS
As required	F10 Sc
As required	Shredded paper

- 8.2 Macaques held at relevant info are usually long term with the occasional short distance travel to the irrelevant for MRI scanning.
- 8.3 Loading animals into the transport box requires up to 3 technicians. The same procedure is used in both irrelevant information
- 8.4 Refer to 6.3 for transport cage types and the weight allowance for each.
- 8.5 Once the correct transport box is recognised, place 3cm of shredded paper within the box. Shredded paper is located in the prep areas.
- 8.6 With the transport box on the hydraulic trolley, secure the transport box to the cage. See figures 7 and 8.
- 8.7 Ensure the door to the transport box and cage are both open for the animal to enter. Refer to figures 9 and 10.
- 8.8 To encourage the movement of the animal into the transport cage, the squeeze back mechanism in the cages may be used.
- 8.9 Once the animal is inside, slide down the doors and lock with a padlock for the metal transport boxes and release the latch on the smaller white plastic transport box.
- The doors of the small plastic transport boxes are additionally secured by the use of cable ties.
- 8.10 There are occurrences where animals are also transported to the surgery room in relevant info for health checks and are therefore anaesthetised prior to transporting. Refer to PQMS3-MARP-SOP-0186- Anaesthesia in Macaques.
- 8.11 To prepare the transport box, refer to 6.3 for transport cage types. For an anaesthetised animal, place 1-2 towels, depending on the size of the box instead of shredded paper.
- 8.12 Once the animal is anaesthetised, refer to PQMS3-MARP-SOP-0104- Macaques - Capture & Restraint and place the animal inside the transport box lying on its side with its neck elongated and ensuring there is enough space to maintain a clear airway.
- 8.13 Once in the transport cage, refer to 8.9, placing the animal on the hydraulic trolley to reduce manual handling.
- 8.14 The animal can now be transported to relevant info. On return animals are generally recovered or awake
- 8.15 Unloading animals (either conscious or anaesthetised) is as per section 7.

9. ANIMAL MONITORING & WELFARE

- 9.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 9.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 9.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 9.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

10. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-SOP-0105	Equipment Operations – Primate Housing Units for Macaques
PQMS3-MARP-SOP-0118	Health Monitoring of Macaques
PQMS3-MARP-SOP-0233	Blood Collection in Macaques
PQMS3-MARP-REF-0679	Biosecurity Operations Manual [REDACTED]
EXTERNAL REFERENCES	
Department of Agriculture and Water Resources Approved Arrangement for 5.1: Biosecurity containment level 1 http://www.agriculture.gov.au/SiteCollectionDocuments/biosecurity/import/arrival/approved-arrangements/class-5.1.pdf	

DOCUMENT HISTORY		[redacted] irrelevant information	PQMS3-MARP-SOP-0284-V3.docx	
Version no.	Date of Issue		by: Name	Amendments
			OHS	
1	23/03/2017			Original document
2	17/6/2019			Updated Animal Monitoring and Welfare statement Added [redacted] information – sections 7 and 8 Updated [redacted] information. – sections 1 to 6
3	21/03/2022		[redacted] irrelevant information	Removed reference to superseded document PQMS3-MARP-SOP-0224 - Equipment Operations – Toro Workman E2050 [redacted] Updated document authorisation and document history panels Updated footer formatting

TREATMENT OF MACAQUES (17/02/2022)

PQMS3-MARP-SOP-0288-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from date of issue
Irrelevant Information	22-Feb-2022 10:58 AM AEDT
	22-Feb-2022 12:27 PM AEDT
	22-Feb-2022 4:10 PM AEDT

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for treatments of macaques.



1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Area of irrelevant Information at irrelevant Information.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-REF-0030 Macaque Health and Signs of Illness
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
SOP	Standard Operating Protocol – A Controlled Document
WIN	Work Instructions – A Controlled Document
Tunnel Adaptor	Flexible tunnel used to connect Non-Human Primates' Caging Systems together

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

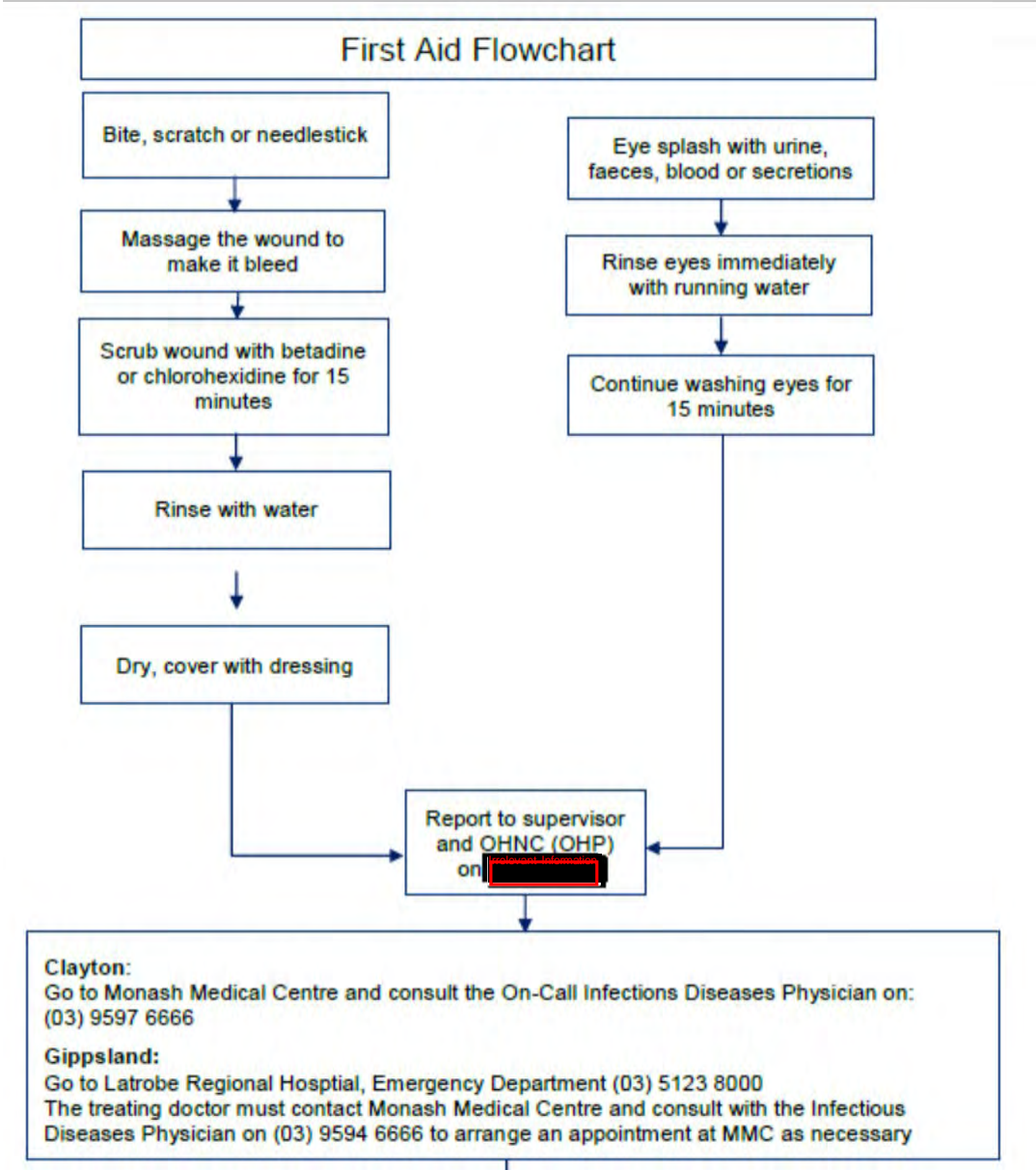
Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment [redacted]

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities [redacted]

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the [redacted] of [redacted].



5. PROCEDURE ON INITIAL DISCOVERY OF SIGNS OF ILL HEALTH

5.1. Equipment & materials require for this procedure.

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
QUANTITY	MATERIAL DETAILS
1	Macaque Treatment Sheet
varies	Various medications as prescribed


5.2 Upon observation of ill health or injury to a macaque, unless the macaque is already isolated or restrained from its group due to a procedure being undertaken, separate the macaque from the group into a Primate Housing Unit which allows closer observation of the macaque, especially wounds or changes in body condition.


 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

 If the animal is located at irrelevant, place a divider into the cage or move into individual recovery cage.


5.3 The MARP Veterinarian is contacted immediately to report the observed signs of ill health in the macaque and suggested treatments.

 PQMS3-MARP-REF-0647 Sign – irrelevant Animal Emergency Contacts


 PQMS3-MARP-eFRM-0114 – relevant information Telephone List


 Notify the Animal Facility Manager if this hasn't already been done.


5.4 Create a Wellness Report for the Macaque by opening the Wellness tab in the Health Manager within Labtracks. Select the group, then animal's ID and click on the Add Button to open the Wellness Report Window where details of the animal's condition can be added.

 Enter Report Type, Date Ist Observed, Reported By, Vet Attention (always MARP Vet), Observation, Clinical Score, Occurrence and New or Recurrent fields. Add a brief summary of condition in the Technician Comments' box and Vet Treatment Plan if instructed by the MARP Vet over the phone.

5.5 A Treatment Sheet is prepared for the macaque and treatments scheduled in Labtracks within the Rx/Tx tab of the Health manager.

 PQMS3-MARP-FRM-0025 Macaque Treatment Sheet

 Add details of the macaque's ID, Species, Location, Date and observations about the macaque's injury or illness in the comments section of the Treatment Sheet.

 Single Medications are added through the Rx/Tx tab of the Health Manager as prescribed by the MARP Veterinarian

6. PROCEDURE FOR ACUTE TREATMENTS OF MACAQUES

6.1 Equipment & materials require for this procedure.

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
QUANTITY	MATERIAL DETAILS
1	Macaque Treatment Sheet
varies	Various medications as prescribed

6.2 Macaques requiring acute treatments generally need to be kept separate from their group for the duration of the treatment period in a Primate Housing Unit located either next to their home group or in the Infirmary irrelevant.

- Macaques given a single administration of a drug can be placed back into their group under observation if recommended by the MARP Veterinarian.
- If the macaque is located in irrelevant, and the animal is not individually housed, it can be separated by a cage divider or by moving the animal into an individual recovery cage.

6.3 Locate the macaque's ID entry in the open section in the Rx/Tx tab of the Health Manager within Labtracks, where the drugs prescribed will be listed (Fig.1).

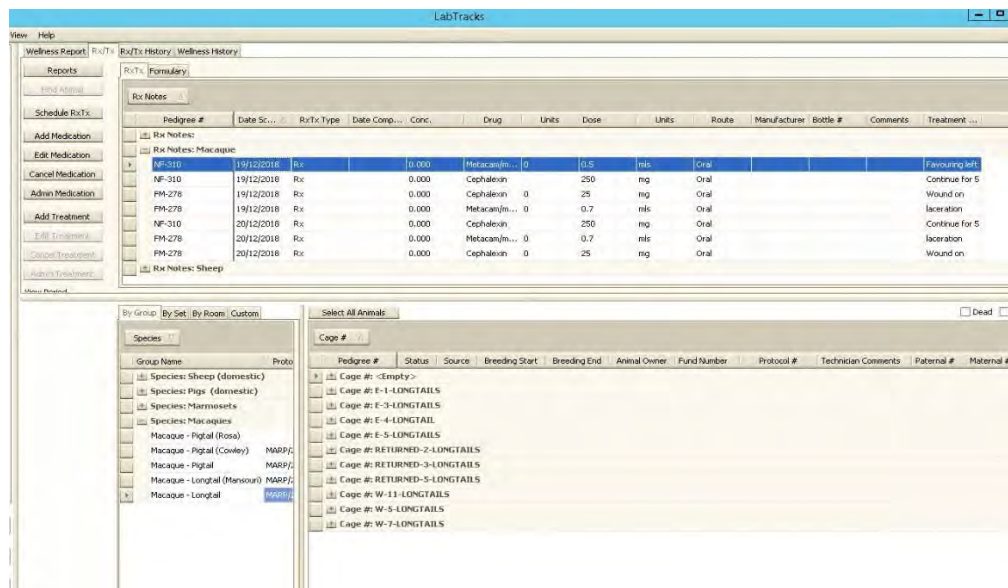


Fig.1: Rx/Tx tab in Health Manager

- 6.4** Collect the medication from the drug cabinet in the Examination Room AS-167 (Fig.2). Lock the cabinet after use (Fig.3).



Fig.2



Fig.3

- 6.5** Prepare the medication for application to the Macaque according to the amount listed in Labtracks. To encourage consumption, Oral medicines are usually provided on a tasty treat like banana or a muffin, depending on the animal's preferences.
- 6.6** Record Medication provided to the Macaque in Labtracks by highlighting the animal's ID in the Clinical Manager, Rx/Tx section and clicking on Admin Medication to open the Rx Administration window (Fig.4).

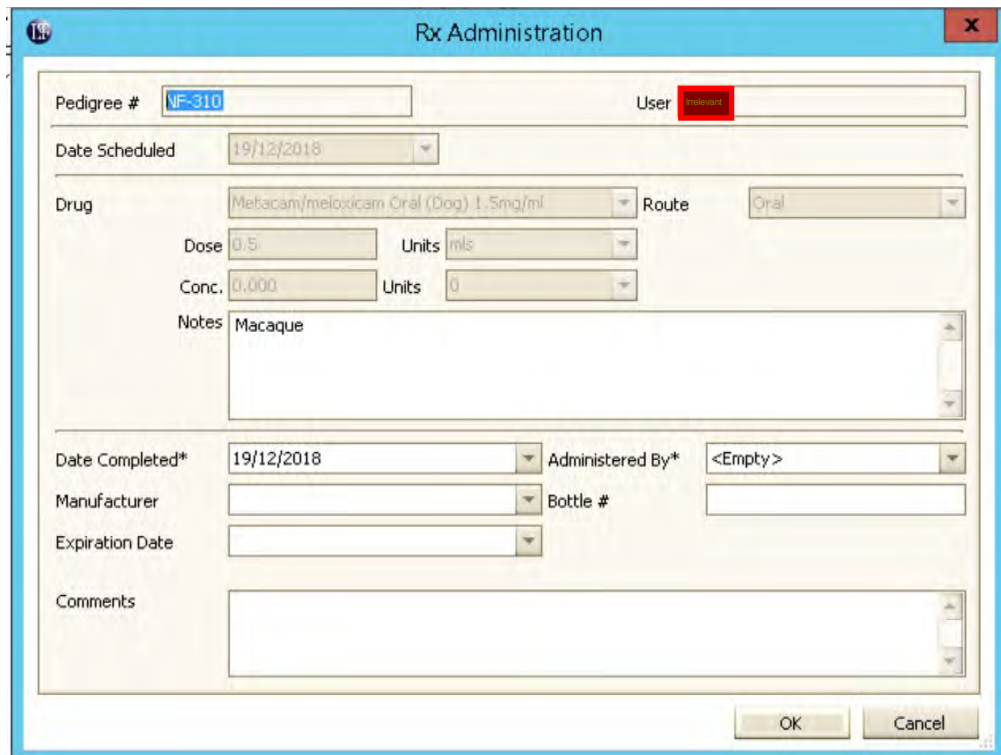







Fig.4: Rx Administration Window

- 6.7** Record method of administration of the drug in Labtracks by clicking on Procedures and then the Selection box and choosing Other Procedure.
- 6.8** Then click on the Add Button to open the New Procedure – Other Window and select the method of administration from Procedure Type box, i.e. Dosing – Oral.
- 6.9** Enter N/A for Task Number and enter the name and amount of drug administered in the Note section. Click on OK to confirm the details and close the window.

- 6.10** **Record** RX/TX in the Macaque Treatment Sheet and consult with the MARP Veterinarian immediately on any adverse changes in condition of the Macaque.
-  PQMS3-MARP-FRM-0025 Macaque Treatment Sheet
- 6.11** Record Physical Examinations in Labtracks as requested by the instructions from the MARP Veterinarian.
-  PQMS3-MARP-SOP-0118 Health Monitoring of Macaques
- 6.12** After the prescribed period of treatment, consult with the MARP Veterinarian about approval to return the Macaque to its home group.
-  PQMS3-MARP-SOP-0122 Returning Macaques to Flexagons
- 6.13** Once settled back into the home group without incident, the macaque's Wellness Report and Treatment Sheet can be updated and archived.
-  PQMS3-MARP-FRM-0025 Macaque Treatment Sheet
-  Continue performing visual physical examinations until the macaque's Wellness Report is closed and archived, even if no medications are administered.

7. PROCEDURE FOR CHRONIC TREATMENTS FOR MACAQUES

- 7.8** Equipment & materials require for this procedure.

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
QUANTITY	MATERIAL DETAILS
1	Macaque Treatment Sheet
varies	Various medications as prescribed

- 7.9** Macaques requiring chronic treatments are usually kept in their home groups and separated daily or whatever schedule has been prescribed for them, into a Primate Housing Unit on an ad hoc basis. Some Macaques can be trained to accept their medicine inside the home group by coming up to staff for medicine, which is usually provided on a tasty treat.

 PQMS3-MARP-FRM-0104 Macaques – Capture and Restraint


- 7.10** Follow steps 6.3 to 6.13

8. PROCEDURE FOR EUTHANASIA AND UNEXPECTED DEATHS

- 8.1** Equipment & materials require for this procedure.

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Primate Housing Unit
QUANTITY	MATERIAL DETAILS
1	Macaque Treatment Sheet
varies	Various medications as prescribed

- 8.2** Macaques that reach an end-point as prescribed by the MARP Veterinarian are euthanized as quickly as practical. Notify the Animal Facility Manager.

 PQMS3-MARP-SOP-0208 Euthanasia Methods in Macaques

- 8.3** Update the animal's record in Labtracks, including cause and date of death.
- 8.4** Unexpected deaths need to be reported to the Chief Investigator with details of death and any monitoring sheets if applicable.
- Post mortems need to be performed on all deaths if at all possible. If not possible, then the reason needs to be conveyed to the Chief Investigator.
- 8.5** Any Wellness Reports open for the animal needs to be closed once cause of death has been established.

9. ANIMAL MONITORING & WELFARE

- 9.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 9.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 9.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 9.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

10. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-REF-0025	Macaque Treatment Sheet
PQMS3-MARP-REF-0030	Non-Human Primate Health Monitoring – Clinical Severity Scores
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-RAS-0161	Macaque Risk Control Program
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code of Practice for the Care and Use of Animals for Scientific Purposes http://www.nhmrc.gov.au/files/nhmrc/publications/attachments/ea16.pdf



DOCUMENT HISTORY			PQMS3-MARP-SOP-0288-V3.docx	
Version no.	Date of Issue	[Redacted] by: Name	Amendments	
			OHS	
1	24/03/2017	[Redacted]		Old document SOP0288-V1
2	03/06/2019	[Redacted]		Updated Animal Monitoring and Welfare statement Added notes for [Redacted] Minor edits
3	17/02/2022	[Redacted]		Updated document authorisation panel Updated footer formatting

ENVIRONMENTAL ENRICHMENT FOR MACAQUES (03/08/2020)

PQMS3-MARP-SOP-0318-V2.docx

DOCUMENT AUTHORISATION	Date of Next Review: 2 years from date of issue
irrelevant information	
	11- Aug- 2020
	11- Aug- 2020

8: 52 AM AES

9: 19 AM AE

9: 41 AM AES

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for preparing and distributing environmental enrichment for Macaques.

1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Area of relevant information at irrelevant information





*Please note.

This SOP may interfere with animals under experimentation. Specific projects may be exempt by approval of the AEC from some aspects of the enrichment.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Ergonomics and Manual Handling Training
-  PQMS3-MARP-REF-0027 Browse Plants suitable for Macaques
-  PQMS3-MARP-REF-0126 Environmental Enrichment Schedule for Macaques
-  PQMS3-MARP-SOP-0061 Animal Care and Husbandry – Macaques at irrelevant information

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Browse sprigs	Short cuttings from non-toxic edible plants
Foraging Rollers	PVC tubes with arrangement of 10mm holes designed to fit into enrichment roller flexagon panel insert
Fum Tubes	Hanging Food Ball with insert which required manipulation to gain food
PPE	Personal Protective Equipment
Scatter	Dry Mix of various treats used as environmental enrichment
SOP	Standard Operating Protocol – A Controlled Document

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment [REDACTED]

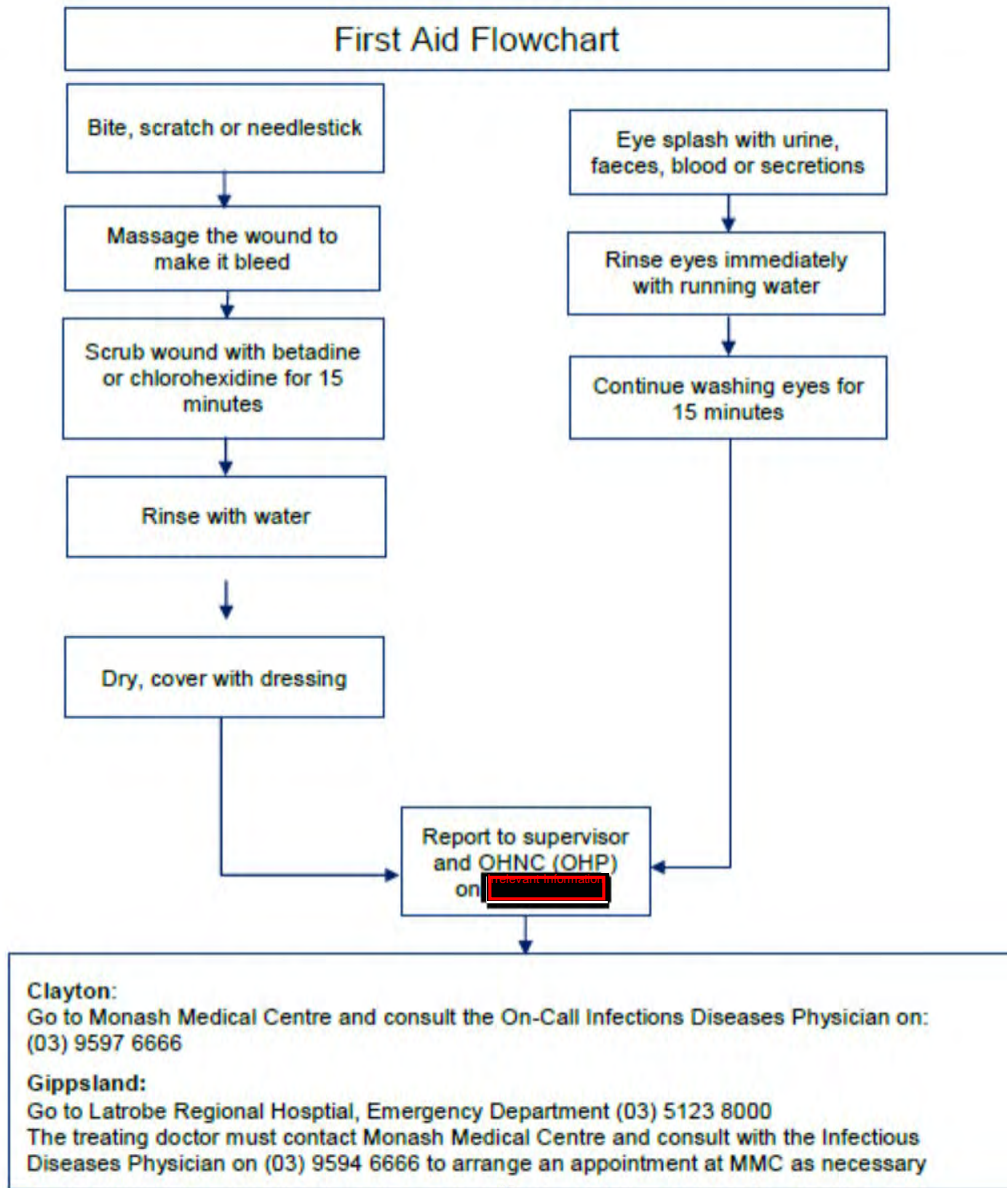
PQMS3-MARP-SOP-0117 Entry and Exit Procedure for Macaque Facilities [REDACTED]

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager if they require vaccinations and/or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Macaque.



For Safety Data Sheets on any of the chemicals used in the SOP, please refer to Chemwatch Online for up to date and current SDS.


- Macaque First Aid Procedure









5. PLANNING SCHEDULE FOR PREPARATION OF ENVIRONMENTAL ENRICHMENT





The environmental enrichment provided to macaques is varied each week according to an enrichment schedule in order to maintain interest and novelty in the enrichment by the animals. This schedule is listed on the Macaque Facility Daily Task List as described in the Animal Care and Husbandry for Macaques SOP.





 PQMS3-MARP-SOP-0061 Animal Care and Husbandry – Macaques at 

Check for what environmental enrichment to prepare for the current or following week from the Environmental Enrichment Schedule for Macaques located on the Kitchen Door in  (Fig.1). Storage capacity for environmental enrichment is limited so often enrichment needs to be prepared the preceding or same day as distribution.

 PQMS3-MARP-REF-0126 Environmental Enrichment Schedule for Macaques in  relevant information

Week One Schedule		
Day	 and 	 to 
Monday	Scatter#	Ice Cups
Tuesday	Jelly in Cartons	Scatter#
Wednesday	Water Bowls	Fruit and Nut Rollers
Thursday	Gnawing Sticks*	Fum Tubes*
Friday	Browse*	Browse*

Week Two Schedule		
Day	 and 	 to 
Monday	Scatter#	Jelly in Cartons
Tuesday	Sprays or Smears	Scatter#
Wednesday	Honey Rollers	Water Bowls
Thursday	Mirrors	Gnawing Sticks*
Friday	Browse*	Browse*

Week Three Schedule		
Day	 and 	 to 
Monday	Scatter#	Sprays or Smears
Tuesday	Ice Cups	Scatter#
Wednesday	Fruit and Nut Rollers	Honey Rollers
Thursday	Fum Tubes*	Mirrors
Friday	Browse*	Browse*

* In inclement weather, replace enrichment with ambient sounds
 # If not all cages are cleaned, use environmental enrichment scheduled for rest of facility for that day.

Quantities of Environmental Enrichment Items required


























Environmental Enrichment	Area	Amount Required
Fruit and Nut Roller	 Irrelevant	27
		21
Fum Tubes		19
		15
Gnawing Sticks		19
		15
Honey Rollers		27
		21
Ice Cups		120
		80
Jelly in Cartons	120	
	80	

Fig.1

For procedures describing how to prepare the various environmental enrichment provided to macaques go to the following sections in this SOP;

-  6. Preparation and storage of fruit and nut rollers.
-  7. Preparation and storage of fum tubes.
-  8. Preparation and storage of food balls.
-  9. Preparation and storage of Ice Cups.
-  10. Preparation and storage of Jelly Cartons.
-  11. Preparation and storage of Gnawing Sticks.
-  12. Preparation and storage of Honey Rollers.
-  13. Preparation of Scatter.
-  14. Preparation of Browse.
-  15. Preparation of Water Bowls.
-  16. Preparation of Herb and Oil Smells.

For procedures describing how to distribute the various environmental enrichment provided to macaques go to the following sections in this SOP;

-  17. Distribution of Fruit and Nut Rollers.
-  18. Distribution of Fum Tubes.
-  19. Distribution of Food Balls.
-  20. Distribution of Ice Cups.
-  21. Distribution of Jelly Cartons.
-  22. Distribution of Gnawing Sticks.
-  23. Distribution of Honey Rollers.
-  24. Distribution of Scatter.
-  25. Distribution of Browse.
-  26. Distribution of Water Bowls.
-  27. Distribution of Herb and Oil Smells.
-  28. Distribution of Mirrors
-  29. Providing Ambient Sounds

6. PREPARATION AND STORAGE OF FRUIT AND NUT ROLLERS

6.1 Equipment & materials required for this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Fruit and Nut Rollers
1	Storage Crate
QUANTITY	MATERIAL DETAILS
As required	Mixed Nuts
As required	Fruit Medley
As required	Sunflower seeds
As required	Maize

- 6.1** Fruit and nut rollers are short lengths of PVC pipes capped at one end and with a removable screw on top with holes along their length to allow the contents to spill out (Fig.2).



Fig.2

- 6.2** Fill the pipes with either a mixture of sunflower and maize seeds or a mixture of fruit and nuts (Fig.3).



Fig.3

- 6.4** Screw on the top firmly but not too tight as it can be difficult to remove when cleaning.

- 6.5** Store in a crate (Fig.4) in a cupboard next to the oven in the Kitchen Irrelevant (Fig.5).



Fig.4



Fig.5

7. PREPARATION AND STORAGE OF FUM TUBES

7.1 Equipment & materials required for this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Fum Tubes
2	Storage Crate
QUANTITY	MATERIAL DETAILS
As required	Mixed Nuts
As required	Diced Pawpaw
As required	Fruit Medley
As required	Sunflower seeds
As required	D Shackles

7.2 Fum Tubes consist of a ball filled with small pieces of food that is mounted on a hollow tube. When the ball is moved, food is dispensed from the hole at the end of the tube (Fig.6).



Fig.6

7.3 Fill Ball with a cup of a mixture of fruit and nut mix, seeds and diced Pawpaw (Fig.7).



Fig.7

7.4 Insert centre tube and attach a U-Bolt to top of tube to keep in position (Fig.8).



Fig.8

7.5 Store in a crate beneath the bench in the middle of the Kitchen AS-168 (Fig.9).



Fig.9

8. PREPARATION AND STORAGE OF FOOD BALLS

8.1 Equipment & materials required for this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Food Balls
2	Storage Crates
QUANTITY	MATERIAL DETAILS
As required	Mixed Nuts
As required	Diced Pawpaw
As required	Shredded Coconut flakes
As required	Fruit Medley
As required	Peanuts in shell (unroasted)

8.2 Food Balls are hard plastic balls of various sizes that have a hole into which small pieces of fruit, mealworms, diced Pawpaw and fruit and nut mix can be inserted to provide foraging opportunities for macaques (Fig.10).



Fig.10

8.3 Food balls are prepared just before distribution on the day. Prepare a 1/2cup mixture of diced Pawpaw, fruit and nut mix or use small pieces of fruit cut up small enough to be inserted into the ball.

8.4 Collect enough Food Balls from the Store Room (irrelevant) as indicated from the enrichment schedule and put the mixture into the ball.

8.5 Store prepared Food Balls in a Storage Crate beneath the bench in the Kitchen (relevant).

9 PREPARATION AND STORAGE OF ICE CUPS

9.1 Equipment & materials required for this procedure:

QUANTITY	EQUIPMENT DETAILS
2	Muffin Trays
1	1 litre measuring jug
1	Freezer
QUANTITY	MATERIAL DETAILS
As required	Diced Pawpaw
As required	Shredded Coconut flakes
As required	Fruit Medley
As required	Pineapple Juice
2	4 litre Ice Cream Containers

9.2 To Prepare Ice Cups, first place a Muffin Tray on a flat bench (Fig.11).



Fig.11

9.3 Distribute diced Pawpaw, sunflower seeds, coconut flakes, mixed fruit or small pieces of fruit over the bottom of the Muffin Tray mould (Fig.12).



Fig.12

9.4 Pour 500ml of Pineapple Juice into a 1litre Bowl and fill rest with cold water (Fig.13).



Fig.13

9.5 Pour the dilute fruit juice into the Muffin Trays and fill to the top (Fig.14).



Fig.14

9.6 Stack Muffin Tray into the Freezer located in the Store Room (relevant) until frozen (Fig.15).



Fig.15

9.7 Frozen Ice Cups can then be taken out of Muffin Trays and put into a tub and left in freezer until required (Fig.16).



Fig.16

10 PREPARATION AND STORAGE OF JELLY CARTONS

10.1 Equipment & materials required for this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Electric Kettle
1	1 litre measuring jug
1	Large spoon
1	Freezer
QUANTITY	MATERIAL DETAILS
As required	Packets of Jelly crystal
6 to 8	New Egg cartons or paper patty pans (70-80 pans)
1	4 litre Ice Cream Container

10.2 For preparation of Jelly in Cartons, make 1 cup (250mls) of boiling water in an electric kettle. Pour hot water into a 1 litre measuring jug.

10.3 Empty contents of one sachet of jelly crystals into a large bowl and add the boiling water. Stir with a spoon until dissolved (Fig.17).



Fig.17


10.4 Add one cup (250mls) of cold water and stir thoroughly (Fig.18).



Fig.18

10.5 Tip contents of bowl into a 4 litre empty ice cream tub. Put into Cool Room irrelevant and allow to set (minimum of 4 hours).

10.6 Once jelly is set, lay out about 6-8 egg cartons on a bench. If egg cartons are unavailable use small patty pans instead.

 Egg cartons must be new to ensure there is no Salmonella contamination from previous use.

10.7 Spoon jelly into egg cartons or patty pans (Fig.19).



Fig.19

10.8 Place egg cartons or patty pans into freezer ready for distribution (Fig.20).



Fig.20

11 PREPARATION AND STORAGE OF GNAWING STICKS

11.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Kitchen Scales
1	Electric Kettle
1	Storage Crate
1	1 litre measuring jug
1	Table spoon
varies	Muffin Trays
QUANTITY	MATERIAL DETAILS
1	Jar of low sugar Strawberry Jam
1	Jar of Peanut Butter
60g	Acacia Gum powder
As required	Gnawing Sticks
1	Plastic Rubbish Bin Liner

11.2 Preparation of Gnawing Sticks begins by collecting the gnawing sticks from the storage crate located under the centre bench in the Kitchen (irrelevant (Fig.21).



Fig.21

11.3 Lay out the sticks on a spread out plastic bin liner on the Kitchen bench (Fig.22).



Fig.22

- 11.4 Either Acacia Gum, Peanut Butter or Low Sugar Strawberry Jam can be used to fill the holes drilled in the sticks. Strawberry Jam and Peanut Butter is prepared the day of distribution while Acacia Gum needs to be prepared before the day of distribution (Fig.23).



Fig.23

- 11.5 If using Acacia Gum, it will need to be made into a syrup. Weigh out 60g of Acacia Gum from the tub next to the Kitchen door (irrelevant) (Fig.24) with the Kitchen Scales (Fig.25) into a 1 litre measuring jug. Boil water in a hot water kettle and pour 40ml into the measuring jug and stir until it forms a runny paste.



Fig.24



Fig.25

- 11.6 Spread out Strawberry Jam or Acacia Gum Mixture into the holes in the gnawing sticks with a table spoon.
- 11.7 Allow the Acacia Gum to harden before storing prepared gnawing sticks back in the tub under the Kitchen bench (Fig.26).



Fig.26

12 PREPARATION AND STORAGE OF HONEY ROLLERS

12.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
3	Baking Trays
1	Trolley
1	Storage Crate
1	Freezer
QUANTITY	MATERIAL DETAILS
3	850g Jars of Treacle or Golden Syrup
As required	Sunflower Seeds
As required	Maize
As required	Paint Rollers
As required	Roller Covers

- 12.2 To prepare Honey Rollers, first lay three baking trays next to each other on the Kitchen bench in irrelevant.
- 12.3 Fill up a 4 litre Ice Cream Container with hot water from the tap in the Kitchen (irrelevant). Soften the treacle or golden syrup jars in the hot water in order to make it more liquid.
- 12.4 Pour the treacle or golden syrup into one baking tray and make a layer of sunflower and maize seeds in another baking tray.
- 12.5 Get covered paint rollers stored in a storage crate from the cupboard in the Kitchen in irrelevant next to the oven.
- 12.6 Pick up a roller and roll it over the liquid treacle or golden syrup, revolving the roller so to ensure it is completely covered in treacle or golden syrup (Fig.27).



Fig.27

- 12.7 Next move the roller to the next tray and roll it in the seed mixture so it is covered in seeds (Fig.28).



Fig.28

- 12.8 Place roller covered in seeds onto the third, empty baking tray.
- 12.9 Continue steps until all rollers are prepared.
- 12.10 Place the tray with the seeded rollers into the freezer to set (Fig.29).



Fig.29

13 PREPARATION OF SCATTER

13.1 Equipment & materials required for this procedure:

QUANTITY	EQUIPMENT DETAILS
1	10 litre Bucket
1	Trolley
1	Measuring scoop
QUANTITY	MATERIAL DETAILS
As required	Mixed Nuts
As required	Diced PawPaw
As required	Shredded Coconut flakes
As required	Fruit Medley
As required	Peanuts in shell (unroasted)

- 13.2 Scatter is a mixture of coconut flakes, diced paw paw, peanuts in shell and mixed fruit and nuts. It is prepared on the day of distribution and all ingredients are located in the cupboard next to the cool room in the Kitchen (relevant) (Fig.30).



Fig.30

- 13.3 Using a scoop (Fig.31), measure out equal amounts of the ingredients for the scatter into a 10 litre bucket. Place the bucket of scatter onto a trolley until required (Fig.32).



Fig.31



Fig.32

14 PREPARATION OF BROWSE

14.1 Equipment & materials required for this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Toro Workman E2020
1	Pair secateurs
1	Trolley
QUANTITY	MATERIAL DETAILS
50	Sprigs of plant browse

14.2 Browse is prepared on the day of distribution. Collect a pair of secateurs and start the Club Car Carryall 500 ATV which is found in the Hay Shed (relevant).

 PQMS3-MARP-SOP-0224 Equipment Operations – Club Car Carryall 500 – relevant

14.3 Drive down to one of the plantations next to the fence lines on the relevant paddocks (Fig.33).



Fig.33

14.4 Stop next to a suitable tree or scrub for pruning. Please refer to Browse Plants Fed at Melbourne Zoo Primate Department for list of suitable plants for browse (Fig. 34).

 PQMS3-MARP-REF-0027 Browse Plants suitable for Macaques

BROWSE PLANTS FED AT MELBOURNE ZOO PRIMATE DEPARTMENT

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Abutilon megapotamicum</i>	Chinese lantern	<i>Fraxinus excelsior</i>	Golden ash
<i>Acacia baileyana</i>	Cootamundra wattle	<i>Fraxinus oxycarpa</i>	Desert ash
<i>Acacia saligna</i>	Golden wrath wattle	<i>Fraxinus raywoodii</i>	Claret ash
<i>Acacia retinoides</i>	Wirilda	<i>Hedychium gardnerianum</i>	Ginger
<i>Acacia longiflora</i>	Sallow wattle	<i>Liquidamber styraciflua</i>	Liquid amber
<i>Acacia floribunda</i>	Gossamer wattle		
<i>Acacia litaphylla</i>	Flinders range wattle	<i>Musa spp.</i>	Banana
<i>Acacia dealbata</i>	Silver wattle	<i>Qmaianthus populifolius</i>	Bleeding heart
<i>Acer negundo</i>	Box elder	<i>Pittosporum undulatum</i>	Sweet pittosporum
<i>Alnus incana</i>	Evergreen alder	<i>Platanus orientalis</i>	Oriental Plain Tree
<i>Arundo donax</i>	Aruna bamboo	<i>Populus crispata</i>	Poplar
<i>Betula spp.</i>	Birch	<i>Populus spp.</i>	Poplar
<i>Blea europaea</i>	Olive	<i>Prunus cerasifera</i>	Plum
<i>Brachychiton acerifolium</i>	Flame Tree	<i>Prunus armeniaca</i>	Apricot
		<i>Prunus persica</i>	Peach
<i>Comptosia variegata</i>	Variagated mirror plant	<i>Prunus persica</i>	Nectarine
<i>Comptosia repens</i>	Mirror plant	<i>Salix humboldtiana</i>	Chilean willow
<i>Cotoneaster spp.</i>	Cotton ester	<i>Salix matsudana</i>	Tortured willow
<i>Cyperus papyrus</i>	Papyrus	<i>Salix babylonica</i>	Weeping willow
<i>Enicobotrya japonica</i>	Loquat	<i>Salix caprea</i>	Pussy willow
<i>Erythrina caffra</i>	Coral tree	<i>Sparmannia africana</i>	African hemp
<i>Ficus pumila</i>	Creeping fig	<i>Tagasaste prolifera</i>	Tree lucerne
<i>Ficus elastic</i>	Rubber plant	<i>Ulmus parvifolia</i>	Chinese elm
<i>Ficus macrophylla</i>	Morton bay fig		

For all primate species only small amounts of *Acacia* spp., *Musa* spp., *Hedychium* spp. And any other fibrous species are fed and then only once a week. If fed in large quantities they can lead to difficulties in defaecation, bowel obstructions and possibly death.

Fraxinus spp. When the bark is eaten can cause the urine to be red in colouration in some primate species.

Compiled by irrelevant information

Melbourne Zoo Horticultural Department. Updated October 2018 to remove some plants identified by Adelaide AEC as being potentially poisonous to non-human primates.

Fig.34

- 14.5 Prune about 50 sprigs (about 50 or 60cm long) from the branches and place in back of the buggy.
- 14.6 Drive the Club Car Carryall 500 to the Loading Bay at the back of relevant information
- 14.7 Pick out and carry browse sprigs from the back of the Club Car Carryall 500 ATV to a trolley
- 14.8 Drive the Club Car Carryall 500 ATV back to the Hay Shed and park it in its parking location. Please refer to WIN document on operating the Club Car Carryall 500 for parking and securing procedures.

 PQMS3-MARP-SOP-0224 Equipment Operations – Club Car Carryall 500 –

- 14.9 The trolley with the browse sprigs is pushed through the double doors of the Loading Bay Area into relevant information. The Loading Bay doors operated like an airlock, the outside doors are opened by swiping a proximity card reader to let through the trolley (Fig.35). Then the outside doors are shut and the inside doors to relevant information are opened by swiping its proximity card reader to allow the trolley to be pushed into the building (Fig.36). Then the inside doors are shut.



Fig.35



Fig.36

- 14.10 If weather is unsuitable for driving into paddocks, browse can be collected instead from the Bamboo planted around Macaque Facility (Fig.37).



Fig.37

15 PREPARATION OF WATER BOWLS

15.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
As required	Polycarbonate Water Bowls
1	Trolley
QUANTITY	MATERIAL DETAILS
As required	Diced PawPaw
As required	Fruit Medley
As required	Sunflower seeds

15.1 Water bowls are prepared on day of distribution. First place required number of Polycarbonate Water Bowls onto a Trolley (One Water Bowl per group) (Fig.37).



Fig.37

15.2 Half Fill the Bowls with Water.

15.3 Spread half a cup of either sunflower seeds, small pieces of fruit, diced paw paw or coconut flakes in Bowl (Fig.38). The water bowls are ready for distribution.



Fig.38

16 PREPARATION OF HERB AND OIL SMELLS

16.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
varies	Foraging Rollers
1	1 litre measuring jug
1	microwave
1	Microwave bowl
1	Strainer
QUANTITY	MATERIAL DETAILS
As required	Mint , Parsley, Sage or Thyme flakes
As required	Tea Tree or Relaxation essential oils
1	600ml Spray bottle

16.2 Herb and Oil smells for macaques consist of flakes or oils which are made into a spray which can be sprayed around enclosures to help stimulate olfactory senses of the macaques.

16.3 Oils come in liquid form in small bottles. Oils used are Rose, Relaxing Blend, Ylang Ylang, Juniper, Tea Tree and Lemon/Lime juice (Fig.39).



Fig.39

16.4 6mls of oil is mixed with 200mls of water in a measuring jug (Fig.40).



Fig.40

- 16.5 Pour mixture into a spray bottle marked with name of oil (Fig.41).



Fig.41

- 16.6 Herbs come in flake form in small packets. Herbs used are Mint, Thyme, Parsley and Sage (Fig.42).



Fig.42

- 16.7 Sprinkle about a tablespoon of herb flakes into a plastic microwave bowl.
 16.8 Add 200mls of water to microwave bowl and mix with water.
 16.9 Microwave on high for 10 minutes.
 16.10 Take bowl out of microwave and leave on bench to cool.
 16.11 Pour contents of microwave bowl through a strainer into a measuring jug.
 16.12 Pour contents of measuring jug into a spray bottle marked with name of herb.
 16.13 Spray bottles can be stored in the cupboard next to the cool room in the Kitchen (Irrelevant)



Fig.43

17 DISTRIBUTION OF FRUIT AND NUT ROLLERS

17.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
1	Storage Crate
QUANTITY	MATERIAL DETAILS
As required	Prepared Fruit and Nut Rollers
1	Lock and Key

17.1 Collect the storage crate with the prepared fruit and nut rollers from the cupboard next to the oven in the Kitchen (irrelevant) and place it on a trolley.

17.2 Push the trolley to a flexagon that is to get fruit and nut rollers for environmental enrichment.

17.3 Unlock the padlock on the top bar of the roller panel (Fig.44).



Fig.44

17.4 Place fruit and nut rollers into the grooves on the top and bottom of the roller panel (Fig.45).



Fig.45

17.5 Place the top bar back into position and lock the padlock (Fig.46).



Fig.46

- 17.6** Use 1 fruit and nut roller for groups up to 6 macaques, 2 fruit and nut rollers for groups of between 7-12 macaques and 3 fruit and nut rollers for groups containing more than 12 macaques.
- 17.7** Repeat steps 17.3 to 17.7 until all groups on the Macaque Enrichment Program for that day gets fruit and nut rollers.

18 DISTRIBUTION OF FUM TUBES

18.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
2	Storage Crates
1	Pair of Pliers
QUANTITY	MATERIAL DETAILS
As required	Prepared Fum Tubes
As required	D Shackles

18.2 Collect the storage crates with the prepared fum tubes from beneath the centre bench in the Kitchen (irrelevant) and place onto a trolley.

Fum tubes aren't provided if it's raining on that day.

18.3 Push the trolley to the external access door adjacent to a flexagon group that is getting the fum tube environmental enrichment.

18.4 Open the external access door and then the door to the external enclosure (Fig.47).


 Ensure macaques are locked inside while erecting fum tubes in their external enclosures.



Fig.47

18.5 Pick up a fum tube and locate an anchor point to hang it from – typically a piece of chain used to anchor the branches in the enclosures is sufficient (Fig.48).



Fig.48

18.6 Attach the fum tube to the anchor point with a D Shackle and tighten with a pair of pliers (Fig.49).



Fig.49

- 18.7** One fum tube is provided to groups of up to 15 macaques while two fum tubes are provided to groups with over 15 macaques.
- 18.8** Repeat steps 18.3 to 18.7 until all groups on the Macaque Enrichment Program for that day gets fum tubes.

19 DISTRIBUTION OF FOOD BALLS

19.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
1	Storage Crate
QUANTITY	MATERIAL DETAILS
As required	Prepared Food Balls
As required	D Shackles

19.2 Collect the storage crates with the prepared food balls from beneath the centre bench in the Kitchen (Irrelevant) and place onto a trolley.

19.3 Push the trolley a flexagon group that is getting the food balls environmental enrichment (Fig.50).



Fig.50

19.4 Unlock the door to the flexagon so the food balls can be placed inside.



Ensure macaques are locked outside while placing food balls in their enclosures.

19.5 Some food balls have rings that can be attached to anchor points inside the flexagons by a D Shackle (Fig.51) while others are just placed inside the flexagon (Fig.52).



Fig.51



Fig.52

19.6 Lock the door to the flexagon and let the macaques inside.

19.7 Repeat steps 19.3 to 19.6 until all groups on the Macaque Enrichment Program for that day gets food balls.

20 DISTRIBUTION OF ICE CUPS

20.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
1	4 litre Ice Cream Container
QUANTITY	MATERIAL DETAILS
As required	Prepared Ice Cups

20.2 Collect the 4 litre ice cream container with the prepared ice cups from the freezer in the Store Room (irrelevant) (Fig.53) and place onto a trolley.



Fig.53

20.3 Push the trolley a flexagon group that is getting the ice cups environmental enrichment.

20.4 Place ice cups in the forage basket (Fig.54). Provide an ice cup to every macaque in the group over 6 months of age.



Fig.54

20.5 Repeat steps 20.3 and 20.4 until all groups on the Macaque Enrichment Program for that day gets ice cups.

21 DISTRIBUTION OF JELLY CARTONS

21.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
QUANTITY	MATERIAL DETAILS
As required	Prepared Jelly Cartons

21.2 Collect the prepared Jelly Cartons from the freezer in the Store Room (relevant) (Fig.55) and place onto a trolley.



Fig.55

21.3 Push the trolley a flexagon group that is getting the Jelly Cartons environmental enrichment.

21.4 Tear off one jelly cup to every macaque in the group over 6 months of age (Fig.56). Place jelly cups in the forage basket (Fig.57).



Fig.56



Fig.57

21.5 Repeat steps 22.3 to 22.4 until all groups on the Macaque Enrichment Program for that day gets jelly cartons.

22 DISTRIBUTION OF GNAWING STICKS

22.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
1	Pliers
QUANTITY	MATERIAL DETAILS
As required	Prepared Gnawing Sticks
As required	D Shackles

22.2 Collect the prepared gnawing sticks in a storage crate located under the centre bench in the Kitchen (irrelevant) and place onto a trolley.

22.3 Push the trolley to the external access door adjacent a flexagon group that is getting the gnawing sticks environmental enrichment.

22.4 Open the external access door and then the door to the external enclosure (Fig.58).



Ensure macaques are locked inside while erecting gnawing sticks in their external enclosures.



Fig.58

22.5 Pick up a gnawing stick and locate an anchor point to hang it from – typically a piece of chain used to anchor the branches in the enclosures is sufficient (Fig.59).



Fig.59

22.6 Attach the gnawing stick to the anchor point with a D Shackle and tighten with a pair of pliers (Fig.60).

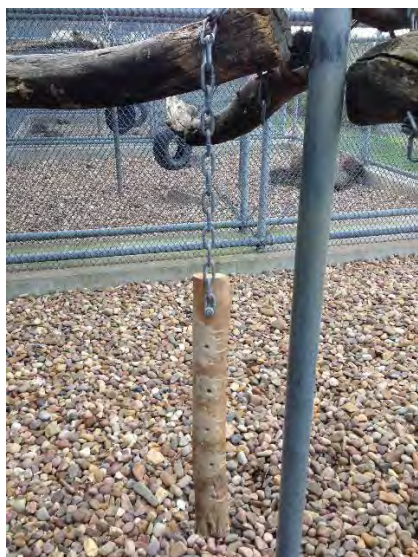


Fig.60

- 22.7** One gnawing stick is provided to groups of up to 15 macaques while two gnawing sticks are provided to groups with over 15 macaques.
- 22.8** Repeat steps 22.3 to 22.7 until all groups on the Macaque Enrichment Program for that day gets gnawing sticks.

23 DISTRIBUTION OF HONEY ROLLERS

23.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
1	Baking Tray
QUANTITY	MATERIAL DETAILS
As required	Prepared Honey Rollers
As required	Lock and Key

23.2 Collect the prepared Honey Rollers from the freezer in the Store Room Irrelevant and place onto a trolley.

23.3 Push the trolley a flexagon group that is getting the Honey Rollers environmental enrichment.

23.4 Unlock the padlock on the top bar of the roller panel (Fig.61).



Fig.61

23.5 Place honey rollers into the grooves on the top and bottom of the roller panel (Fig.62).



Fig.62

23.6 Place the top bar back into position and lock the padlock (Fig.63).

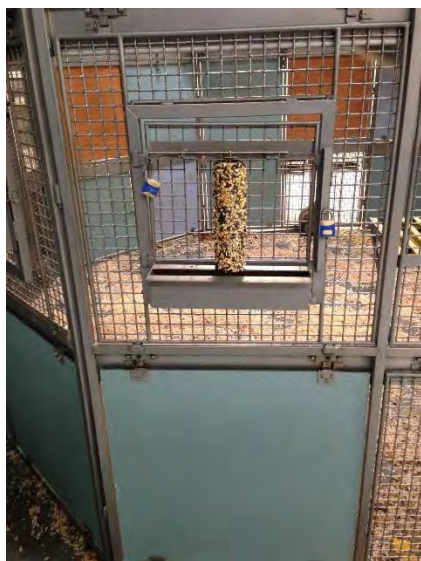


Fig.63

- 23.7** Use 1 honey roller for groups up to 6 macaques, 2 honey rollers for groups of between 7-12 macaques and 3 honey rollers for groups containing more than 12 macaques (Fig.64).



Fig.64

- 23.8** Repeat steps 23.3 to 23.7 until all groups on the Macaque Enrichment Program for that day gets honey rollers.

24 DISTRIBUTION OF SCATTER

24.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
QUANTITY	MATERIAL DETAILS
1	Bucket of prepared scatter

24.2 Collect the bucket of prepared scatter from the trolley it was placed on after preparation (Fig.65).



Fig.65

24.3 Take the bucket of scatter to a flexagon that has been cleaned and ready for habitation again by macaques.

24.4 Spread half a cup (approx. 10-12g) of scatter on the floor of each flexagon.

 For groups inhabiting double flexagons, provide scatter for each flexagon.

24.5 Cover with shavings, which is distributed as part of the process of preparing the flexagons for habitation by macaques again after cleaning (Fig.66).

 PQMS3-MARP-SOP-0112 Cleaning of Flexagons for Macaques



Fig.66

24.6 Repeat steps 24.3 to 24.5 until all cleaned flexagons have scatter distributed on their floors.

25 DISTRIBUTION OF BROWSE

25.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
QUANTITY	MATERIAL DETAILS
50	Sprigs of Browse plants

25.2 Collect the trolley packed with the browse.

25.3 Push the trolley a flexagon group that is getting the Browse environmental enrichment.

25.4 Push through part of the browse sprigs into an opening in the roller panel insert found on every flexagon (Fig.67).

- It's not necessary to push the whole sprig into the flexagon. The macaques will pull them through themselves.



Fig.67

25.5 Provide 1 sprig for groups with less than 6 macaques, 2 sprigs for groups containing 6-12 macaques, 3 sprigs for groups containing 13-18 macaques and 4 sprigs for groups containing more than 18 macaques.

25.6 Repeat steps 25.3 to 25.5 until all groups on the Macaque Enrichment Program for that day gets browse.

26 DISTRIBUTION OF WATER BOWLS

26.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Trolley
QUANTITY	MATERIAL DETAILS
As required	Polycarbonate Bowls with prepared water enrichment.
As required	Padlocks

26.2 Collect the trolley which is packed with the prepared water bowls (Fig.68).



Fig.68

26.3 Push the trolley to a flexagon group that is getting the water bowls environmental enrichment.

26.4 Slide the polycarbonate bowls into the forager basket insert found on every flexagon.

26.5 Lock the slide bolt with a padlock to prevent the bowl from being pushed out of the forager basket (Fig.69).



Fig.69

26.6 Repeat steps 26.3 to 26.5 until all groups on the Macaque Enrichment Program for that day gets water bowls.

27 DISTRIBUTION OF HERB OR OILSPRAYS, JAM OR PEANUT BUTTER SMEARS

27.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Rubber end spatula
QUANTITY	MATERIAL DETAILS
1	Spray bottle with prepared herb or oil solution
1	Jar of low sugar Strawberry Jam
1	Jar of Peanut Butter

27.2 Collect the spray bottle with the herb or oil solution stored in the cupboard next to the cool room in the Kitchen (irrelevant) (Fig.70) or Jar of Strawberry Jam or Peanut Butter stored in the shelf just below.



Fig.70

27.3 Walk to a flexagon group that is getting the herb/oil sprays, jam or peanut butter environmental enrichment.

27.4 If using the Herb or Oil Spray, use 3 or 4 squeezes of the spray bottle on 6 to 10 places around the flexagon or in the external enclosures, depending on weather conditions (Fig.71).

If the weather is fine, neither too hot nor too cold, then the spray can be used in the external enclosures. Otherwise only spray the inside flexagons.




 Ensure the macaques are locked outside if spraying around the flexagons or locked inside if spraying around the external enclosures.



Fig.71



- 27.5** If using the Strawberry Jam or Peanut Butter smears, use the spatula to scoop out a portion of the Jam or Peanut Butter and then smear it on 6 to 10 clean areas of the flexagon or on the branches in the external enclosures, depending on weather conditions
-  If the weather is fine, neither too hot nor too cold, then the smears can be used in the external enclosures. Otherwise only use the smears in the inside flexagons.
 -  Ensure the macaques are locked outside if using smears around the flexagons or locked inside if using smears around the external enclosures.
- 27.6** Repeat steps 27.3 to 27.5 until all groups on the Macaque Enrichment Program for that day gets herb/oil sprays or jam/peanut butter smears.

28 DISTRIBUTION OF MIRRORS

28.1 Equipment & materials required for this procedure;

QUANTITY	EQUIPMENT DETAILS
1	Flat Trolley
1	Robertson Wrench
QUANTITY	MATERIAL DETAILS
As required	Mirror Inserts

- 28.2 Collect the flat trolley on which the mirror inserts are stored next to the store room irrelevant
- 28.3 Push the trolley to a flexagon group that is getting the mirrors environmental enrichment.
- 28.4 Remove one of the bottom panel inserts by first turning the locking screw $\frac{1}{4}$ turn anti-clockwise with a Robertson Wrench for both upper lugs (Fig.72 & Fig.73).

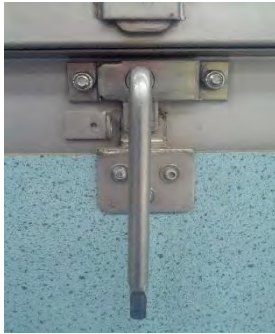


Fig.72



Fig.73

28.5 Then lift out the panel insert from the guides at the bottom of the flexagon frame (Fig.74 & Fig.75).



Fig.74



Fig.75

- 28.6 Lift a mirror panel insert from the flat trolley and inserted it into the guides at the bottom of the frame.
- 28.7 Lock the two top lugs by turning the locking screw $\frac{1}{4}$ turn clockwise with a Robertson Wrench.
- 28.8 Repeat steps 28.3 to 28.7 until all groups on the Macaque Enrichment Program for that day gets mirror panels (Fig.76).



Fig.76

29 PROVIDING AMBIENT SOUNDS

29.1 Equipment & materials required for procedure

QUANTITY	EQUIPMENT DETAILS
1	Trolley
1	Radio
QUANTITY	MATERIAL DETAILS

29.2 Collect the Radio/CD Player from where it is stored under the centre bench in the Kitchen Irrelevant (Fig.77).



Fig.77

- 29.3 Place the radio/cd player on a trolley and push the trolley to near a power point in whichever area is going to receive ambient sounds.
- 29.4 Plug the radio/cd player into a power point and turn on both the power point and radio/cd player (Fig.78).



Fig.78

- 29.5 At the end of the day turn off the radio/cd player and power point. Push the trolley back next to the Kitchen Irrelevant and take off the radio/cd player and store it back under the Kitchen bench.

30 ANIMAL MONITORING & WELFARE

- 30.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 30.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 30.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 30.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

31 REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-REF-0027	Browse Plants suitable for Macaques
PQMS3-MARP-REF-0126	Environmental Enrichment Schedule for Macaques in relevant information
PQMS3-MARP-SOP-0061	Animal Care and Husbandry – Macaque at [redacted]
PQMS3-MARP-SOP-0112	Cleaning of Flexagons for Macaques
PQMS3-MARP-SOP-0224	Equipment Operations – Club Car Carryall 500 - [redacted]
EXTERNAL REFERENCES	
List any relevant references including those from which reference ranges may have been derived, those used in the preparation of the document or in the establishment of the method	



MONASH University
Technology Research Platforms

DOCUMENT HISTORY		irrelevant information	PQMS3-MARP-SOP-0318-V2.docx
Version no.	Date of Issue		Amendments
1	29/05/2017		Original Document
2	03/08/2020		Updated Animal Monitoring and Welfare statement Fixed incorrect titles, updated procedures

PROVISION OF WATER FOR MACAQUES (17/02/2022)

PQMS3-MARP-SOP-0319-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years form date of issue
Irrelevant Information	2-Feb-2022 10:50 AM AEDT
	2-Feb-2022 12:23 PM AEDT
	2-Feb-2022 8:16 PM AEDT

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for providing water for Macaques.

1.2. Scope

This SOP is to be applied when providing water to all macaques housed at Monash Animal Research facilities.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

 Nil

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
Primate Exercise Unit	A portable cage used for housing and exercise of macaques
Primate Housing Unit	A portable cage used for housing and restraint of macaques
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
Robertson Wrench	A wrench with a square protrusion for locking square shaped sockets
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

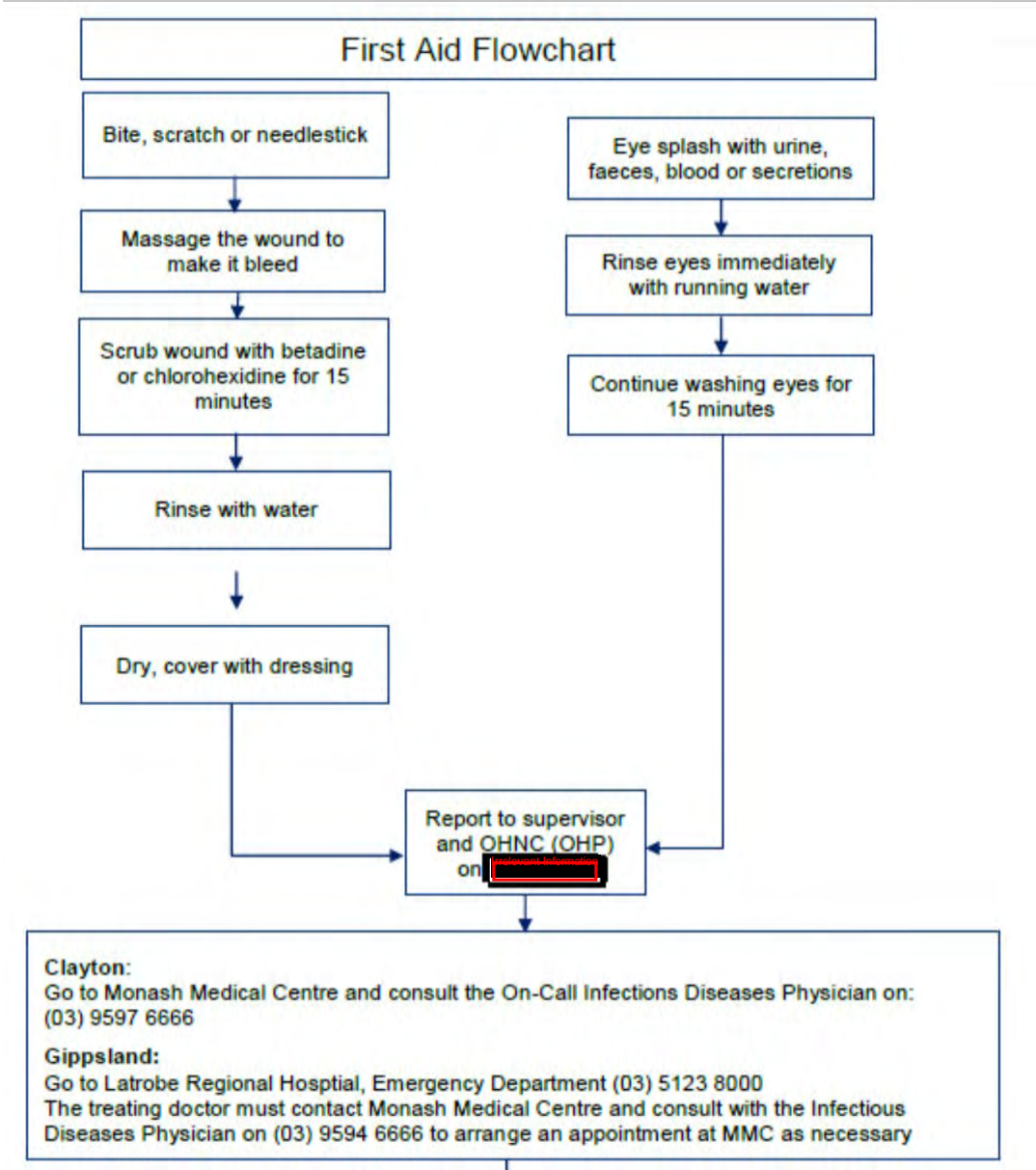
PQMS3-MARP-RA-0161 Macaque Area Risk Assessment [REDACTED]

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities [REDACTED]

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility [REDACTED]

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Appropriate Work Area.



5. PROVISION OF WATER TO FLEXAGONS AND EXTERNAL ENCLOSURES

5.1. Equipment & materials required for this procedure

QUANTITY	EQUIPMENT DETAILS
1	Screwdriver
QUANTITY	MATERIAL DETAILS
	Nil

5.2. Flexagons and External Enclosures at relevant information are fitted with automatic water nozzles.



Fig.1



Fig.2

5.3. These nozzles need to be checked daily for blockages or leaks.

5.4. Blockages can often be fixed by using a screwdriver to remove any debris stuck in the water nozzle (Fig.3).



Fig.3

5.5. Leaks or blockages that prevent water from coming out of the nozzle need to be reported to the Animal facility manager or designated contact person so a BEIMS request can be submitted for fixing the problem.

6. PROVIDING WATER FOR PRIMATE HOUSING UNITS

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Primate Housing Unit
1	Water Connector Adaptor (fixed or portable)
1	Hose
1	Tap
1	Water Pressure Reducer
1	Polycarbonate Bowl
1	Pressure Reducer
1	Water Forage Basket Insert
1	Robertson Wrench
QUANTITY	MATERIAL DETAILS
	Nil

6.2 There are two methods of supplying water to Primate Housing Units.

6.3 The first method is to supply water using a hose. First attach the Water Connector Adaptor to the water pipe outlet on the Primate Housing Unit. Both the fixed version (used in the Infirmary [irrelevant]) and portable version attached the same way. The portable version is used for Primate Housing Units located in the animal areas and is stored in the Store Room [irrelevant] (Fig.4 & 5).



Fig.4



Fig.5

6.4 To attach the Water Connector, push up the sleeve, push connector over the pipe outlet and release sleeve to lock into position (Fig.6 & 7).



Fig.6



Fig.7

- 6.5 For Primate Housing Units located in the animal areas, a ½”hose needs to be connected to the end of the portable water connector (Fig.8).



Fig.8

- 6.6 Attach a pressure reducer to the tap in the animal areas nearest the Primate Housing Unit (Fig.9 & 10).



Fig.9

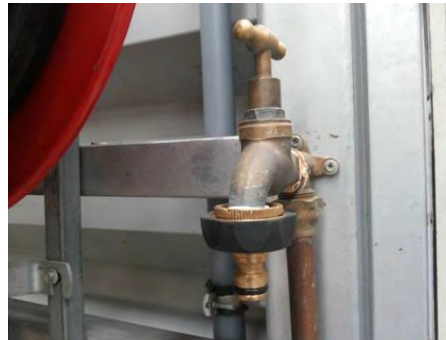


Fig.10

- 6.7 Attach the other end of the hose to the end of the pressure reducer and turn on the water (about 1 turn of the tap) (Fig.11).

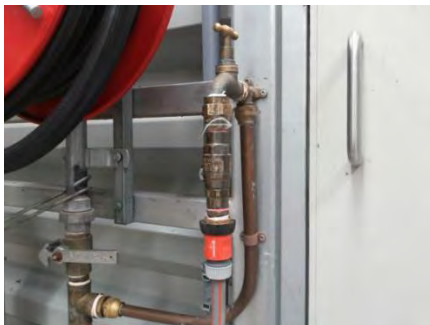


Fig.11

- 6.8 Check the nozzle/s in the Primate Housing Unit for correct water flow (Fig.12).



Fig.12

- 6.9 The second method of supplying water to Primate Housing Units is to fill a Polycarbonate Bowl that fits into the Water Forager Basket Insert (Fig.13) that can be fitted onto a Primate Housing Unit. This is the best solution for supplying water to young macaques or macaques that either have difficulty using the water nozzle in the Primate Housing Unit or require medicated drinking water.



Fig.13

- 6.10 Attach a Water Forage Basket Insert in the insert adaptor (Fig.14) of the Primate Housing Unit using a Robertson Wrench to lock it into Position (Fig.15).



Fig.14



Fig.15

- 6.11 Fill a Polycarbonate Bowl with Water and slide it into the Water Forager Basket Insert (Fig.16).



Fig.16

7. PROVIDING WATER AT [redacted]

- 7.1 There are two types of water bottles at [redacted]. Please see the figures below. Figure 17 is located in [redacted] and figure 18 is located in [redacted].



Figure 17.



Figure 18.

- 7.2 Water bottles are topped up full each morning. On hot days with temperatures 30 degrees and above, they are topped up at the end of the day also.
- 7.3 If animals are on water scheduling, they are not to be let outside on days where the temperature is 30 degrees and above. If they are to go outside, water scheduling for the day must cease.
- 7.4 To top up water bottles in [redacted] remove the bottle from the holder on the cage, refer to figure 19 below. Unscrew the cap and fill with cold water, either from the tap or sink. Screw the cap back on and return to bottle holder on cage, see figure 20 below.



Figure 19.



Figure 20.

- 7.5 To top up water bottles in [redacted] lift up the lid on the box, refer to figure 21 below. Use a jug from the prep area to fill the box with cold water. Close the lid back down.



Figure 21.

- 7.6** Some animals are on water scheduling; in this case, researchers will provide water allocations during training. Please check schedules in the areas prior to giving water. Water schedule sheets are prepared by the researchers and are available in the preparation areas in clearly marked folders. They are filled out by the researchers and are specific to their approved protocols.

8. ANIMAL MONITORING & WELFARE

- 8.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 8.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 8.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 8.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for Reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

9. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-RA-0161	Macaque Area Risk Assessment [REDACTED]
PQMS3-MARP-SOP-0117	Entry and Exit Procedures for Macaque Facilities [REDACTED]
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque Facility [REDACTED]
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013) https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes
NHMRC Guidelines	Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals https://www.nhmrc.gov.au/about-us/publications/guidelines-promote-wellbeing-animals-used-scientific-purposes
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016) https://www.nhmrc.gov.au/about-us/publications/principles-and-guidelines-care-and-use-non-human-primates-scientific-purposes
Monash OHSE	Using Biologicals and Animals at Monash University https://www.monash.edu/_data/assets/pdf_file/0006/147156/using-biologicals.pdf
Monash OHSE	Monash Move Smart https://www.monash.edu/_data/assets/pdf_file/0006/148596/movesmart.pdf
Monash OHSE	Monash OHSE Immunization https://www.monash.edu/_data/assets/pdf_file/0003/147117/immunisation-procedure.pdf
Monash OHSE	Monash OHSE Immunization Grid https://www.monash.edu/ohs/info-docs/safety-topics/immunisations
Monash OHSE	Μοναση ΟΗΣΕ Μονκευ-Β-Οιρθσ https://www.monash.edu/_data/assets/pdf_file/0020/147125/monkey-b-virus.pdf



DOCUMENT HISTORY			PQMS3-MARP-SOP-0319-V3.docx	
Version no.	Date of Issue	by: Name		Amendments
		Irrelevant information	OHS	
1	12/5/2017	[Redacted]		Original Document
2	05/08/2019			Updated Animal Monitoring and Welfare statement Added [Redacted] information Updated section 4 and references, fixed formatting
3	17/02/2022			Removed reference to PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility [Redacted] Updated approver Updated document history format Updated footer format

CLEANING GENERAL AREAS FOR MACAQUES (07/09/2020)

PQMS3-MARP-SOP-0321-V2

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from date of issue
Irrelevant Information	1-Sep-2020 12: 55 PM A
	- Sep- 2020 9: 52 AM AEST
	2-Sep-2020 1: 04 PM AES

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for cleaning general areas that are associated with Macaques.

1.2. Scope

This SOP is to be applied whenever cleaning general areas associated with Macaques at Irrelevant Info

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

📖 Nil

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.


3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
BC1	Biosecurity containment area for animals only that are held under biosecurity conditions.
PAPR	Powered Air Purifying Respirator
PPE	Personal Protective Equipment
Pro Foaming Gun	Tool attached to water hoses that dispenses cleaning chemicals in a foam
RA	Risk Assessment- A controlled Document
SOP	Standard Operating Protocol – A Controlled Document
Squeegee	Tool with a flat rubber blade used for removing water on flat surfaces

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0161 Macaque Area Risk Assessment 

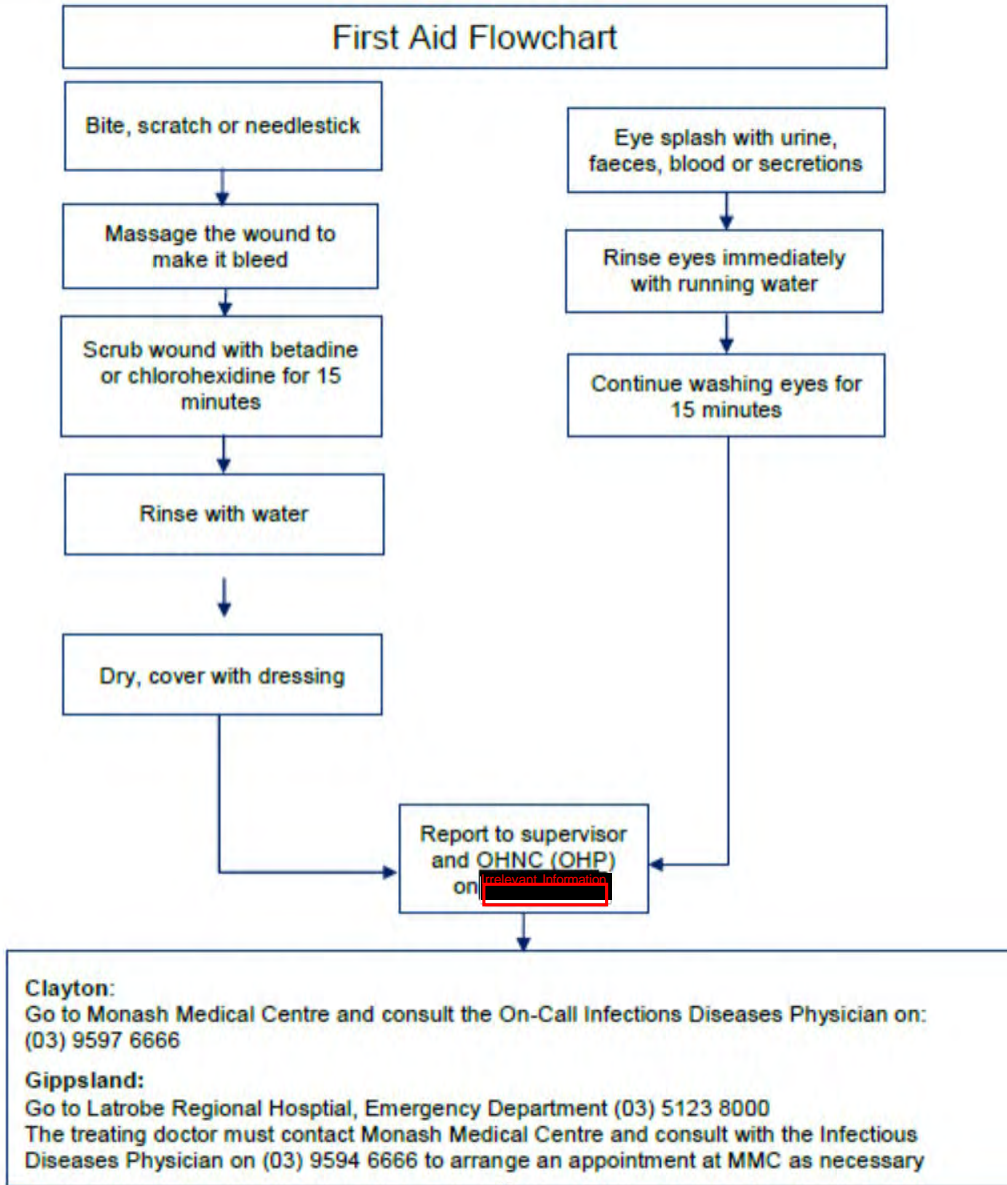
PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities 

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®-TB Gold Tuberculosis Screening

- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to Chemwatch Online.

Macaque First Aid Procedure



5. SCHEDULE FOR CLEANING GENERAL AREAS AT [REDACTED] FOR MACAQUES

5.1. Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
	N/A
QUANTITY	MATERIAL DETAILS
	N/A

5.2 Consult the Daily Task List for Macaques – [REDACTED] (Fig.1) which is displayed on the door of the Kitchen ([REDACTED]) for the scheduling of cleaning specific general areas at [REDACTED]

 PQMS-MARP-REF-0128 Daily Task List for Macaques – [REDACTED]

DAILY TASK LIST FOR MACAQUES - [REDACTED]		
MONDAY TO FRIDAY	WEEKEND	PUBLIC HOLIDAY
ENVIRONMENTAL OBSERVATIONS	ENVIRONMENTAL OBSERVATIONS	ENVIRONMENTAL OBSERVATIONS
TREATMENTS AND MEDICATIONS	TREATMENTS AND MEDICATIONS	TREATMENTS AND MEDICATIONS
HEALTH AND WATER CHECKS / OUTSIDE ACCESS / FEED PELLETS	HEALTH AND WATER CHECKS / FEED PELLETS	HEALTH AND WATER CHECKS / FEED PELLETS
LABTRACKS - Medications - Task Manager - Clean Cage Checks - Projects Monitoring	LABTRACKS - Medications - Task Manager - Clean Cage Checks - Projects Monitoring	LABTRACKS - Medications - Task Manager - Clean Cage Checks - Projects Monitoring
CLEANING FLEXAGONS (starting Monday if feasible and continuing until complete)		FEED FRUIT
OUTSIDE ACCESS LOCKED IN / FEED FRUIT / DOUBLE CHECK		WASH BUCKETS / CLEAN WASH AREA
WASH BUCKETS / HOPPERS / CLEAN WASH AREA		CLEAN FLEXAGONS IF SCHEDULED ON ROSTER
FOOD PREPARATION (as required)		FOOD PREPARATION (as required)
ENVIRONMENTAL ENRICHMENT DISTRIBUTION (as feasible)		

EXTRA TASKS AS PRIORITIZED BY REQUIREMENTS

WEEKLY	
Client Orders (Animals, Blood Collection, etc.)	Cleaning Store Room
Technical Procedures (worming, TB Testing, etc.)	Cleaning Returned Area (no animals) [REDACTED]
Enrichment Preparation	Cleaning / Restocking PAPR
Cleaning Kitchen [REDACTED]	Cleaning Change Rooms and Entrance Area [REDACTED]
Cleaning Infirmar [REDACTED]	Setup / Wash Bins
Cleaning Examina [REDACTED]	Eye Wash Testing
Cleaning Kitchen [REDACTED]	
MONTHLY OR AS REQUIRED	
Pressure Cleaning Floors around Flexagons	Cleaning Kitchen Windows
Cleaning [REDACTED] Exterior	Cleaning Cool Room and Shelves [REDACTED]
Cleaning Oven in [REDACTED]	Preparing Muffins

Fig.1 Macaque Area Task Lists

6. CLEANING CHANGE ROOM AND ENTRANCE relevant information

6.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Bucket
1	Mop
QUANTITY	MATERIAL DETAILS
1	Multi-purpose spray, e.g. Ajax Spray & Wipe
As required	Paper towel
As required	80% Ethanol v/v

6.2 Ensure staff gumboots on boot rack are clean and tidy. If gumboots require cleaning, use the hand held hose adjacent to the boot rack to hose boots over the floor drain (Fig.2).



Fig.2 Gumboots on boot rack

6.3 Ensure work boots are all tidy and stacked neatly under bench (Fig.3).



Fig.3 Gumboots stored under bench.

6.4 Clean sinks and bench with 80% v/v Ethanol solution and paper towel (Fig.4).

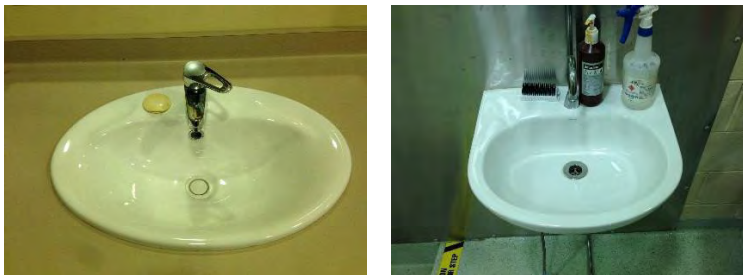


Fig.4 Sinks cleaned.

- 6.5** Tidy storage rack and discard any tattered coveralls (Fig.5). Restock coveralls and gloves from stock in the store room relevant information



Fig.5 Storage rack

- 6.6** Tidy up visitor's rack and gear (Fig.6).



Fig.6 PAPR equipment hung on hooks

- 6.7** Tidy up PAPR battery recharge station (Fig.7).



Fig.7 PAPR battery charging station

- 6.8** Restock Paper Towel Holder and Hand Disinfectant Dispensers as required (Fig.8) from stock in the store room relevant information



Fig.8 Paper towel and hand wash dispenser

- 6.9** Empty Large Waste Bin and replace with a Black Garbage Bag Liner (Fig.9). Garbage Bag Liners are stored in the Store Room relevant information



Fig.9 Large waste bin

- 6.10** All Change Room Lockers (Fig.10) should be emptied and wiped down with a multi-purpose cleaner, which is stored in the cupboard beneath the sink in relevant information

- Floors, Shower cubicles, toilets, hand basins and small waste bins in relevant information relevant information are cleaned daily by a contractor.



Fig.10 Double sided change room lockers.

- 6.11** Restock Shampoo, Conditioner and Body Wash in Showers as required from stock in the cupboard under the sink in the Entrance Area.

7. CLEANING KITCHEN ACCESS [relevant information]

7.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Bucket
1	Mop
1	Dustbin and brush
QUANTITY	MATERIAL DETAILS
As required	Broad Spectrum Disinfectant, e.g. F10SC

- 7.2** Sweep the floor using a broom and remove debris using a dust pan brush and shovel into a waste bin. Dustbin and brush is located in cupboard under sink in the [irrelevant information]. The broom is hung at corner of Kitchen Access Corridor (Fig.11).



Fig.11 [irrelevant] kitchen access corridor.

- 7.3** Fill a mop bucket with the Broad-Spectrum Disinfectant as per the manufacturer's instructions. The Disinfectant, mop and bucket are stored in the Wash Room [relevant information]

- 7.4** Mop the floor (Fig.12).

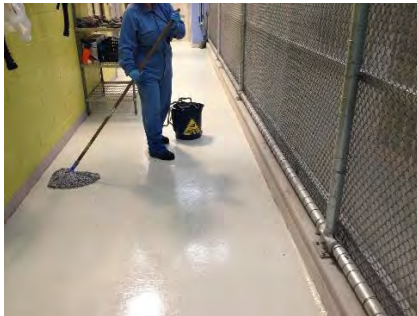


Fig.12 Mopping [irrelevant]

- 7.5** Once finished squeeze mop head thoroughly and discard waste water from bucket into drain in wash room [relevant information]
- 7.6** Hang broom back on hanger, dust pan and brush back in the kitchen and store mop and bucket in washroom.
- 7.7** Restock gloves and PAPR as required from stock in the [relevant information]

8. CLEANING INFIRMARY relevant information

8.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Bucket
1	Mop
1	Spray Bottle
1	Dustbin and brush
QUANTITY	MATERIAL DETAILS
As required	80% Ethanol v/v
As required	Broad Spectrum Disinfectant, e.g. F10SC
As required	Paper towel

8.2 Pickup spray bottle filled with 80% ethanol v/v and spray sink and then wipe clean with paper towel from dispenser in room (Fig.13).



Fig.13 Sink area of irrelevant

8.3 Tidy benches if required and spray with 80% v/v ethanol and wipe clean with paper towel (Fig.14).



Fig.14 Ethanol spray and paper towel

8.4 Wipe doors, windows, door handles with 80% v/v ethanol and wipe clean with paper towel.

8.5 Sweep the floor using a broom and remove debris using a dust bin brush and shovel into a waste bin. Dustbin and brush is located in cupboard under sink in the Kitchen relevant information The broom is hung at corner of Kitchen Access Corridor relevant information

- 8.6** Fill a mop bucket with the Broad-Spectrum Disinfectant as per the manufacturer's instructions. The Disinfectant, mop and bucket are stored in the **relevant information**.
- 8.7** Mop floor.
- 8.8** Once finished squeeze mop head thoroughly and discard waste water from bucket into drain in wash room **relevant information**.
- 8.9** Hang broom back on hanger, dust pan and brush back in the kitchen and store mop and bucket in washroom.
- 8.10** Tie up and dispose of bin liner from general waste bin (Fig.15) into one of the 240 litre Wheelie Bins and replace bin liner from store room **relevant information**.



Fig.15 The 240 litre general waste bin in **relevant information**.

- 8.11** Tie up and dispose of clinical waste bin liner from the clinical waste bins (Fig.16) by taking to **relevant information relevant** and placing into freezer **relevant information** in room **relevant information**. Replace clinical waste liners from store room **relevant information**.



Fig.16 Clinical waste and sharps bins.

- 8.12** If sharp containers are full, notify the Animal Facility Manager for disposal by accredited contractors.
- 8.13** Restock Gloves, Paper Towel Holder and Hand Disinfectant Dispensers as required from stock in the store room **relevant information**.
- 8.14** Check veterinarian supplies in mobile bench and on shelves and notify the MARP veterinarian if supplies need to be ordered.

9. CLEANING EXAMINATION irrelevant information

9.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Bucket
1	Mop
1	Wheelie Waste Bin
1	Spray Bottle
1	Dust pan and brush
QUANTITY	MATERIAL DETAILS
As required	Broad-Spectrum Disinfectant, e.g. F10SC
As required	80% Ethanol v/v
As required	Paper towel

9.2 Pickup spray bottle filled with 80% Ethanol v/v and spray sink and then wipe clean with paper towel from dispenser in room.

9.3 Wipe doors, windows, door handles (Fig.17) with 80% Ethanol v/v and wipe clean with paper towel.



Fig.17 Wiped down handles and windows in irrelevant info

9.4 Tidy cupboards if required.

9.5 Tie up and dispose of bin liner from small general waste bin into one of the 240 litre Wheelie Bins and replace bin liner from cupboard under sink in the Kitchen irrelevant information

9.6 Tie up and dispose of clinical waste bin liner from the clinical waste bins by taking to irrelevant information and placing into freezer irrelevant information in irrelevant information. Replace clinical waste liners from store room irrelevant information

9.7 Sweep the floor using a broom and remove debris using a dust pan brush and shovel into a waste bin. Dustbin and brush is located in cupboard under sink in the Kitchen irrelevant information. The broom is hung at corner of Kitchen Access Corridor irrelevant information

9.8 Fill a mop bucket with the Broad-Spectrum Disinfectant as per the manufacturer's instructions. The Disinfectant, mop and bucket are stored in the Wash Room irrelevant information

9.9 Mop floor.

9.10 Once finished squeeze mop head thoroughly and discard waste water from bucket into drain in wash room irrelevant information

9.11 Hang broom back on hanger, dust pan and brush back in the kitchen and store mop and bucket in washroom.

9.12 Restock Gloves, Paper Towel Holder and Hand Disinfectant Dispensers as required from stock in the store room irrelevant information

9.13 Check all drugs and medical supplies in drug cabinets and notify the MARP veterinarian if supplies need to be ordered.

10. **CLEANING KITCHEN** relevant information

10.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Bucket
1	Mop
1	Wheelie Waste Bin
QUANTITY	MATERIAL DETAILS
As required	Broad-Spectrum Disinfectant, e.g. F10SC.
As required	80% Ethanol v/v
1	240 litre heavy duty waste bags
As required	Paper towel

10.2 Tidy up bench tops and place any rubbish into waste bin.

10.3 Use portable hand vacuum (Fig.18) to vacuum bench tops, including behind computers, telephones, printer and paper storage trays.



Fig.1 Portable vacuum cleaner.

10.4 Clean any dishes in the sink and pack away any dishes that have dried.

10.5 Pickup spray bottle filled with 80% Ethanol v/v and spray bench tops and sink, then wipe clean with paper towel from dispenser in room relevant information

10.6 Wipe doors, windows, door handles with 80% Ethanol v/v and wipe clean with paper towel.

10.7 Tidy cupboards and underneath centre bench if required. Wipe out front of cupboards and cupboard shelves.

10.8 Pickup anti-fatigue mats from floor (Fig.19) and take to the Wash Room relevant information or cleaning.

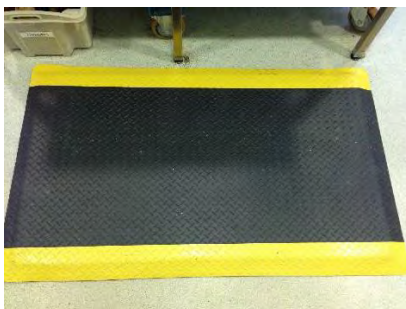


Fig.19. Anti-fatigue mats in relevant information

- 10.9** Sweep the floor using a broom and remove debris using a dust pan brush and shovel. Dustbin and brush is located in cupboard under sink in the Kitchen [redacted]. The broom is hung at corner of Kitchen Access Corridor [redacted].
- 10.10** Tip debris into the waste bin under the Kitchen bench adjacent to the sink. Tie up bin liner from the waste bin and put into a 240 litre Wheelie Bin. Wheel waste bin to the Wash Room [redacted] for cleaning.
- 10.11** Fill a mop bucket with the Broad-Spectrum Disinfectant as per the manufacturer's instructions. The Disinfectant, mop and bucket are stored in the Wash Room [redacted].
- 10.12** Mop floor (Fig.20).



Fig.20 Mopping [redacted] floor

- 10.13** Once finished squeeze mop head thoroughly and discard waste water from bucket into drain in wash room [redacted].
- 10.14** Hang broom back on hanger, dust pan and brush back in the kitchen and store mop and bucket in washroom.
- 10.15** After cleaning and rinsing the anti-fatigue mats and waste bin in the wash room, allow them to dry before returning them to the Kitchen. Put another bin liner from the store room [redacted] in the waste bin.
- 10.16** Check food environmental enrichment from the pantry cupboard (Fig.21) next to the Cool Room and other supplies, such as cleaning sprays, chuck towels, tea towels, resealable plastic storage bags, stationery, etc., found in the other storage cupboards in the Kitchen and notify the facility supervisor if stocks require ordering or replacing.



Fig.21 Pantry and under bench/ sink cupboards.

11. **CLEANING COOL ROOM** relevant information

11.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Dust pan and brush
1	Bucket
1	Mop
1	Wheellie Waste Bin
QUANTITY	MATERIAL DETAILS
As required	Broad-Spectrum Disinfectant, e.g. F10SC
As required	Multi-purpose spray, e.g. Ajax Spray & Wipe

11.2 Move any boxes of food to the storage racks on one side of the room to facilitate cleaning (Fig.22).

- It's easier to clean the Cool Room the day before it is restocked with fruit and vegetables.



Fig.22 Storage racks in the cool room

11.3 Turn off fan in the Cool Room by pressing the switch between the two fans (Fig.23).



Fig.23 The fan switch in the cool room


- 11.4** Spray around fan housing and shelves with the multipurpose spray and wipe with paper towel. The spray bottle is stored in the cupboard under the sink in the Kitchen.
- If the fans are dirty, inform the Animal Facility Manager so that a request can be submitted to get them cleaned by a contractor.
- 11.5** Sweep the floor using a broom and remove debris using a dust pan brush and shovel. Dustbin and brush is located in cupboard under sink in the Kitchen [relevant information]. The broom is hung at corner of Kitchen Access Corridor [relevant information].
- 11.6** Tip debris into the waste bin under the Kitchen [relevant information] bench adjacent to the sink.
- 11.7** Fill a mop bucket with the Broad-Spectrum Disinfectant as per the manufacturer's instructions. The Disinfectant, mop and bucket are stored in the Wash Room [relevant information].
- 11.8** Mop the floor.
- 11.9** Once finished squeeze mop head thoroughly and discard waste water from bucket into drain in wash room [relevant information].
- 11.10** Hang broom back on hanger, dust pan and brush back in the kitchen and store mop and bucket in washroom.
- 11.11** Turn on the fans again by pressing the switch located between the two fans.

12. CLEANING KITCHEN WINDOWS Relevant Information

12.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Hose with nozzle
1	Pro foaming Gun
1	Squeegee
QUANTITY	MATERIAL DETAILS
As required	Broad-Spectrum Disinfectant, e.g. F10SC
As required	Multipurpose spray, e.g. Ajax spray & wipe
As required	Handy Wipes cleaning cloths

12.2 The outside of the Kitchen windows (Fig.24) are first hosed with a high pressure hose.

 This is easier if incorporated with routine cleaning of Flexagons when the high pressure hoses are used next to the Kitchen area.


 PQMS3-MARP-SOP-0112 Cleaning of Flexagons for Macaques



Fig.24 Outside kitchen windows.


12.3 Using a Pro Foaming Spray Gun, spray the windows with the Broad-Spectrum disinfectant used as per the manufacturer's instructions. Allow to soak for 10 minutes.

12.4 Rinse thoroughly with the hose.

12.5 Pick up a squeegee from the Store Room Relevant Information and use to remove excess water off windows to prevent water smudges.

12.6 Return squeegee to the store room.

12.7 Clean the inside of the Kitchen Windows by getting a bottle of multipurpose spray from the cupboard beneath the sink in the Kitchen. Spray the inside of the Kitchen windows with spray bottle and then wipe down with Chuck handy wipes, which is located in the cupboard beneath the sink in the Kitchen.

 Use a step ladder to stand on the benches in the Kitchen to reach the windows. Care must be taken to prevent falls.

13. **CLEANING STORE ROOM** [redacted]

13.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Bucket
1	Mop
1	Wheelie Waste Bin
QUANTITY	MATERIAL DETAILS
As required	Broad-Spectrum Disinfectant, e.g. F10SC

13.2 Tidy shelves in the store room (Fig.25), making sure everything is stacked neatly and safely.



Fig.25 Store room shelves

13.3 Push out trolleys holding equipment (Fig.26) so entire floor is accessible.



Fig.26 Trolleys for equipment storage

13.4 Sweep the floor using a broom and remove debris using a dust pan brush and shovel. Dustbin and brush is located in cupboard under sink in the Kitchen [redacted]. The broom is hung at corner of Kitchen Access Corridor [redacted].

13.5 Tip debris into one of the 240 litre Wheelie Bins.

13.6 Fill a mop bucket with the Broad-Spectrum Disinfectant as per the manufacturer's instructions. The Disinfectant, mop and bucket are stored in the Wash Room [redacted].

13.7 Mop the floor.

13.8 Once finished squeeze mop head thoroughly and discard waste water from bucket into drain in wash room [redacted].

13.9 Hang broom back on hanger, dust pan and brush back in the kitchen and store mop and bucket in washroom.

13.10 Check all consumables and other supplies in the Store Room and notify facility supervisor if stock needs to be ordered.

14. CLEANING RETURNED AREA relevant information

14.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Dust pan and brush
1	Bucket
1	Mop
1	Wheelie Waste Bin
QUANTITY	MATERIAL DETAILS
As required	Broad-Spectrum Disinfectant, e.g. F10 SC
As required	80% Ethanol v/v
As required	Paper Towel

14.2 The Returned Area relevant information also operates as a BC1 Approved Arrangement.

- ✂ All cleaning or animal husbandry performed within the Returned Area needs to be documented in the Log Book. This is located on the bench near the external door during quarantine periods or next to the Daily Diary Log located in the Kitchen Area relevant information when there's no quarantine being conducted.

14.3 If macaques are being housed within the Returned Area, whether they're under quarantine or not, then their enclosures are cleaned as per the cleaning routines for flexagons.

- 📖 PQMS3-MARP-SOP-0112 Cleaning of Flexagons for Macaques.

14.4 Pickup spray bottle filled with 80% Ethanol v/v and spray sink (Fig.27) and all benches (Fig.28) and then wipe clean with paper towel from dispenser in room.



Fig.27 Sink in relevant information



Fig.28 Benches in relevant information Yellow biosecurity waste bin with orange liner.



- 14.5** Sweep the floor using a broom and remove debris using a dust pan brush and shovel. The broom, dust pan and brush is located in the Returned Area.
- 14.6** Tip debris into one of the 240 litre Wheelie Bins.
 - Do not use the Yellow Biosecurity Waste Bin in the Returned Area for discarding general debris unless the area is holding quarantine animals. The Yellow Biosecurity Waste Bin is reserved for quarantine waste only.
- 14.7** Fill a mop bucket with the Broad-Spectrum Disinfectant as per the manufacturer's instructions. The Disinfectant, mop and bucket are stored in the Returned Area.
- 14.8** Once finished squeeze mop head thoroughly and discard waste water from bucket into one of the drains in the Returned Area.
- 14.9** Place broom, dust pan and brush back where they were picked up in the Returned Area.
- 14.10** Restock Gloves, Paper Towel Holder and Hand Disinfectant Dispensers as required from stock in the store room relevant information

15. **CLEANING** irrelevant information **EXTERIOR**

15.1 Equipment & materials required for procedure.

QUANTITY	EQUIPMENT DETAILS
1	Broom
1	Hose with nozzle
1	Key to external doors
QUANTITY	MATERIAL DETAILS
	Nil

15.2 Pick up a brush from the store room irrelevant information

15.3 Unlock the door to the exterior of the building where cleaning will be conducted (Fig.29).



Fig.29 Outside access door

15.4 Brush cobwebs off the side of the building (Fig.30).

- Bad infestations of cobwebs should be reported to the Animal Facility manager who will arrange for them to be sprayed by a Pest Control Contractor.
- Weeds along the walkways along the sides of the building are killed by spraying with weedkiller. Notify the service assistant when weeds need to be sprayed.



Fig.30 The external side of the building.

- 15.5** Pick up a high pressure hose located next to every door to the exterior (Fig.31).



Fig.31 Wash down hose

- 15.6** Turn on the hose and hose the side of the building to remove dirt and grime.
- 15.7** Turn off the hose and wind the hose reel up.
- 15.8** Lock the door to the exterior.
- 15.9** Repeat steps 15.3 to 15.8 for all other external areas that will be cleaned.
- 15.10** Using the brush, brush away all stones and dirt off the concrete slab at the front of the building near the main entrance at relevant information and the rear of the building near the Goods Entry (Fig.32).



Fig.5 Entrance and goods entry to relevant information

- 15.11** Return the brush to the store room.

16. ANIMAL MONITORING & WELFARE

N/A

17. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-REF-0128	Daily Task List for Macaques - REDACTED
PQMS3-MARP-SOP-0112	Cleaning of Flexagons for Macaques
EXTERNAL REFERENCES	
Nil	



DOCUMENT HISTORY		irrelevant information	PQMS3-MARP-SOP-0321-V2.docx
Version no.	Date of Issue		Amendments
1	15/08/2017		Original document
2	07/09/2020		Updated section 4 and flowchart, removed Animal Monitoring and Welfare Statement as no animals are involved, updated references. Formatting. Updated Animal Monitoring and Welfare statement

BREEDING MANAGEMENT IN MACAQUES (18/07/2022)

PQMS3-MARP-SOP-0388-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from date of issue	
Irrelevant Information	07- Sep- 2022 9: 49	AM AEST
	08- Sep- 2022 1: 24	PM AEST
	19- Sep- 2022 2: 06	PM AEST

1. INTRODUCTION
1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used by staff for pedigree maintenance of macaques used for breeding.




1.2. Scope

This SOP is to be applied to all staff members working with Macaques across MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0128 Macaque Animal Records
-  PQMS3-MARP-SOP-0120 Grouping Macaques
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Harem	Breeding system where there is one stud male to several breeding females.
PPE	Personal Protective Equipment
SOP	Standard Operating Protocol – A Controlled Document
WIN	Work Instructions – A Controlled Document

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents relevant to the area they're working in:

SARAH Ref no. 24354 Macaque Area Risk Assessment - irrelevant information

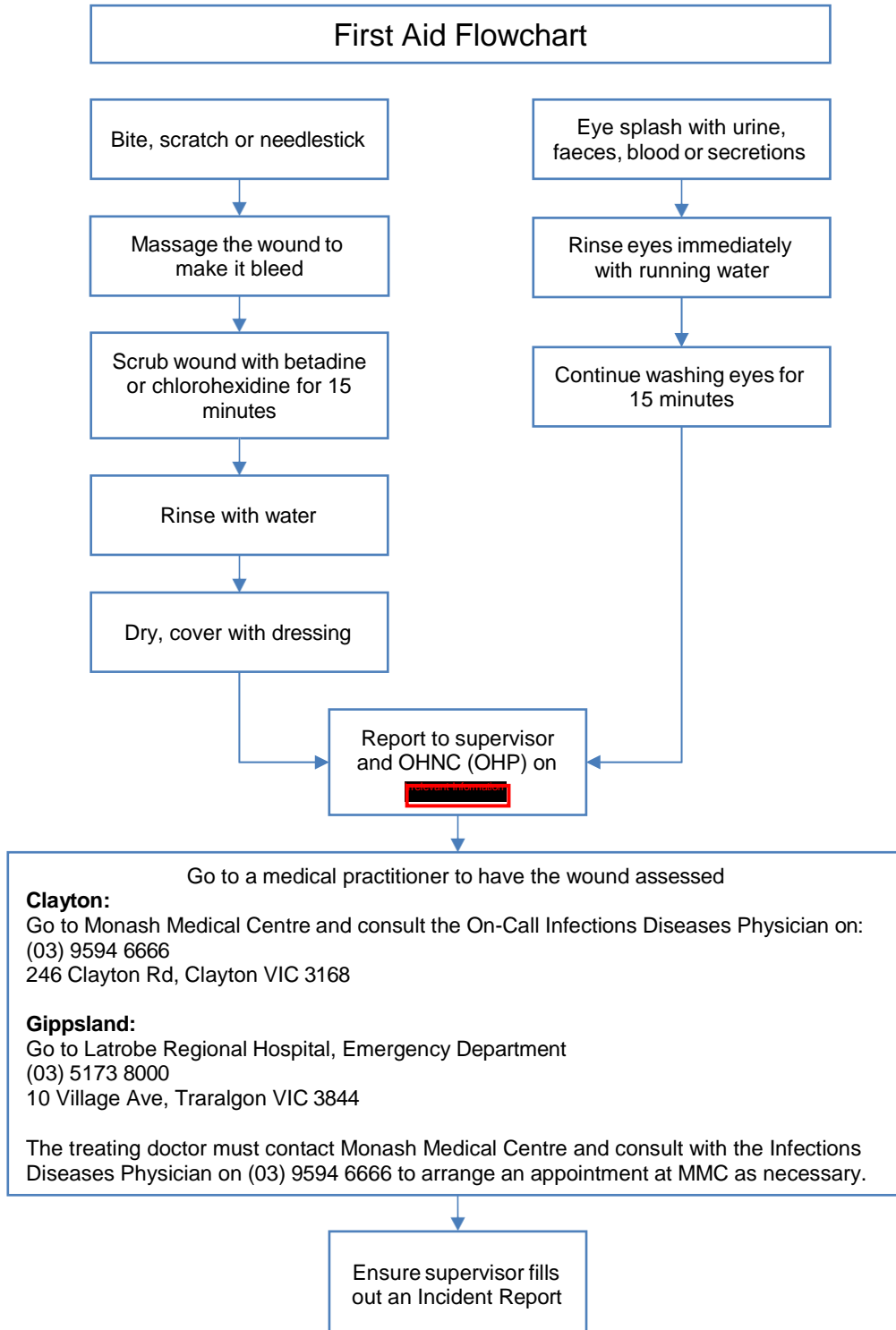
PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities relevant info

PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility relevant info

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque. [MANAGEMENT OF SUSPECTED EXPOSURE TO MACACINE ALPHAHERPES VIRUS 1 \(B VIRUS\) PROCEDURE](#)
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area.

Macaque First Aid Procedure



5. BREEDING INFORMATION


In captive breeding colonies, macaques are maintained in harem groups generally consisting of up to 12 females and their young, to one male. To prevent inbreeding, males should have no genetic relationship to any of the females. This mating system helps to ensure that the genetic pool remains as diverse as possible reflecting that found in the wild population.

Because there are fewer males than females in the colony, control of genetic variation is maintained by carefully matching the male to prospective females. While a shared relationship amongst female members is acceptable, in fact often unavoidable, there should be no shared relationship in the family background between the male and female.

Once established, a harem group can be maintained for up to a generation of breeding, or until it becomes necessary to replace the male. While this limits the genetic variation within the group, the benefits of maintaining a stable, harmonious relationship between individuals within the group greatly outweighs any disruption caused by frequent introduction of new males to the group.

When establishing a new breeding group, macaques should be as young as possible (2- 5 years of age). Later, any attrition of female members can be replaced by absorbing females (up to 14 years old) from other retired groups.

Each macaque has its own individual record that includes a pedigree sheet detailing its own pedigree.

 PQMS3-MARP-SOP-0128 Macaque Animal Records

Generally, macaque pedigrees can only be traced back to 3- 5 generations.


Due to the incompleteness of the macaque's pedigrees, it is assumed that no relationships exist between the macaques past the known recorded pedigree.

6. PREPARING NEW BREEDING GROUP

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer
QUANTITY	MATERIAL DETAILS
1	Macaque Animal Records
1	Macaque Colony Records

6.2. Match pedigrees of prospective males against those of the breeding females to compare any relationships or shared heritage.

 PQMS3-MARP-SOP-0128 Macaque Animal Records


6.3. If the prospective male shares any relationship or heritage with any females, then either another male has to be selected or the female(s) moved from the group and replaced by more suitable female(s).

There are a number of factors that need to be considered when selecting a male or female breeder for use in the breeding program. These are as follows:


- The genetic relationship to other prospective members in the group.
- Previous breeding history if any. (i.e. 50/50 sex ratio, low stillborn/ death rate)
- Female's not currently pregnant or suckling infants.
- Temperament, especially for males.
- No deformities.
- Not younger than 2 years of age.
- Not older than 14 years of age.

There should be a few reserve female breeders available, though only reserve males should be maintained.

6.4. Introduce the females to the male in the group.

 PQMS3-MARP-SOP-0120 Grouping Macaques

6.5. Update the cage list in LabTracks.

 PQMS3-MARP-SOP-0128 Macaque Animal Records

7. REPLACING A BREEDER IN AN EXISTING BREEDING GROUP


7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer
QUANTITY	MATERIAL DETAILS
1	Macaque Animal Records
1	Macaque Colony Records

7.2. Match the pedigree of the available female reserve breeding stock macaques with the incumbent male breeder in the group if replacing a female or match the pedigree of the available reserve breeding stock male macaques with the incumbent female breeders in the group if replacing a male. This is to select potential macaques that can be used for breeding with the macaques already present in the group.


7.3. From the list, select the most suitable female or male in regards to age and history, including any previous breeding experience, comparable with the existing group so they are as similar as possible.

7.4. Females can be introduced into the group using standard introduction procedures.


 PQMS3-MARP-SOP-0120 Grouping Macaques

7.5. Adult Male Macaques require that there are no young infants and/or heavily pregnant females in the group prior to introducing them. This is because male macaques (especially Pigtails) have been known to commit infanticide if there's any very young infants present when they are combined with a group.

Once the above has been established, the introduction of the new Adult Male can proceed using standard introduction procedures.

 PQMS3-MARP-SOP-0120 Grouping Macaques

7.6. Update the cage list in LabTracks

 PQMS3-MARP-SOP-0128 Macaque Animal Records

8. CONFIRM PREGNANCY

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Tunnel Adaptor
1	Transfer Tunnel
1	Primate Housing Unit
1	Trolley or Table
1	Woolly blanket
QUANTITY	MATERIAL DETAILS
1	Lock and Key
As required	Injectable anaesthesia

8.2 Pregnancy in macaques can be determined by a trained technician about mid-pregnancy by palpation or by ultrasound as the uterus has started moving up further in the abdominal cavity by that stage.


The average gestation length for Longtail Macaques (*Macaca fascicularis*) is 165 days and for Pigtail Macaques (*Macaca nemestrina*) is 170 days.

So pregnancy could be confirmed by palpation or ultrasound as early as 80-85 days, though pregnancy confirmation isn't routinely performed as a procedure for macaques at REDACTED

8.3 Capture and restrain the female macaque by routine capture procedures and injectable anaesthesia. Pregnancy confirmation of macaques through palpation would generally only occur while some other procedure that requires anaesthesia was being performed, such as TB testing.

 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

8.4 Inject the anaesthesia IM (intramuscular) into the side of the quadriceps facing the operator.


 PQMS3-MARP-SOP-0186 Anaesthesia in Macaques

8.5 Wait until the female becomes unconscious then unlock the door of the Primate Housing Unit.

8.6 Determine the amount of withdrawal reflex in the macaque. If no withdrawal reflex is present, carefully grab both arms of the macaque and gently hold them behind its back in a restraint hold.

8.7 The macaque can now safely be removed from the Primate Housing Unit.

8.8 Lay the macaque down on a trolley or table covered by a woolly blanket. Gently palpate the abdomen for the presence of a swollen uterus, which would confirm pregnancy. In early pregnancy, the uterus is smaller and located close to the urinary bladder.

 If the macaque isn't completely unconscious, a second technician can use a restraint hold on the macaque in a vertical position so that the abdomen can be palpated.

 PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint

9. DETERMINING WHEN TO REMOVE FROM BREEDING


9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer
QUANTITY	MATERIAL DETAILS
1	Macaque Animal Records
1	Macaque Colony Records


9.2 Macaques should be removed from the breeding program if any of the following situations occur, in no particular order;

- Breeders that are over 18 years of age.
- Undesirable traits that have developed whilst breeding (e.g. overly aggressive behaviour, stealing infants from other females, neglecting own infant, etc.).
- Illness or inheritable predisposition to anatomical or physiological problem (e.g. hernia, diseases, reproductive, etc.).
- Poor reproductive performance such as;
 - Failure to conceive in 3 years
 - 3 miscarriages or still born neonates
 - 3 neonatal deaths

9.3 Macaques when retired are moved to a group of similarly retired animals.

 PQMS3-MARP-SOP-0120 Grouping Macaques

9.4 Update the cage list in LabTracks

 PQMS3-MARP-SOP-0128 Macaque Animal Records

10. ANIMAL MONITORING & WELFARE

- 10.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 10.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 10.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 10.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate within 72 hours of its detection. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

11. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref no. 24354	Macaque Area Risk Assessment - [REDACTED]
PQMS3-MARP-SOP-0104	Macaques – Capture and Restraint
PQMS3-MARP-SOP-0117	Entry and Exit Procedures to Macaque Facilities - [REDACTED]
PQMS3-MARP-SOP-0120	Grouping Macaques
PQMS3-MARP-SOP-0128	Macaque Animal Records
PQMS3-MARP-SOP-0154	Entry and Exit Procedures for Macaque [REDACTED]
PQMS3-MARP-SOP-0186	Anaesthesia in Macaques
EXTERNAL REFERENCES	
NHMRC Codes of Practice	Australian Code for the Care and Use of Animals for Scientific Purposes (8 th Edition – 2013) https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes
NHMRC Guidelines	Principles and guidelines for the care and use of non-human primates for scientific purposes (2016) https://www.nhmrc.gov.au/about-us/publications/principles-and-guidelines-care-and-use-non-human-primates-scientific-purposes
MONASH OHS	MANAGEMENT OF SUSPECTED EXPOSURE TO MACACINE ALPHAHERPES VIRUS 1 (B VIRUS) PROCEDURE



DOCUMENT HISTORY			PQMS3-MARP-SOP-0388-V3.docx	
Version no.	Date of Issue	Reviewed by: Name		Amendments
1	23/03/2017	irrelevant information		Original document
2	28/10/2019			Update to Animal Monitoring & Welfare statement
3	20/06/2022			Updated section 4 and added updated OHS First Aid flowchart. Added LabTracks recording steps, update to animal monitoring and welfare statement.
				<p>Changed approver from irrelevant information</p> <p>Added OHS column to Document History</p> <p>Updated Document Authorisation and footer formatting</p> <p>Section 4: Updated is assessment reference, updated first aid flowchart, removed reference to superseded SOP-0143</p> <p>Section 6 and 7: Removed yellow highlighted but left text</p> <p>Section 11: Updated references</p> <p>No Changes to the body of this SOP.</p>

SPECIALISED CARE OF MARMOSET NEONATES (23/09/2020)

PQMS3-MARP-SOP-0056-V2.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

Irrelevant Information

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- Oct - 2020 |

10: 47 AM AE

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Procedure (SOP) is to detail the standard for neonate care in the Marmoset Colony and is essential for the successful raising of neonate Marmosets.






1.2. Scope

This SOP is to be applied to all technician staff performing the task of raising Marmosets.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets
-  PQMS3-MARP-SOP-0269 Sexing of Marmosets
-  PQMS3-MARP-SOP-0273 Weighing Marmosets
-  PQMS3-MARP-SOP-0447 Health Monitoring in Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

Definition	Brief Explanation
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Procedure
FRM	Form – A controlled Document
UFN	Until Further Notice
AFM	Animal Facility Manager

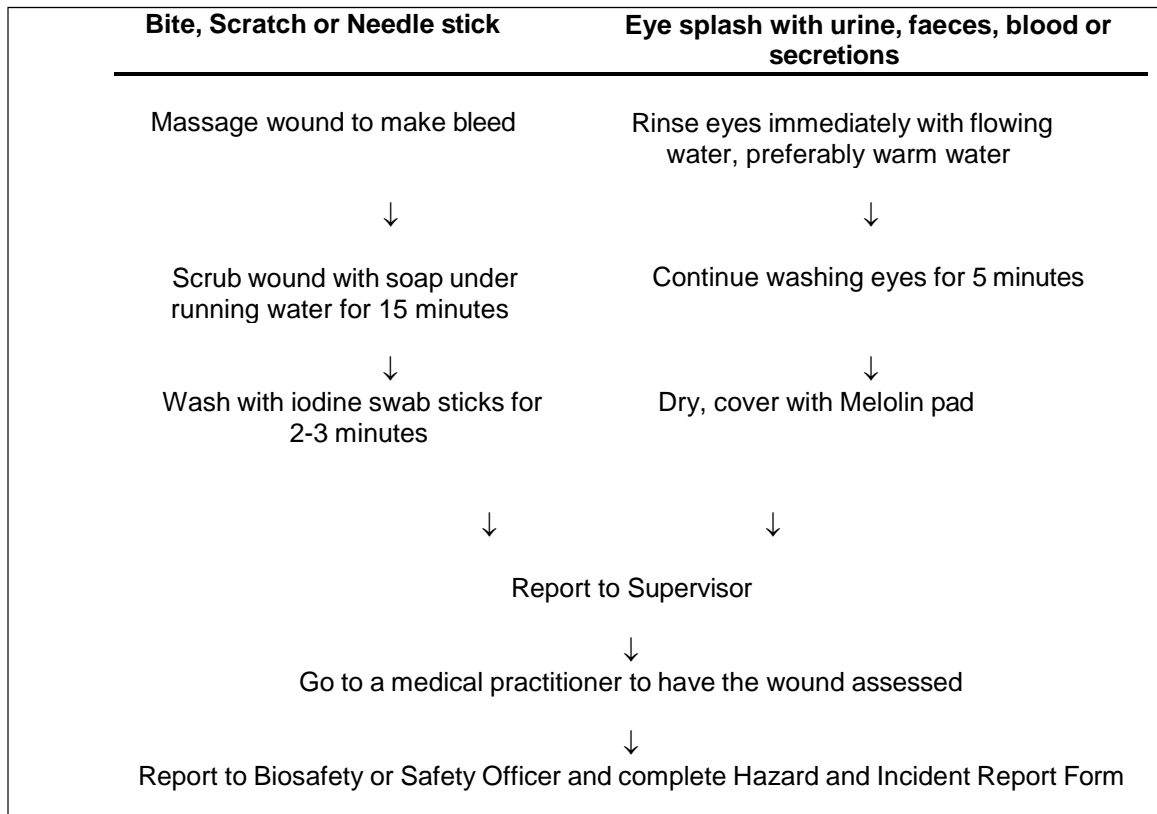
Parturition	The act of giving birth to young
Vytrate	A non-antibiotic supportive treatment for scouring or dehydration
PD	Post Natal Day

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Specific health and safety considerations while performing this procedure are:



- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the **irrelevant Information** of **irrelevant Information** **Chemwatch?**



5. PREPARATION OF HEAT SOURCE

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Perspex Neonate Box
QUANTITY	MATERIAL DETAILS
1	500mL saline fluid Bag
1	Hand towel

-  As neonates can be unable to thermo-regulate for the first four weeks of their life, a heat source can be used to provide warmth in the absence of a carrier animal.
-  A heat source may be prepared prior to obtaining the neonate from the cage, so the neonates do not become cold during preparation.

5.2 Collect the 500mL saline fluid bag from the neonatal perspex box in irrelevant. Preferably use a fluid bag that has expired.

5.3 Heat the fluid bag in the microwave in irrelevant for 30 seconds to 1 minute. Once finished shake fluid bag to remove any hot spots and check temperature of the bag by placing the bag on one's wrist. Ensure the fluid is tepid, not too hot or cold.

5.4 Wrap the fluid bag in a hand towel and place into the neonate transport box, see Figure.1 below.

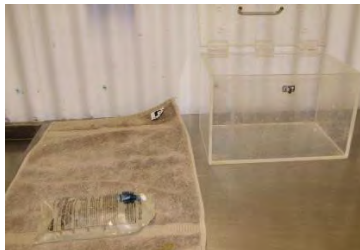


FIGURE 1: WRAP FLUID BAG IN TOWEL

5.5 Ensure the bottom of the towel is not directly in contact with the heat source, this is to allow the infant to escape the heat to a cooler area of the towel if it chooses. See figure 2.



Figure 2: Bag wrapped in towel, leaving half the towel with no heat source

6. CHECKING PREGNANT FEMALES FOR PARTUTION

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	NILL
QUANTITY	MATERIAL DETAILS
As required	Task Specific PPE - Examination Gloves, Safety Glasses, P2 Mask

6.2 Whilst completing daily routine animal checks, observe any pregnant females for the following;

- Blood in the cage
- Unusual behaviour such as hiding away from technicians
- Any discharge or foreign material protruding from the vagina
- Any "Heavy Pregnant" signs (See figure 3) on the animal cages. Particularly observe for newborn neonates.



Figure 3: Heavy Pregnant sign



Parturition usually occurs late evening to the early hours of the morning.

Inform your supervisor and veterinarian if you find a female in labour immediately and complete a wellness report in Labtracks.

7. NEWBORN NEONATES - DAY OF BIRTH HANDLING PROCEDURES


7.1 The following equipment and materials are required to perform this procedure:


QUANTITY	EQUIPMENT DETAILS
1	Neonate box with heating source
1	Scales
1	Animal clippers
QUANTITY	MATERIAL DETAILS
As required	Task Specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

7.2 Prepare neonate box as per section 5.


7.3 Wear task specific PPE listed above and approach family cage to remove neonates as per SOP

 PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets

 Prior to capture, check newborn neonates. Neonates should only be handled if they have a clean and dry coat.

 It is also not recommended to remove neonates from the mother, if they are feeding.

7.4 Determine sex of each neonate

 PQMS3-MARP-SOP-0269. Sexing of Marmosets

7.5 If there are two or three neonates of the same sex, shave a small section of the tail or shoulders for identification purposes with clippers (Refer to Figures 4 & 5) Record this information in the ID field in the 'animals in group' tab, in Labtracks.



FIGURE 4: TAIL SHAVING



FIGURE 5: SHOULDER SHAVING

7.6 Weigh neonate as per SOP


 PQMS3-MARP-SOP-0273 Weighing Marmosets

See figure 6 below.




FIGURE 6: WEIGHING NEONATE

7.7 Record weight in labtracks

 PQMS3-MARP-SOP-0398 – Labtacks Recording Weights.

7.8 Complete a neonate health assessment where required. Refer to Section 13.**7.9** If triplets or quadruplets are born, feed as per Section 14.

 Neonate's eyes can occasionally be closed or partially closed when born. These may remain closed for up to four days if the neonate is premature. These infants do not require extra care than the usual observations. However, it is important to note if the eye membranes are closed on the individual animal record in Labtracks as this information is valuable for clients completing neurological studies.

7.10 At the conclusion of the activities listed above, the neonate can be returned back to the family as per section 15.**8. NEWBORN NEONATES - DAY OF BIRTH RECORD KEEPING PROCEDURES****8.1** The following equipment and materials are required to perform this procedure:


QUANTITY	EQUIPMENT DETAILS
1	Computer
As required	Paper records
QUANTITY	MATERIAL DETAILS
As required	Labtracks database

8.2 Using the information obtained in section 7.5 and 7.6, enter the details for each neonate into the Labtracks database.

 PQMS-MARP-SOP – 0392 Labtracks Basics.

8.3 Complete a paper individual record for each animal born. This paper record will include animal colony number, sex, parents, and date of birth for each neonate.

 Once 3 months of age, this record will also include the microchip number.

 PQMS3-MARP-SOP-0193 Animal Records Marmosets

- 8.4** Place paper record into record folders in [irrelevant] in chronological order once complete.
- 8.5** Remove ‘Heavy Pregnant’ label from the cage and place into top draw of examination table in [irrelevant].
- 8.6** Whilst in the top drawer of the examination table in [irrelevant], take out a “DO NOT LET OUT” label, and place on the cage. See figure 7 below.



FIGURE 7: DO NOT LET OUT LABEL ON CAGE



Marmoset neonates should not be let outside for the first 2 weeks of their life. This is to ensure they do not fall off a carrier in the outside access tunnel or onto the concrete surface outside.

- 8.7** In the top draw of the examination table in [irrelevant] collect a yellow sticker. Record the total number of animals per cage onto this sticker. Place onto cage as shown in figure 7 above.
- 8.8** Record birth into excel stud records and excel birth register on the MONASH share drive. S:\MNHS-MARP\nhmrc\[irrelevant Information] [irrelevant] Marmosets\Breeding
- 8.9** Update the marmoset feeding routine excel spreadsheet found on the MONASH share drive: S:\MNHS-MARP\nhmrc\[irrelevant Information] [irrelevant] Marmosets\Feeding Routines and Diets\FEEDING ROUTINE. Increase the fruit and vegetable ration by 1 serving, primate cake by 10g and HEHP drink ration by 10mLs.
- 8.10** Write in colony diary when neonates are 4 weeks old, to increase the feeding amounts to full ratio for the entire family unit.
- 8.11** Print out the updated changes for the diet and place on the food preparation pin board in AS115, and also on the room door outside the family’s cage.
- 8.12** Using labtracks, on the mother’s animal record tick the recoup box and update amount being fed in grams to reflect the new amount of primate cake being fed to the family unit. See figure 8 below.

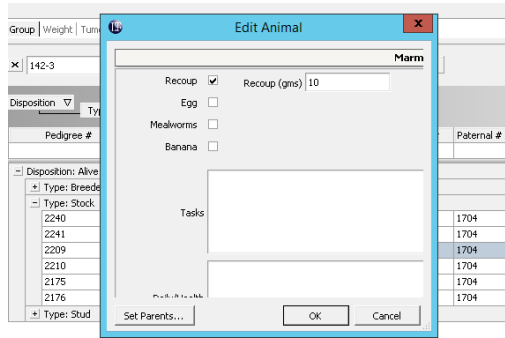


Figure 8: Labtracks animals in group – Diet Recording


- 8.13** Update daily treatment and baby schedule to include new litter in daily routine. See share drive S:\MNHS-MARP\nhmrc\irrelevant information\relevant\Marmosets\Treatments
- 8.14** Print out and place updated schedule on treatment cart in irrelevant information

9. PREPARING MILK FORMULA


9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Heat safe container
1	10mL syringe (single use)
1	Scales
1	Kettle
QUANTITY	MATERIAL DETAILS
As required	S26 Gold lactose free Supplement powder
As required	Infant supplement powder (eg: Nestle Kids Essentials)
As required	Wombaroo Impact
As required	Wombaroo Marmoset Milk replacer
As required	Tepid boiled water

 All milk should be prepared according to manufacturer instructions. Read all instructions carefully on manufacturer labels.


 Only use tepid boiled water to make formulas, do not place or reheat formula in the microwave.

9.2 S26 and Infant supplement powder Recipe;


 S26 and Infant supplement powder can be fed at any time in replace of Wombaroo products.

- Measure 2.1 grams of S26 Gold lactose Free Supplement Powder into a heat proof container.
- Add 0.6 grams of Infant Supplement Powder
- Add 15mLs of tepid boiled water

 PQMS3-MARP-REF-0729 S26 Gold Lactose Free Supplement Powder

 PQMS3-MARP-REF-0730 Nestle Kids Essentials

9.3 Wombaroo Impact Recipe;

 Can be used to feed neonates for the first 48hours after birth, post-natal days 0 to 2.

- Measure 0.5g Impact into heat proof container
- Add 2mL tepid boiled water

 PQMS3-MARP-REF-0732 Wombaroo Impact

9.4 Wombaroo Marmoset Milk Replacer Recipe;

 Can be used to feed marmoset neonates, in preference from post-natal day 3.

- Measure 2.8g Marmoset milk replacer powder into heat proof container
- Add 20mL tepid boiled water

 PQMS3-MARP-REF-0733 Wombaroo Marmoset Milk Replacer

10. FEEDING PROCEDURE

10.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	1mL syringe (single use)
1	Prepared neonatal box and heating source
1	Facial Tissue
QUANTITY	MATERIAL DETAILS
As required	Task specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask
1	Prepared milk formula
1	Pre-packaged Smooth Fruit puree (lactose free with veterinary approved fruits or vegetables)
As required	Tepid boiled water

10.2 The necessity to feed neonates

- The necessity to feed a neonate will be determined by following section 11, Weight assessment of neonates.
- Neonates 0- 2 weeks of age can be fed 10- 20% of their body weight over a 24 hour period. This includes feeding from their mother, and supplement feeding from the technicians.
- Neonates may feed approximately every 3 hours during the first week of their life. The time interval gradually increases per day/week after this period.

10.3 TECHNIQUE TO FEED A NEONATE

- Restrain neonate by gently holding the head in between the thumb and index finger. The remainder of the body should rest in between your fingers and palm of your hand. See figure 9.



Figure 9: Restraining neonate for oral administration

- Using your opposite hand, draw up the prepared milk into a disposable 1ml syringe and place the tip of the syringe on the neonate's lips. If the neonate is hungry, it will smell the milk and open its mouth.
- Slowly drop the milk into the neonate's mouth and allow it to swallow the milk formula.

- Complete the neonatal feed very slowly, giving opportune time for breaks. Allow the neonate determine the breaks and duration of the feed.
- Do not rush this procedure or the neonate may aspirate. See section 10.6.2
- Signs to cease feeding include;
 - Neonate holding their mouth closed
 - Neonate turning their head away from the syringe
 - Abdomen check (see below)
- To prevent over or under feeding, check the stomach regularly. The abdomen should be level with the abdomen and not convex or concave. This will be a visual sign that the neonate has been fed adequately. See figure 10.




Figure 10: Examination of the abdomen to ensure the neonate is not over or under fed.

10.4 Factors effecting the amount of milk fed per individual;

- Number of neonates per litter. One animal may not have been fed most of the night; this is a normal occurrence in triplets and quad litters, as the mother only has two breasts. Consequently, one neonate may drink more than another neonate amount during supplement feeding.
- When the neonate was last fed by the mother. The neonate may have just been fed prior to examination but may still have lost weight and require feeding. If the infant is not hungry, give back to the family and attempt to feed again in the afternoon.
- Parental experience – it can be essential to give new parents a chance to learn how to raise their first litter. Therefore if it is deemed necessary to supplementary feed as set out in section 11, do not over feed the neonates as the mother will produce less milk. Also do not underfeed, as this can lead to neonatal weakness and weight loss.

10.5 Introduction of Solids

- Introduction of solid food will be necessary for all triplet and quadruplet neonates.
- A commercially purchased smooth fruit puree can be introduced initially, followed by solid fruits.

 PQMS3-MARP-REF-0731 - Organic Bubs Baby Puree

An example of the feeding schedule can be seen in Table 1.

AGE	ITEM	DETAILS	TIMES/DAY
PD30-33	Puree first then milk	Offer puree first, then milk	2 x for triplet 3 x for quads
PD34-38	Banana first then milk	Offer slice of soft banana first, then milk	2 x for triplet 3 x for quads
PD39-42	Banana first then milk	Offer slice of banana first, then milk	1 x triplet. Afternoon feeding (PM) 2 x for quads
PD43-47	Banana first then milk	Offer slice of banana first, then milk	Triplet - Weigh PM daily, feed only if not gained 0.5g. Remove from daily checks if gained weight 3 consecutive days in a row without supplemental feeding. Quads - Feed 1x daily, afternoon only.
PD48-52	Banana first then milk	Offer slice soft banana first, then milk	Quads - Weigh PM daily, feed only if not gained 0.5g. Remove from daily checks if gained weight 3 consecutive days in a row without supplemental feeding.

Table 1: Example of a Neonate Introduction to solid food schedule.

10.6 Feeding Troubleshooting

10.6.1 An example of behaviours that can occur during feeding;

BEHAVIOUR	DIAGNOSTICS	ACTION
Shaking head from side to side	Neonate may be full, visually observe abdomen for convex or concave stomach	Cease feeding session, If convex abdomen try toilet
Turning away from handler	Toilet may be required	Obtain tepid water and tissue, gently rub over urogenital area.
Closing mouth	Is solids being introduced?	Neonate may not like new food - try a small amount of new food frequently each feeding session prior to offering milk
As above accompanied by eyes closed and head resting to one side	Neonate may be weak	Try to rouse neonate to ensure not sleeping. Complete neonate health assessment and wellness report.
Neonate Sneezing during feed and milk comes out the nose	Neonate may have aspirated	See section 10.6.2 on aspiration. Complete wellness report.

Table 2; Feeding Troubleshooting Guide

10.6.2 Aspiration



Aspiration occurs when a food including milk is sucked into the airway and comes out of the nostrils of the neonate. This can occur when the neonate is consuming food too quickly for itself or sneezes during feeding. Aspiration may be harmful to the neonate as it can cause a bacterial infection in the lungs.

- In the event of aspiration, stop feeding and place the neonate face down to open the chest, resting on the palm of your hand.
- Tilt the neonate on a 45 degree angle to the floor and very gently rub the back of the chest, using one finger, in a motion towards the neonate's head. See figure 11.



Figure 11: Procedure to clear fluid from the nose and lungs

- Allow the fluid to clear from the nostrils and observe neonate closely.
- Report to your supervisor, veterinarian and researcher (if animal is allocated), and complete wellness report.

10.7 Night time Feeding (as required, anytime from 9PM-Midnight)



The facility manager should be notified prior to commencement of this task for security purposes.

Examples of situations that require night time feeding include;

- Quadruplet litters are fed each night until the neonates are introduced to solids foods as per the example in table 1.
- Feeding neonates that have a weak health assessment and wellness report, refer Section 15. With veterinarian guidance, feeding neonates can be completed for up to four consecutive nights per individual. Daily veterinary assessment is required in this situation.
- If a neonate is in the humidicrib, see section 13 and 14.




If a staff member is required to attend after hours for a researcher's neonate, technical services will be recorded in ilabs.


11. DAILY WEIGHT ASSESSMENT OF NEONATES

11.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Computer
1	Prepared neonatal box with heat source
QUANTITY	MATERIAL DETAILS
As required	Individual animal records on labtracks
As required	Task Specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

Refer to the following documents for flow charts on this procedure;



 PQMS3-MARP-REF-0721- Neonatal Care Procedure for Single and Twin Marmoset Litters

 PQMS-MARP-REF-0722 – Neonatal Care Procedure for Triplet Marmoset Litters





It is not recommended to remove a neonate if it is feeding from the mother.

11.2.1 Single and Twin litters PD0-14;

- Wear task specific PPE as described above and catch neonate according to SOP.
-  PQMS3-MARP-SOP-147 Handling and Restraint in Marmosets.
- Weigh daily as per SOP
-  PQMS3-MARP-SOP-273 Weighing Marmosets.
- Each neonate should gain a minimum of 0.5g in 24hrs. If not, a single supplement feed will take place for that day.
- Refer to section 9 regarding milk preparation.
- Refer to section 10 regarding feeding procedure.
- If neonate has lost 5%, or >5% body weight in a 24-hour period, increase to a further supplementary feed during that day.
- If a neonate has not gained weight for 3 consecutive days, increase to a further supplementary feed during that day. In addition, a neonatal health assessment can be completed as per Section 16 and complete a wellness report.
- Additional supplement feeds can be reduced back to normal supplement feeding after three consecutive days of weight gain.
- After PD14, if a neonate has put on at least 0.5gms in weight for three consecutive days, without supplement feeding, it can move to the weekly weigh program. See section 11.3.

11.2.2 Triplet Litters

- Wear task specific PPE as described above and catch neonate according to SOP.
-  PQMS3-MARP-SOP-147 Handling and Restraint in Marmosets.
- Weigh daily as per SOP
-  PQMS3-MARP-SOP-273 Weighing Marmosets.

- Feed triplets twice a day regardless of any weight gain. Feeding times can be 8am and 3:30pm. (Early and late as possible during work hours)
- Refer to section 9 regarding milk preparation.
- Refer to section 10 regarding feeding procedure.
- If neonate has lost 5%, or >5% body weight in a 24-hour period, increase to a further supplementary feed during that day.
- If a neonate has not gained weight for 3 consecutive days, increase to a further supplementary feed during that day. In addition, a neonatal health assessment can be completed as per Section 16 and complete a wellness report.
- Refer to Table 1 regarding age groups to introduce solid foods.
- Post PD43 if a neonate is able to put on at least 0.5gms of weight for three consecutive days without the need for supplement feeding, it can be moved to the weekly weighing program, see section 11.3.

11.2.3 Quadruplet Litters


- Wear task specific PPE as described above and catch neonate according to handling SOP.

 PQMS3-MARP-SOP-147 Handling and Restraint in Marmosets.

- Weigh daily as per SOP


 PQMS3-MARP-SOP-273 Weighing Marmosets.




- Feed quads three times each day regardless of any weight gain. Feeding times can be 8am, 3:30pm and 10pm.

 During the night feed, if neonate is feeding from the mother, do not disturb the nursing neonate/s and feed the other litter mate/s instead.

- Refer to section 9 regarding milk preparation.
- Refer to section 10 regarding feeding procedure.
- If neonate has lost 5%, or >5% body weight in a 24-hour period, increase to a further supplementary feed during that day.
- If a neonate has not gained weight for 3 consecutive days, increase to a further supplementary feed during that day. In addition, a neonatal health assessment can be completed as per Section 16 and complete a wellness report.
- It may be necessary to space out the feeds as much as possible during the day and night, ie: 8am, Noon, 3:30pm and 10pm.
- Refer to Table 1 regarding age groups to introduce solid foods.
- Post PD48, if a neonate is able to put on at least 0.5gms of weight for three consecutive days without the need for supplement feeding it can be moved to the weekly weighing program, see section 11.3.

11.2.4 Neonates without Mothers

 Do not attempt to cross foster to another family. This will result in infanticide. The remainder of the family, i.e. the father and siblings will continue to care for the neonate regardless of whether or not the mother is present.


-  Attempt to allocate to a research project as an acute experiment (perfusion)
- Advise supervisor, colony manager and veterinarian of the situation. Complete a wellness report.
- Wear task specific PPE as described above and catch neonate according to SOP.
-  PQMS3-MARP-SOP-147 Handling and Restraint in Marmosets.
- Weigh daily as per SOP
-  PQMS3-MARP-SOP-273 Weighing Marmosets.
- Feed neonate four times a day. Feeding times can be 8am, noon, 3:30pm and 10 pm.
- Refer to section 9 regarding milk preparation.
- Refer to section 10 regarding feeding procedure and volumes fed.
- If neonate has lost 5%, or >5% body weight in a 24-hour period, increase to a further supplementary feed during that day.
- If a neonate has not gained weight for 3 consecutive days, increase to a further supplementary feed during the day. In addition a neonatal health assessment can be completed as per Section 12, and this information added to the wellness report. In this situation it is essential to space out the feeds as much as possible.
- Refer to Table 1 regarding age groups to introduce solid foods.
- Post PD52 if a neonate is able to put on at least 0.5gms of weight for three consecutive days without the need for supplement feeding it can be moved to the weekly weighing program, see section 11.3.
- If neonate has moved to weekly weighing, milk feeding can continue to PD90 by offering 10% of their body weight in milk daily, by placing into a small food bowl in the cage. Using this option minimises handling.

11.3 Weekly weighs

- During weekly weighs, it is expected neonates may put on an average of 10-20% of their body weight each week.
- If the neonate is not gaining weight as described above it will be required to recommence daily weight assessments and supplemental feeding as described in the single/Twin procedure in section 11.2.1.
- A wellness report should also be submitted and the colony veterinarian notified.

11.4 Weekly Weighs to Adult Weighs

- At PD60, weekly weighing examinations can cease provided a neonate has put on weight for three consecutive weighs without the need for supplement feeding.
- Neonates can be weighed at the same time as the adults and juveniles in their family unit in the routine monthly examinations.
- Routine monthly physical exams in labtracks can also commence.

 PQMS-MARP-SOP-447 Health Monitoring in Marmosets

12. NEONATAL HEALTH ASSESSMENT

12.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Perspex neonate box with prepared eating source
QUANTITY	MATERIAL DETAILS
As required	Task specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask
1	Soft fluffy toy

- A neonatal health assessment is a tool that can be used to assess the strength of a neonate.
- The neonatal health assessment can be used at any time.
- This tool has most benefit when used on the day of birth, for surgical neonates, or those that require the use of the humidicrib. By using the neonatal health assessment as required, technicians can determine intervention early, before neonates may become unresponsive to care.
- These assessments can be completed on a routine basis throughout the work day while completing other activities in the family cage such as feeding. Or when handling neonates daily for routine weighing.
- If there are no concerns, usual work routines apply. When there are findings in the neonatal health assessment that are of concern, a wellness report is completed in lab tracks, and the veterinarian is consulted.

12.2 Neonatal Health Assessment Criteria:

12.2.1 Observe Neonate Position on Carrier

- At any time the position of the neonate on the carrier can be observed.
- The optimum position of a neonate is high on the carrier, around the shoulders. This can extend to the middle of the carrier back with multiple neonates on the carrier.
- If a neonate is down around the carrier's lower back, back legs or tail it should be removed immediately and assessed. It may be possible there was a messy transfer between adults of the neonate, or possibly the neonate is weak.

12.2.2 Grip Reflex

- Once the neonate has been caught, the gripping reflex can be examined. Poor gripping reflex hinders the neonate's ability to hold onto the carrier.
- Place the neonate's chest onto a soft fluffy toy and hold the toy 10- 20 cm above a test surface. Turn the toy on a 90-180degree angle.
- If the neonate can hold onto the toy for up to 30 seconds this is an excellent indication of good gripping reflex.
- If the neonate is unable to grip onto the soft toy, the neonate may be losing its strength and is weak. See figure 12 below.



Always have your second hand underneath the neonate (but not touching the neonate) in case it falls.

- ☐ A very strong neonate will not sit still during this test. It will climb to right itself.



Figure 12: Good Gripping Reflex

12.2.3 Climbing

- Repeat steps in 12.2.2
- The soft toy is then rotated slowly. The neonate should attempt to climb up as the toy is held and rotated. See figure 13 below.
- If the neonate attempts to climb it is a good indication that the neonate is strong and healthy, and has the ability to move itself around the carriers well.



Figure 13: Good Climbing Behaviour

12.2.4 Righting itself

- The righting reflex indicates how well the neonate can orientate itself on a carrier.
- Using the soft toy, place the neonate head down on the toy at a 45 degree angle.
- The neonate should turn itself around within 60 seconds. See figures 14 & 15. Below.



Figure 14: Neonate Held on 45 Degree Angle

Figure 15: Neonate Moved to Upright Position

12.2.5 Rooting Reflex and Suckling

- This can be assessed if one is required to supplement feed the neonate.
- The rooting reflex can be seen when the corner of the neonate's mouth is brushed or touched. The neonate will turn its head and open its mouth in the direction of the stimulus. This reflex helps the neonate find the breast or, in the case of supplementary feeding, the syringe to begin feeding.
- When feeding, hold a disposable syringe up to the neonate's mouth without putting it directly into the mouth.
- The neonate should smell the milk and place its mouth over the tip of the syringe beginning to suckle.
- A weak neonate will refuse to do this, while a strong neonate will do this enthusiastically.

12.2.6 General Strength

- This can be seen by placing the neonate on the prepared heating source, see section 5, and observing the animal whilst completing the daily weighing.
- The neonate should have the ability to lift its chest off the heating source and look around. This should happen within 30 seconds and is a good indication of overall strength. See figure 16 below.
- If the neonate is weak, it may be reluctant to even lift its head off the towelling.



Figure 16: Holding Chest and Head off Test Surface

12.2.7 Tail Curling

- The tail should be curled on the neonate, particularly if the animal is less than 2 weeks of age.
- This can be tested by holding your index finger up to the tail. The tail should curl tightly around one's finger. See figure 17 below.
- This is a good indication that the neonate is strong and healthy.
- If the tail is limp on the carrier's back, it can often be an annoyance to the carrier and may lead to tail chewing.
- A weak neonate will not curl its tail.



Figure 17: Tail Curling

12.2.8 Vocalisation

- When the neonate is placed onto the heating source, it should be actively looking around, alert and vocalising within 30 seconds. This is a sign of a healthy and strong neonate.
- A weaker neonate will not make any noise.

12.2.9 Coat

- The coat on a healthy, strong neonate will be fluffy. This is particularly noticeable around the neonate's head. See figure 18 below.
- The coat on a weaker neonate will be flat and dull.



Figure 18: Fluffy Fur, No Ridges, Good Posture

12.2.10 Posture

- When resting on the heating source, the neonate should not be in a hunched position.
- If it is hunched, particularly with a flat coat, but ridge of fur sticking up on the spine; this can be signs of an unwell neonate.

12.2.11 Abdomen



- When holding the neonate upright in your palm adopting a feeding position, one can observe the abdomen.
- A strong and healthy neonate will display a smooth plump abdomen.
- If the abdomen has a lot of loose skin, appears tight, or one can see the ridges of the intestines, veterinary guidance should be sought.

12.2.12 Toilet

- It is not uncommon for neonates to urinate or defecate on routine daily weighing. The excrement can be observed at the time of passing.
- Urine will be clear to pale yellow in colour.
- Faecal content can either be liquid or solid, from yellow to brown depending on the age and solid food introduction stage for the neonate.
- If the urine is brown or red, and the faeces green, black, or foamy in appearance veterinary advice should be sought.

 The use of antibiotics or pain medication can also have an effect on excrement.

13. NEONATE USE IN THE HUMIDICRIB

13.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Neonatal perspex box
1	ATOM 80 or V-85 Infant humidicrib
QUANTITY	MATERIAL DETAILS
As required	Towels
1	Soft furry toy


For the operation of this equipment and maintenance refer to;


 PQMS3-MARP-SOP-0057 Equipment Operation Marmoset Humidicrib

13.2 Situations when we may need to use an incubator include the following:

- Research neonate, recovering from a surgical or experimental procedure.
- Neonate showing multiple signs of weakness determined by the daily health assessment tool in section 12. These neonates will have a wellness report and technicians will be acting on veterinary advice.
- Temporary care of a rejected neonate. These neonates will also have a wellness report and technicians will be acting on veterinary advice.
- Any colony animal entering the humidicrib for care – every effort should be made to allocate the neonate to a terminal research project as soon as possible.

13.3 Temperature in the humidicrib

- The temperature can be maintained at 35°C to 37°C
- The temperature is monitored by two thermometers inside the crib, to ensure there is a thermometer back up in the event of unlikely system failure.
- While the humidicrib is in use, the temperature must be recorded twice daily on the Room Environmental Recording Form.
 PQMS3-MARP-FRM-276 Room Environmental Recording Form
- If the temperature moves out of the acceptable range, the temperature dial on the incubator must be altered up or down until the temperature is back within the acceptable range.

 Record the temperature on the monitoring sheet if this situation occurs.

13.4. Blocking of Light sources


- Ensure draping is used to block direct bright light sources. See figure 19 below.
 This is particularly important for surgical recovery



Figure 19: Example of Humidicrib draping

13.5 Placement of Neonate into Humidicrib

- A towel is used to elevate a soft toy as shown in figure 20. This is to allow the neonate to exercise its natural gripping reflex in an upright position.
- Whilst the neonate is in the humidicrib without secondary containment, direct supervision is required.



Figure 20: Neonate unsecured, direct supervision required

- If the neonate is going to be left unattended for a period of time, a secondary containment method is used so the neonate is unable to fall onto the base of crib, should it become mobile in staff absence.
- This can be achieved by placing the neonatal box inside the incubator with a soft toy, refer to Figure 21.



Figure 21: Secondary Containment in the humidicrib



Ensure the lid to the neonate box is left open for adequate ventilation

13.6 WHAT TO DO IN THE EVENT OF EQUIPMENT FAILURE

In the event that an humidicrib ceases to work correctly, the following procedure can be followed;

- Prepare a heat source as per Section 5.

- Place the neonate into the Perspex box and set up the backup humidicrib for use.
- When the backup humidicrib is up to the correct temperature, move the neonate into the back-up humidicrib as described above.
- Record the temperature of the backup humidicrib on the Room Environmental Recording Form.

 PQMS3-MARP-FRM-276 Room Environmental Recording Form

14. FEEDING AND CARE OF NEONATES IN THE HUMIDICRIB

14.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	1ml syringe
1	Heat proof container
1	5mL syringe
QUANTITY	MATERIAL DETAILS
As required	Vytrate
As required	Tepid Boiled Water
As Required	Wombaroo Impact
As Required	Wombaroo Marmoset Milk Replacer
As required	S26 Gold Lactose Free milk powder
As required	Infant Supplement powder (PediaSure or Sustagen Kids Essentials Powder)
As Required	Facial tissue

14.2 Type of Formula to be used

- The humidicrib is only used for the purposes outlined in section 13.2 in consultation with veterinary advice.
- Any of the following milk formulas can be used to feed neonates in the humidicrib

14.2.1 Wombaroo Impact

- Can be used for PD0-PD2
- Can be used for weak neonates
- Refer to section 9.3 for preparation

14.2.2 Vytrate solution

- Can be used for weak neonates at any time
- Place 5mL tepid boiled water into heat proof container
- Add 0.4mL Vytrate

14.2.3 Wombaroo Marmoset Milk Replacer

- Can be used to feed neonates from PD3 onwards
- Can be used when neonates are starting to gain strength
- Refer to section 9.4 for preparation

14.2.4 S26 and Infant Supplement Powder

- Can be used to feed neonates at any time in replace of Wombaroo Products
- Refer to section 9.2 for preparation.

14.3 All neonates can be offered formula or the Vytrate solution using the techniques described in section 10.

14.4 Critical Care in the Humidicrib

- A neonate in the humidicrib should be intensively monitored where possible. An example of the critical care activity can be seen table 3 below.

TIME INTERVAL IN HUMIDICRIB	EXPECTED AVERAGE FEEDING VOLUMES	CAN DO NEONATE ASSESSMENT	OFFER TOILET
0-20MINS	0.1mL	Yes	No
40MINS	0.1-0.2mL	No	No
1HR	0.2mL	Yes	No
1.5HRS	0.2mL	No	No
2HRS	0.2mL	Yes	Yes
4HRS	0.3mL	Yes	No
6HRS	0.3mL	Yes	Yes

Table 3: Example of feeding and Critical care Activity in the humidicrib for a neonate

14.5 Assessment of a Critical Care Neonate


- The neonate health assessment in section 12 can be completed at the times set out in the example from table 3 above. Any outcomes should be recorded in the wellness report.
- Toilet can be completed at the times set out in the example from table 3. This may be extended to every 4-6 hours if the neonate remains in the humidicrib. To do so, obtain a soft tissue soaked with tepid boiled water. Gently stimulate the urogenital area by stroking it with the tissue.
- If the neonate is over 48 hours old and there is continuous improvement; alternative feeding substances may be introduced including S26 and kids Essentials mixture or the Wombaroo Marmoset milk Replacer as per section 9.
- Updating the wellness report, and liaising with the veterinarian regarding care directives should be a continuous activity whilst caring for a critical care neonate.
- It is expected that the neonate will improve for the duration of the critical care. If this is not the situation, a veterinary decision will be made regarding the ongoing care of the individual.
- If the animal can be used for a terminal procedure, this is also considered.
- Critical care in the humidicrib can be maintained for a continuous 24 hours, provided the neonate is deemed as improving. These neonates should be attended to by a technician at least once during the evening.

15. RETURNING A NEONATE TO THE FAMILY

15.1 The following equipment and materials are required to perform this procedure:


QUANTITY	EQUIPMENT DETAILS
1	Stainless steel food bowl
QUANTITY	MATERIAL DETAILS
As required	Task specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

15.2 Procedure A) Least human intervention

 This procedure can be used for neonates with a strong health assessment returning to the family.

- A stainless steel feeding bowl can be used for the reintroduction. Place 1 or 2 neonates at a time into bowl and enter animal room.
- Slide out the catch tray of the animal enclosure and place bowl into the tray.
- Close catch tray.
- Observe reintroduction. As the neonate vocalises, the family will quickly approach the neonate. An adult will pick up the neonate, and in response the neonate will reach out and grip onto the adult.
- The adult and neonate will now return to the top of the cage. Often the adult will nuzzle the neonate, whilst the neonate moves around to the shoulder/neck area on the carrier's back. This may take up to 60 seconds for the neonate to assume optimum position.
- If the neonate fails to move around to the back/shoulder area after 60 seconds; Procedure B, described below in 15.3 is used to correct the individual.

15.3 Procedure B) Handling Adults


 This procedure can be used to return surgical neonates, neonates being cared for in the humidicrib or alternatively to correct position of a neonate on the carrier.

- Wearing the task appropriate PPE listed above, approach family cage and catch an adult in the group, preferably the father as per SOP

 PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets

- Place the neonate chest down and head up on the carrier's shoulders. The neonate is now in the optimum position and does not have to use additional effort to move to this position.
- Return adult to family cage as per PQMS3-MARP-SOP-0147 referenced above.
- The neonate and carrier can be intermittently observed throughout the workday in between neonatal feeding checks, to ensure the neonate stays in the optimum position.
- If the neonate fails to remain in the optimum position, a further neonatal health assessment may need to be completed as described in section 12, and outcomes recorded in the wellness report.


15.4 Procedure C) Placing neonate onto cage wire

 This procedure can be used for neonates with strong health assessment over the age of PD30, returning to the family.

- Approach family cage and open bottom door.
- Neonate can be placed onto the cage wire and door closed. The family will quickly come down to meet the neonate as the neonate crawls along the cage wire up to an adult.

15.5 Procedure D) Returning neonate to the family cage at Night time.

- Follow steps 15.3 or 15.4 according to the age of neonate.
- After the neonate has been reintroduced to the family, ensure the neonate does not fall to the enclosure floor. If it does, repeat steps in section 15.3 again.

- Turn the animal room lights back off 5 minutes post reintroduction, or earlier if the family puts themselves back into the nesting site to sleep.
-  If a neonate happens to fall during the night, it may not be rescued by the family until first light. Therefore ensure all babies are on carriers before leaving for the night.

16 LACTATING MOTHER EXAMINATION

16.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
	NILL
QUANTITY	MATERIAL DETAILS
As required	Task specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

16.2 The following situations require examination of the mother's mammary glands;

- If a newborn neonate does not put on any weight in the first 48 hours of life
- If a neonate whom has put on weight previously without human intervention, does not put on any weight for 3 consecutive days
- Mother who was feeding and no longer has neonates. See section 16.5.
- Mother who lost neonates shortly after birth. See section 16.5.

16.3 How To Check Marmoset Mammary Glands


- Wearing the task specific PPE listed above, catch mother according to SOP
 PQMS-MARP-SOP-147 Handling and Restraint in Marmosets
- With the females back resting in the palm of one's hand, gently move the marmoset's arms away from the breast area so examination can commence. See figure 22 below.



Figure 22: Lactating Breast

- Using one's index finger, palpate entire breast slowly.
- Express a small amount of milk from each breast by placing one's thumb and index finger at the external sides of a breast. Slowly move your thumb and finger from the external sides of the breast, towards the direction of the nipple. Milk should now be visible at the nipple. See figure 23.



Figure 23: How to express Milk

- Observe for Irregular mammary gland symptoms during palpation, see section 16.4

16.4 Irregular Mammary Gland Symptoms

16.4.1 During breast examination as described in section 16.3 and 16.4, observe for any of the following irregularities;

- Breast is hot to touch
- Swollen breast tissue
- Red or discoloured breast tissue
- Breast has cuts, wounds or injury present.
- Breast contains hard or lumpy masses.
- Milk is a thick, lumpy, custard type consistency.
- Milk is dark yellow to red in colour
- Breast is engorged.

16.4.2 Any abnormalities found in section 16.4.1 should be reported to the area supervisor and the Veterinarian contacted. A wellness report should also be completed for the individual.

16.5 Mothers With-out Neonates

- The procedures in 16.3 can be completed daily until the mammary glands have returned to normal size and are no longer lactating. Cease of lactation can take up to 2 weeks after the neonates have been removed.
- If the breast is engorged, with veterinary advice small amounts of milk can be expressed as described in section 16.3. This will release pressure from the breast.



When expressing milk, ensure not to empty the breast, as this will encourage production of more milk.

17 ANIMAL MONITORING & WELFARE

17.1 All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.

17.2 Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.

17.3 Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.

17.4 All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:

<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

18 REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-057	Equipment Operation Marmoset Humidicrib
PQMS3-MARP-SOP-147	Handling and Restraint In Marmosets
PQMS3-MARP-SOP-273	Weighing Marmosets
PQMS3-MARP-SOP-0192	Identification in Marmosets
PQMS3-MARP-SOP-0269	Sexing of Marmosets
PQMS3-MARP-SOP-0398	Latracks- Recording Weights
PQMS3-MARP-SOP-0392	Labtracks - Basics
PQMS3-MARP-SOP-0193	Animal Records Marmosets
PQMS3-MARP-SOP-0447	Health Monitoring in Marmosets
PQMS3-MARP-FRM-0276	Room Environmental Recording Form
PQMS3-MARP-REF-0721	Neonatal Care Procedure for Single and Twin Marmoset Litters
PQMS3-MARP-REF-0722	Neonatal Care Procedure for Triplet Marmoset Litters
PQMS3-MARP-REF-0729	S26 Gold Lactose Free Supplement Powder
PQMS3-MARP-REF-0731	Organic Bubs Baby Puree
PQMS3-MARP-REF-0730	Nestle Kids Essentials
PQMS3-MARP-REF-0732	Wombaroo Impact
PQMS3-MARP-REF-0733	Wombaroo Marmoset Milk Replacer
EXTERNAL REFERENCES	
Nil	



DOCUMENT HISTORY			PQMS3-MARP-SOP-0056-V2.docx
Version no.	Date of Issue	relevant information	Amendments
1	01/06/2017		Original Document
2	23/09/2020		Inclusion of new reference documents Removed unused references in table that were not referenced in document Ensure reference documents had the same name throughout document and referenced to correctly

DAILY DUTIES - MARMOSETS AT [redacted] (07/09/2020)

Irrelevant Information

s from Date of Issue

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1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the requirement of daily observation or monitoring of animals and the rooms that the animals are housed in, plus providing external access to the animals.

1.2. Scope

This SOP is to be applied all staff members working in the Marmoset Area of [redacted] at [redacted].

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
BAS	Building Automation System
FRM	Form – A controlled Document
[redacted]	[redacted]
HEHP	High Energy High Protein Drink
mLs	Milliliters
NHP	Non-Human Primate
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4 HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0160 Marmoset Area Risk Assessment [redacted]

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the [redacted] of Building [redacted].

Bite, Scratch or Needle stick	Eye splash with urine, faeces, blood or secretions
Massage wound to make bleed	Rinse eyes immediately with flowing water, preferably warm water
↓	↓
Scrub wound with soap under running water for 15 minutes	Continue washing eyes for 5 minutes
↓	↓
Wash with iodine swab sticks for 2-3 minutes	Dry, cover with Melolin pad
↓	↓
Report to Supervisor	
↓	
Go to a medical practitioner to have the wound assessed	
↓	
Report to Biosafety or Safety Officer and complete Hazard and Incident Report Form	

5. MARMOSET WEEKLY TASK SCHEDULE

5.1 WEEKDAY SCHEDULE

The Marmoset Weekday Task Schedule is an example of the tasks for the Marmoset Facility, during usual working hours.

The tasks are completed in order from top to bottom for each day's list. If all tasks have been completed for the day, staff can start working on the following days tasks. See figure 1 below;

MARMOSET FACILITY TASK SCHEDULE EXAMPLE - WEEKDAYS				
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Babies & births	Babies & births	Babies & births	Babies & births	Babies & births
Environmental Observations	Environmental Observations	Environmental Observations	Environmental Observations	Environmental Observations
General Health Checks	General Health Checks	General Health Checks	General Health Checks	General Health Checks
Treatments	Treatments	Treatments	Treatments	Treatments
Outside access	Outside access	Outside access	Outside access	Outside access
Feed animals	Feed animals	Feed animals	Feed animals	Feed animals
Wash all dishes	Wash all dishes	Wash all dishes	Wash all dishes	Wash all dishes
Sweep floors	Sweep floors	Sweep floors	Sweep floors	Sweep floors
Food preparation for the next day	Food preparation for the next day	Food preparation for the next day	Food preparation for the next day	Food preparation until Monday
Combinations and moving	Check water bottles	Check water bottles	Provide fresh water bottles	Check water bottles
Check animal orders	Combinations and moving	Combinations and moving	Clean dirty water bottles	Check animal orders
Cleaning inside Cages	Clean Outside Cages	Check animal orders	Check animal orders	Sweep floors
Wash indoor Nest boxes	Mop Irrelevant	Complete health checks for animals being relocated	Dispatch	Wash all Floors
Wash all Floors	Weigh treatment animals and weekly reweighs	Wash & put away Fruit & Vegetable order	Technical Procedures as required	Mop Irrelevant
Provide fresh water bottles	Weigh Babies <2mths	Monthly Adult Weighing	Weekly Palpations	Make & Distribute Enrichment
Clean dirty water bottles	Weekly assessment of Treatment animals	Make & Distribute Enrichment	Assess monthly weighs	Make Primate Cake
Make & Distribute Enrichment	Make & Distribute Enrichment	Replace cleaned outdoor cages with fresh browse	Make & Distribute Enrichment	Fix perches
Order weekly fruit and vegetables	Make Primate Cake	Make Primate Cake	Prepare any additional enrichment that requires drying time	Install enrichment as required
Make HEHP drink	Make HEHP drink	Prepare any additional enrichment that requires drying time	Clean all benches, fridge, freezer, microwave, spot clean handles, windows	Check facility supply levels & order
Distribute HEHP drink	Distribute HEHP drink	Make HEHP drink	Clean store rooms and corridors	Make HEHP drink
Lock animals inside	Lock animals inside & Double Check	Distribute HEHP drink	Make & distribute HEHP drink	Distribute HEHP drink

& Double Check				
Feed any PM neonates	Feed any PM neonates	Lock animals inside & Double Check	Lock animals inside & double check	Lock animals inside & double check
		Feed any PM neonates	Feed any PM neonates	Feed any PM neonates

Figure 1: Example of the Weekday Marmoset Task Schedule

5.2 WEEKENDS AND PUBLIC HOLIDAY SCHEDULES

- ☐ The Marmoset Weekend and Public Holiday Task Schedule is an example of what may be required on weekends and some public holidays. See table 2 below.
 - ☐ The tasks are completed from top to bottom.
 - ☐ If two shifts are required for the day, i.e.: AM & PM, the morning shift may be completed in three hours where possible. Any left-over duties such as, but not limited to; washing dishes – can be completed in the afternoon shift.
 - ☐ The need to complete an afternoon shift will be determined by the level of care required for neonates as set out in the SOP
- 📖 PQMS3-MARP-SOP-0056-Specialised Care of Neonates

MARMOSET FACILITY TASKS SCHEDULE -WEEKEND/PUBLIC HOLIDAY	
SATURDAY	SUNDAY
AM SHIFT	AM SHIFT
Babies and Births	Babies and Births
Environmental Observations	Environmental Observations
Complete treatments	Complete treatments
General Health Checks	General Health Checks
Check water bottles	Check water bottles
Sign Door sheets	Sign Door sheets
Feed animals	Feed animals
Wash all dishes and food bowls	Wash all dishes and food bowls
Make & distribute HEHP drink	Make & distribute HEHP drink
Boiler Check	Boiler Check
Fridge & Freezer checks	Fridge & Freezer checks
PM SHIFT	PM SHIFT
Any left-over duties from AM shift	Any left-over of duties from AM shift
Feed PM neonates	Feed PM neonates

Figure 2: Example of Weekend and public holiday Marmoset Task schedule




5.3 Information regarding how to complete each task within the daily duties lists can be found in the following SOPs;

- 📖 PQMS3-MARP-SOP-0059 Weekly Cleaning Marmoset
- 📖 PQMS3-MARP-SOP-0107 Ordering and Storage of Food Supplies for the Marmosets
- 📖 PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets
- 📖 PQMS3-MARP-SOP-0197 Environmental Enrichment in Marmosets
- 📖 PQMS3-MARP-SOP-0198 Weekend / Public Holidays for Marmosets
- 📖 PQMS3-MARP-SOP-0273 Weighing Marmosets
- 📖 PQMS3-MARP-SOP-0297 Washroom Operations for Marmosets at [REDACTED]
- 📖 PQMS3-MARP-SOP-0364 Provision of Water for Marmosets at [REDACTED]
- 📖 PQMS3-MARP-SOP-0365 Food Preparation for Marmosets at [REDACTED]
- 📖 PQMS3-MARP-SOP-0389 Breeding Management in Marmosets
- 📖 PQMS3-MARP-SOP-0432 Allocating and Issuing Marmosets
- 📖 PQMS3-MARP-SOP-0447 Health monitoring in Marmosets
- 📖 PQMS3-MARP-REF-0026 Environmental Enrichment Schedule for Marmosets

6. CHECK AND RECORD ENVIRONMENTAL OBSERVATIONS

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Data logger
As Required	Personal Protective Equipment (PPE) Hair net, P2 face mask, latex or nitrile gloves
1	Computer
QUANTITY	MATERIAL DETAILS
1	Marmoset Facility Diary & Pen
As required	PQMS3-MARP-FRM-0276 Room environmental recording form
As required	MARP intranet/computer access


-  Some areas of the Marmoset Area is monitored through the Building Automation System (BAS). This system regulates the temperature and humidity to set points specifically set to suit the species of animal being held.
-  The BAS sensors are in irrelevant. Staff validate the operation of the BAS by checking the temperature and humidity daily.
-  Temperature may be within 25- 30°C and humidity within 40- 60% RH. Recordings outside these ranges must be reported to the Marmoset Supervisor and/or Animal Facility Manager immediately

6.2 Each animal room has its own Data logger. These data loggers are located on the wall next to the door in each the animal room in the Marmoset Facility.



Figure 3: Example of a Data logger

6.3 Read the maximum and minimum temperature from the Data logger in each room. As per SOP



-  PQMS3-MARP-SOP-0517 BC2/PC2 – Testo Data Loggers

6.4 Record the values into the Marmoset Diary.

6.5 Log onto a computer and enter the Environmental Observations into the online recording system via the MARP Intranet.

-  PQMS3-MARP-SOP-0274 Environmental Recording

6.6 Record environmental data for the day into the following PQMS form;

-  PQMS3-MARP-FRM-0276 Room Environmental Recording form
-  Once the month is complete – give the completed forms to the facility manager for the monthly ethics report.

7. GENERAL HEALTH CHECKS

7.1 The following equipment and materials are required to perform this procedure:

QUANTITY	MATERIAL DETAILS
1	Permanent Marker
QUANTITY	MATERIAL DETAILS
As required	PQMS3-MARP-FRM-0009 Non-Human Primate Daily Checks and Outside access sheet

7.2 General daily health checks are performed with the following frequency and time of day:


	Monday - Friday	Weekend / Public Holidays
Frequency	Minimum 2 times a day	Once a day
Time of day or activity	Morning or When providing outside access and feeding	Any time of day or during any activity
	Afternoon or When moving marmoset back inside and feeding their HEHP drink	

7.3 Using the Non-Human Primate Daily checks and Outside access sheet located next to the door in every animal room, visually check all animals. The general health check includes observing for any signs of;

- Pain
- Distress
- Injury
- Vomiting
- Diarrhoea
- Abnormal behaviour
- Birthing

7.3.1 Once checked, if any of the above occur other than birthing, the animal can be physically checked and the colony veterinarian and supervisor informed. A wellness report may also be completed on LabTracks.

7.3.2 If birthing has occurred, neonate procedures should commence as per SOP

 PQMS3-MARP-SOP-0056 Specialised Care of Neonates

7.3.3 Once all of the above is checked, a tick can be applied to the animal check column.

7.4 The water is checked by visually ensuring the water bottle contains no less than 200mLs at the time of the check. If there is less than 200mLs in the water in the bottle, this should be replaced as per SOP.





 PQMS3-MARP-SOP-0364 Provision of Water for Marmosets at 

Once checked, a tick can be applied to the water check column.

8. PROVIDING OUTSIDE ACCESS

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	MATERIAL DETAILS
1	Permanent Marker
QUANTITY	MATERIAL DETAILS
As required	PQMS3-MARP-FRM-0009 Non-Human Primate Daily Checks and Outside access sheet

-  It is a Legislative Requirement that Non-human primates must not be without outside access for a maximum of 6 weeks without written approval from the Monash Animal Ethics Committee, to the National Health and Medical Research Council.
-  Marmosets are provided with outside access every day of the working week, except for Weekends and Public Holidays when required.
-  In the following situations, outside access is not provided;
 - Animals with offspring younger than 2 weeks of age
 - Animals that are under veterinary care, with specified no outside access
 - Animals on experiment that have had surgery within the last 2 weeks
 - If the outside environmental conditions are too extreme. This may include cold or hot weather, strong wind, storms, snow, bushfire smoke, or the fire risk is eminent.
-  It may be necessary that marmosets are only given outside access if two staff are present at the end of the day. This is to facilitate double checking of all animals are accounted for. If one staff member leaves early in the day, it may be necessary that all marmosets are locked inside while there are two staff members present.

8.2 Proceed into the external marmoset outdoor area and visually observe all external caging, including tunnels for sign of repair.


-  If repair is needed, report the issue to your supervisor for maintenance, and place a "do not let out" sign on the cage. See figure 4.



Figure 4: Do not let out label

8.3 Open all outdoor access slides, by pulling down on the pulley wire, and locking it into place on the hook. See figure 5.



Figure 5: Outdoor access slide open (all cages)

8.4 Proceed back into the animal rooms, and open the internal access doors on the internal cages. See figures 6 and 7 demonstrating the access doors open for the two types of internal caging in the irrelevant information facility.

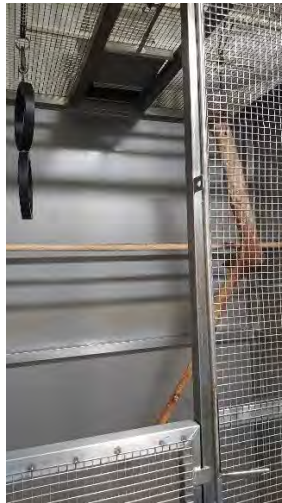


Figure 6: Internal access door open irrelevant




Figure 7: Internal access door open irrelevant



When opening internal doors, one should note the location of all marmosets in the cage. Animals need to be clear from the access door to prevent digital injury.

8.5 Once providing outside access is complete, the Non-Human Primate Daily checks and Outside access sheet located next to the door in every animal room will be checked. By doing so tick the Let outside column, and sign your initials in the next column. If the animals are unable to go outside as per the reasons given in section 8.1, record these reasons in the comments section of this form.

 PQMS3-MARP-FRM-0009 Non-Human Primate daily checks and outside access Sheet

8.6 At the end of the day all animals are brought inside and locked in for the night. Proceed into outside runs and encourage marmosets to enter the tunnel by calling to them in a calm manner.

8.7 Once the marmosets have exited the external cages, close the access door by lifting the pulley off the hook, and sliding the access door closed. See figure 8.



Figure 8: Closed external access door (all cages)



When closing external access doors, one should note the location of all marmosets in the cage or tunnel. Animals need to be clear of the door when it slides to prevent digital injury.

8.8 Proceed back indoors and enter animal room. Count and check all marmosets in the group against the number of animals listed on the yellow cage sticker, to determine that all of them are inside.


8.9 Once all animals are present, close the internal access door as shown in figure 9 and 10.




Figure 9: Closed internal access door Irrelevant






Figure 10: Closed internal access door Irrelevant

-  When closing external access doors, one should note the location of all marmosets in the cage. Animals need to be clear of the door when it slides to prevent digital injury.

8.10 Once the marmosets are inside, the Non-Human Primate Daily checks and Outside access sheet located next to the door in every animal room will be checked. By doing so tick the Locked inside column, and sign your initials in the next column.

-  PQMS3-MARP-FRM-0009 Non-Human Primate daily checks and Outside Access Sheet

8.11 A second staff member now counts and checks all marmosets by repeating the steps in 8.8. The Non-Human primate daily checks and outside access sheet is then checked by the second staff member, by ticking the Double Check/Initials column.

-  This is to verify that no animals are inadvertently left outside.
-  PQMS3-MARP-FRM-0009 Non-Human Primate Daily Checks and Outside Access Sheet
-  At the end of each month, the Non-Human Primate daily checks and Outside access sheet is removed from the animal rooms and placed into the corresponding folder in Irrelevant. A new form for the month is put into the animal room in its replacement.

9.0 ANIMAL MONITORING & WELFARE

- 9.1 All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 9.2 Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 9.3 Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 9.4 All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link: <http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

10. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-FRM-0009	Non-human primate daily checks and outside access
PQMS3-MARP-REF-0026	Marmoset Enrichment Schedule
PQMS3-MARP-SOP-0056	Specialised care of Marmoset Neonates
PQMS3-MARP-SOP-0059	Weekly Cleaning Procedure – Marmosets at [REDACTED]
PQMS3-MARP-SOP-0107	Ordering and Storage of Food Supplies for the Marmosets
PQMS3-MARP-SOP-0147	Handling and Restraint in Marmosets
PQMS3-MARP-SOP-0197	Environmental Enrichment in Marmosets
PQMS3-MARP-SOP-0198	Weekend / Public Holidays for Marmosets
PQMS3-MARP-SOP-0273	Weighing Marmosets
PQMS3-MARP-SOP-0274	Environmental Recording
PQMS3-MARP-SOP-2097	Washroom Operations for Marmosets at [REDACTED]
PQMS3-MARP-SOP-0364	Provision of Water for Marmosets at [REDACTED]
PQMS3-MARP-SOP-0365	Food Preparation for Marmosets at [REDACTED]
PQMS3-MARP-SOP-0389	Breeding Management in Marmosets
PQMS3-MARP-SOP-0432	Allocating and Issuing Marmosets
PQMS3-MARP-SOP-0447	Health monitoring in marmosets
PQMS3-MARP-SOP-0517	BC2/PC2 Testo Data Loggers
EXTERNAL REFERENCES	
Nil	

			PQMS3-MARP-SOP-0058-V2.docx
Version no.	Date of Issue	Irrelevant information	Amendments
1	01/06/2017	[Redacted]	Original Document
2	07/09/2020		Revise and edit Automatic approval by DC due to document expiring Addressed comments

WEEKLY CLEANING PROCEDURE - MARMOSETS AT relevant info (28/05/2021)

PQMS3-MARP-SOP-0059-V3.docx

Irrelevant Information

s from Date of Issue

03- Jun- 2021 |

3: 48 PM AES

23- Jun- 2021 |

4: 43 PM AES

1. INTRODUCTION

10.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe what is required for the weekly clean of the Marmoset Internal and External cages.

10.2. Scope

This SOP is to be applied to all staff cleaning caging in the Marmoset Area at relevant info

10.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  Characteristics of Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained. Refer to PQMS-MARP-SOP-0298.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
relevant	irrelevant information

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

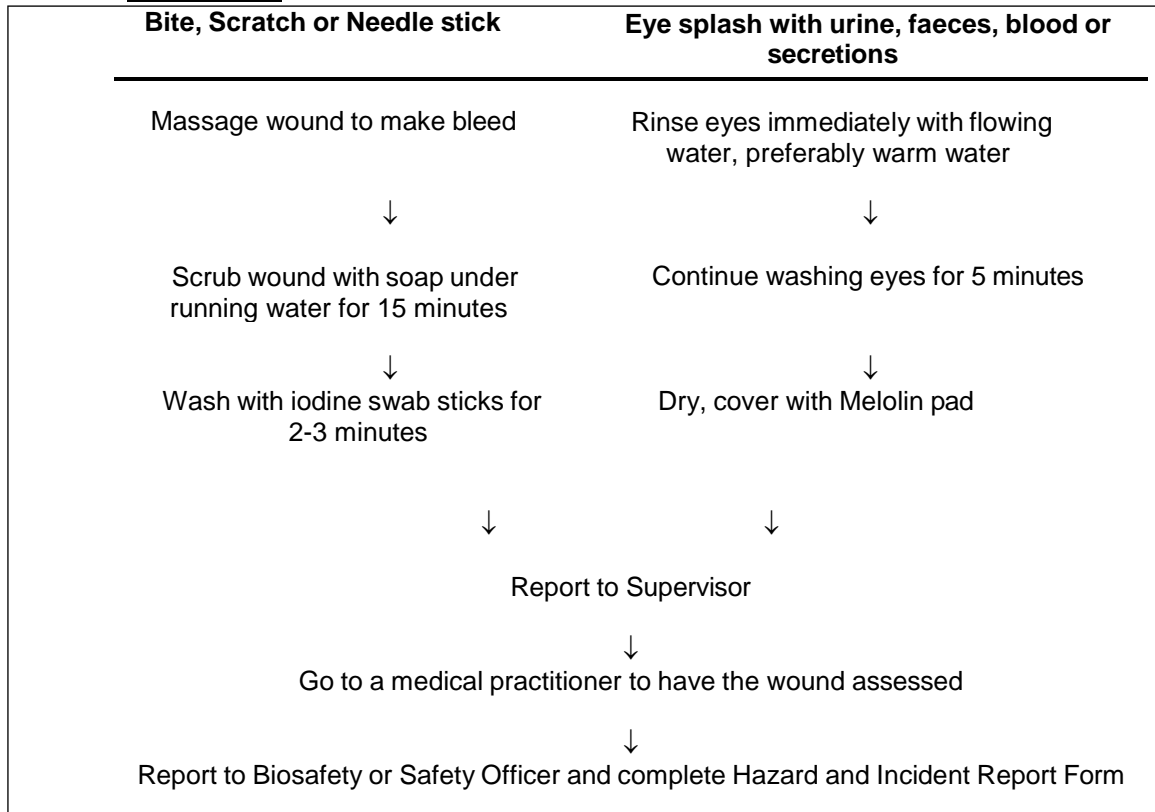
PQMS3-MARP-REF-0350 Personal Protective Equipment required at MARP

PQMS3-MARP-RA-0160 Marmoset Area Risk Assessment irrelevant

PQMS3-MARP-FRM0011 irrelevant Conditions of Entry Statement

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the irrelevant information of irrelevant information



5. CHANGING AND CLEANING INTERNAL NEST BOXES

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Two Tiered Trolley
As Required	Nest Boxes (Plastic or Metal)
QUANTITY	MATERIAL DETAILS
100%	F10 SC Veterinary Disinfectant
As Required	Bleach
As Required	Task Specific PPE
1	Scrubbing brush
1	Chux cloth

- 5.2. The metal and plastic nest boxes are used in all the Marmoset Internal Cages. Every fortnight the nest boxes in the internal cages are replaced with fresh clean ones.
- 5.3. The Marmoset Area Rooms are divided into two sections. The [redacted] or the [redacted] [redacted] consists of [redacted] and [redacted] [redacted] are considered the [redacted] or [redacted] and are cleaned on the alternate week.
- 5.4. Once animals have been moved out of the internal cages that are being cleaned, the dirty nestboxes are removed, put on the trolley to take to the wash area [redacted], for cleaning. See Figures 1, 2, 3 for the manner in which to remove and replace different style nestboxes from cages.



Figure 1: Removing and replacing nest box in [redacted]

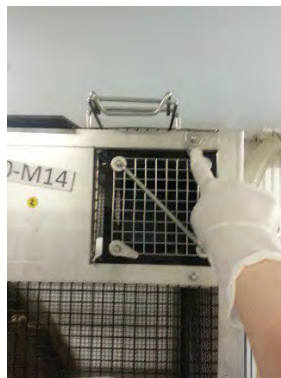


Figure 2: Sliding across latches to remove and secure nest boxes for cages in [redacted]



Figure 3: Removing and replacing nest boxes for cages in Irrelevant

- 5.4 Refer to PQMS3-MARP-SOP-0297 Washroom Operations for Marmosets at Irrelevant Info for instruction on washing nestboxes
- 5.5. On a two- tiered trolley collect the clean nest boxes.
- 5.6. In cages for rooms Irrelevant Information only, open the top door of the cage and replace the fresh clean nest box, ensuring that both hooks at the back of the nest box are secure in the nest box holder. See figure 1.
- 5.7. In cages for room Irrelevant Inform, slide the nest box latches across that secure the nest box in place. See figure 2. Replace nest box and secure latch back into holding position. See figure 3.

6. CLEANING OF INTERNAL CAGES – CHANGE OF SUBSTRATE PROCEDURE

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	240L Wheelie Bin with Bin Liner
1	Broom
1	Dust Pan
1	Scraper
QUANTITY	MATERIAL DETAILS
As Required	Task Specific PPE
As Required	Dust Free Sawdust

- 6.2 Changing over sawdust is usually completed when animals have been given outside access for the day. Before starting this procedure make sure all animals are out of the cage, and the trap door is closed so they cannot jump back inside while the trays have been removed from the cage.
- 6.3 Collect 240 litre wheelie bin from outside relevant information and place a bin liner inside the bin.
 Bin liners are kept on the shelf below the feeding table in relevant information
- 6.4 Using flatbed trolley, collect a bag of sawdust from the Marmoset Store Room relevant information
- 6.5 Take bin to room that needs sawdust changed over in trays.
- 6.6 Slide one tray at a time out and tip contents into the bin, scraping off any stuck bits with the scraper tool.
- 6.7 Replace empty tray back into the cage it came from. Empty all cages that need sawdust changing in the same manner as above
- 6.8 Distribute clean sawdust amongst all the emptied cage trays.
- 6.9 Secure the trays back into their cages by making sure the clasp is locked down.
- 6.10 Sweep sawdust up from the floor using broom and dust pan and place sawdust into the wheelie bin
- 6.11 When completed, tie the bin liner inside the bin in a knot and move the full bin outside via relevant information doors, for collection by waste disposal company

7. CLEANING OF INTERNAL CAGES – WASH DOWN PROCEDURE

7.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Foaming Gun set at 1:250
1	Water Hose
As Required	240L Wheelie Bin with Bin Liner
1	Two Tiered Trolley
1	Broom
1	Dust Pan
1	Scraper
QUANTITY	MATERIAL DETAILS
100%	F10SCXD Veterinary Disinfectant
As Required	Task Specific PPE
As Required	Dust Free Sawdust

- 7.2. Open the trap door and let all animals into the pipe at the top of their inside cage, this pipe connects the internal and external enclosures.
- Encouraging animals outside should only be completed by trained personnel, wearing appropriate PPE for handling
 - If weather is adverse, cleaning is completed room by room with animals not let into their outside enclosure, but left in the pipe.
 - If babies are less than 2 weeks of age, do not allow outside access in case they are to fall. Animals are to be left in the pipe.
 - If babies have been born on the day of cleaning, remove with parents to a small cage while cleaning is undertaken
- 7.3. Once all animals are safely inside the pipe, lock the trap door so the animals cannot re-enter their internal cage. Outside enclosure traps are opened to allow access to outside enclosure.
- 7.4. The internal cage can now be opened up for cleaning.
- 7.5. While wearing the task specific PPE, remove the nest boxes and place them on the top of the two tiered trolley. These will be cleaned and later replaced in the clean cage, as per section 5
- 7.6. Remove the Testo Datalogger, place on light switch just outside room.
- 7.7. Cover any fire sensors in the room with a water proof shoe cover.
- 7.8. Collect 240 litre wheelie bin from outside relevant information, and place a bin liner inside the bin. Bin liners are kept on the shelf below the feeding table in relevant information
- 7.9. Slide one tray at a time out and tip contents into the bin.
- 7.10. Place empty tray at the back of the room to be washed. Empty all trays in the room.
- 7.11. Sweep sawdust up from the floor using broom and dust pan and place sawdust into the wheelie bin.
- 7.12. When completed, tie the bin liner inside the bin in a knot and move the full bin outside via relevant information doors, for collection by waste disposal company.
- 7.13. Person cleaning is to put on gumboots, safety glasses, a water proof apron and long armed water proof gloves,



- 7.14.** Then, pre-soak the cages and trays with hot water and scrape off any heavily soiled areas of faeces.
- Hot water hoses for cleaning are located in [redacted] x 2, [redacted] in wash area and [redacted]
- 7.15.** Collect the foaming gun with F10SCXD inside. Connect it to the cold water hose located at the north end of the marmoset corridor [redacted]
- The foaming gun is located in the wash area of [redacted] next to the F10SCDX.
- 7.16.** Proceed to foam up all the accessible surfaces of the cages, trays, walls and floor.
- 7.17.** Leave the cages with F10SCXD on for 30 minutes for adequate disinfection.
- 7.18.** Once all cages have been foamed return the hose and foaming gun.
- 7.19.** Rinse off the F10SCXD in the cages using the hot water hose.
- 7.20.** Wash down the back of the animal room door, outside access tunnels, windows, window sills and floor.
- 7.21.** Empty drain basket into a 240 litre wheelie bin.
- 7.22.** Hose clean the drain basket before replacing it in the drain trap.
- 7.23.** Allow cages and trays to air dry.
- 7.24.** Move branches in the cage to different positions after cleaning is complete. This gives the animals a varied environment by changing their locomotion.
- 7.25.** Once dry, place trays back under the cages by leaving them half hanging out.
- 7.26.** Using flatbed trolley, collect a bag of sawdust from the Marmoset Store Room [redacted] and distribute clean sawdust amongst all the cage trays.
- 7.27.** Secure the trays back into their cages by making sure the clasp is locked down.
- 7.28.** Place a clean nest box into each cage.
- 7.29.** Ensure all cage doors are closed and locked.
- 7.30.** Remove water proof shoe cover from fire sensor and dispose into a wheelie bin and replace the Testo Datalogger back into the room.
- 7.31.** Open all cage internal trap doors, to allow the marmosets back into their cleaned internal cage.

8. CLEANING OF EXTERNAL CAGES

8.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	240L Wheelie Bin with Bin Liner
1	Foaming Gun set at 1:250
1	Water Hose
1	Broom
1	Dust Pan
1	Scraper
QUANTITY	MATERIAL DETAILS
100%	F10SCXD Veterinary Disinfectant with Degreaser
As Required	Task Specific PPE

- 8.2. Outside cages are cleaned fortnightly. The side of outside cages to be cleaned is the alternate side of the internal cages that have been cleaned that week.
- 8.3. Outside cages are cleaned prior to the Marmosets having outside access for the day or in the afternoon when outside access has already been provided. This is so the animals are locked inside in their internal cage to allow the outside cages to be opened up.
- 8.4. Person cleaning is to put on gumboots, safety glasses, a water proof apron and long armed water proof gloves.
- 8.5. Remove all waste material from the external cage.
- 8.6. Place these items into a lined 240 litre wheelie bin.
- 8.7. Remove old browse from holders and take to the outside exit door.
- 8.8. Place old browse in a pile outside the external exit door for disposal
- 8.9. Sweep out the external cages with a broom and collect any waste with the dust pan and brush and discard into the 240 litre wheelie bin.
- 8.10. Hose down all cages with water & scrape off any faeces or dirt with a scraper
- 8.11. Connect the foaming gun with F10SCXD to the outside run cold water hose and spray all surfaces including the floor, branches, nest box and hanging enrichment in the external cage.
- 8.12. Leave the cages with F10SCXD on for 30 minutes for adequate disinfection.
- 8.13. After 30 minutes using the outside run cold water hose rinse off from top to bottom of the cage, hosing all water towards the drain in the floor.
- 8.14. Ensure all areas of the outside area have been washed down, Including access tunnels, walls, door, window and window sills.
- 8.15. Return the foaming gun to relevant information.
- 8.16. Remove the drain baskets and empty contents into a 240 litre wheelie bin.
- 8.17. Hose clean the drain basket before replacing it in the drain trap
- 8.18. Close and lock the outside cage doors and allow to air dry.

9. ADDITIONAL CLEANING ACTIVITIES

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	240L Wheelie Bin with Bin Liner
1	Foaming Gun set at 1:250
1	Water Hose
1	Broom
1	Dust Pan
1	Scraper
As required	Cleaning cloths
As required	Cleaning products such as 70% ethanol, stainless steel cleaners
QUANTITY	MATERIAL DETAILS
100%	F10SC Veterinary Disinfectant
As Required	Task Specific PPE

- On a Daily Basis
 - Sweeping floors [Irrelevant Information]
- Twice Weekly Basis (After cleaning and on Friday)
 - Hosing floors in [Irrelevant Information]
- Once Weekly Basis
 - Mopping [Irrelevant Information] and [Irrelevant Information] weekly after cage washing
 - Cleaning all bench surfaces in the area, fridges, and microwave in [Irrelevant Information]
 - Cleaning of surgery room [Irrelevant Information] including wiping benches, mopping floor and general tidy up of the area.
- On a Monthly Basis
 - Disinfect all brooms, mops squeegee and other cleaning equipment by soaking in F10SC at 1:250 dilution.

10. CAGE MAINTENANCE

10.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Determined by contractor and dependent upon job required
QUANTITY	MATERIAL DETAILS
As required	Determined by contractor and dependent upon job required

10.2 The Animal Facility Manager needs to be notified immediately of cages that require maintenance or repair.

10.3 The Animal Facility Manager will place a BEIMS request in online to have the issue investigated and repaired or maintained.



10.4 The marmoset supervisor should check the repairs completed by the contractor at the conclusion of the job. If the job is not to standard, this should be reported back to the facility manager.

11. ANIMAL MONITORING & WELFARE


Each animal will be observed and monitored according to the:

EXTERNAL REFERENCES
Australian Code of Practice for the Care and Use of Animals for Scientific Purposes
Code of Practice for the Housing and Care of Laboratory Mice, Rats, Guinea Pigs and Rabbits
Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals
Policy on the Care and Use of Non-Human Primates for Scientific Purposes
Approved ethics project

Report any adverse observations to the supervisor for discussion with the client/owner and veterinarian if required.

-  PQMS3-MARP-SOP-0167 Reporting Adverse Observations
-  PQMS3-MARP-SOP-0168 Reporting Adverse Incidents to the Animal Ethics Committee

12. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-0297	Washroom Operations for Marmosets at 
EXTERNAL REFERENCES	
Nil	

		PQMS3-MARP-SOP-0059-V3.docx	
Version no.	Date of Issue	Amendments	
1	23/02/2017	[Redacted: Irrelevant Information]	Original Document
2	13/04/2018		
3	28/05/2020		Automatic approval due to expired review process

THYMIDINE ANALOGUES IN MARMOSSET AREA (20/01/2021)

PQMS3-MARP-SOP-0111-V3.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

22- Jan- 2021		: 05 AM AED
03- Feb- 2021		: 39 AM AED
03- Feb- 2021		: 12 AM AED

1. INTRODUCTION

Bromodeoxyuridine (5-bromo-2-deoxyuridine, BrdU) is an odourless white powder, a synthetic nucleoside and an analogue of thymidine. BrdU is commonly used in the detection of proliferating cells in living tissues and works substituting for thymidine during DNA replication thereby incorporating itself into the newly synthesized DNA. Antibodies specific for BrdU can then be used to detect the incorporated chemical, thus indicating cells that were actively replicating their DNA. Other thymidine analogues used for the same purpose of tracking replicating cells include EdU (5-ETHYNYL- 2'- DEOXYURIDINE), IdU (5-IODO-2'-DEOXYURIDINE) and CLdU (5- CHLORO- 2'- DEOXYURIDINE)

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to provide instruction on how to safely work with Thymidine Analogues in the Marmoset Area.

1.2. Scope

This SOP is to be applied to all staff using BrdU, IdU, and CLdU and/ or EdU and staff handling animals in the Marmoset Area that have been administered with these Thymidine Analogues.






The use, injection route and dose of TAs must be approved in the client's Animal Ethics Project.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. They must also be listed on the clients approved ethics application, before being allowed to use Thymidine Analogues for experimental purposes. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0147 Capture, Restraint and Handling of Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets
-  PQMS3-MARP-SOP-0273 Weighing Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.




3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
BC1	Biosecurity Containment Level 1
BC2	Biosecurity Containment Level 2
BrdU	5- Bromo- 2'-deoxyuridine (Thymidine Analogue)
CLdU	5- Chloro- 2'- deoxyuridine (Thymidine Analogue)
EdU	5- Ethyl- 2'- deoxyuridine (Thymidine Analogue)
[REDACTED]	[REDACTED]
IdU	5- Iodo-2'- deoxyuridine (Thymidine Analogue)
P2	Particulate Category 2 Mask
PC2	Physical Containment Level 2
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
TA	Thymidine Analogues

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

-  PQMS3-MARP-SOP-0132 Entry and Exit Procedures to Marmoset Facilities - [REDACTED]
-  PQMS3- MARP- RA- 0160 Marmoset Area Risk Assessment
-  Working with Bromodeoxyuridine (BrdU) – Monash OHS Information Sheet

All staff must have the necessary and up to date vaccinations required to work with NHP's

Tetanus

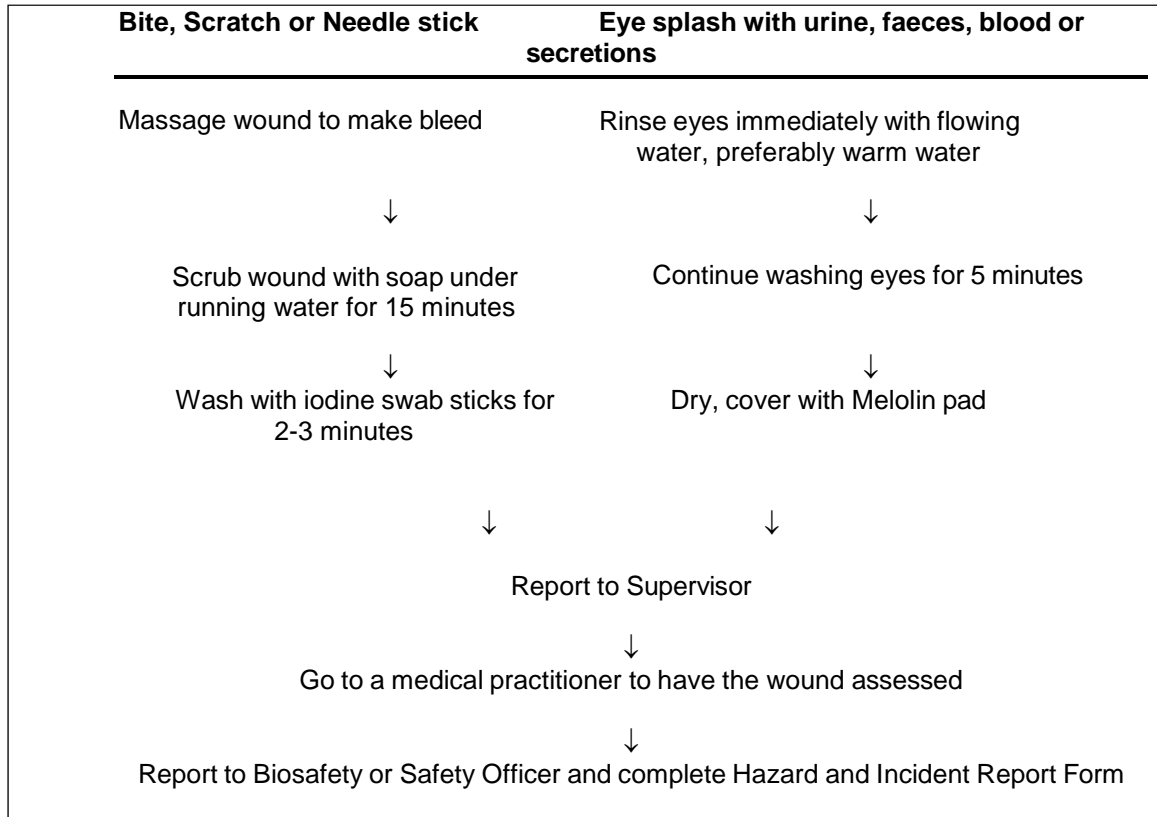
Hepatitis A

Hepatitis B

Polio

QuantiFERON®- TB Gold Tuberculosis Screening

- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For updated and current Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Chemwatch Online.



TAs work by replacing thymidine during DNA replication, hence they have the ability to cause genetic mutations, birth defects and other inheritable genetic defects. Staff who are planning for a family or are pregnant and are likely to come in contact with TAs should contact the Occupational Health and Safety Branch (OH&S).

Specific health and safety considerations while performing this procedure are:

- Prior to working with TAs, all staff and students must be trained in procedures for its safe handling, use, storage and disposal. The principal investigator or supervisor is responsible for this training, which must be documented, include a discussion of the known and potential hazards and an explanation of the relevant procedures and techniques to be followed.
- Appropriate task specific personal protective equipment (PPE) must be worn. Eye protection, disposable gloves and water-resistant coveralls should be worn when preparing or working with TAs. Respiratory protection is not normally necessary but where protection from dust or working with Non-Human Primates is required as indicated by the risk assessment, use type P2 respirators. Where aerosols are present use approved respirators and components. A Fit Test must be completed by OH&S prior to the use of any dust mask or respirator to ensure that an adequate seal exist between the mask and the face.
- Aerosols in the Experimental Room are minimized by use of paper on cage floors and no use of water to clean the area during the test period.
- Containers of TA and any secondary containers must be properly labeled.
- Transportation of the chemical should be performed using a sealed, non-breakable secondary container.

- TAs are prepared by the client and transported frozen in syringes in aliquoted portions to [redacted] to minimize handling by [redacted] staff. They are stored in a locked labelled freezer in the week prior to use.
- Emergency procedures specifically for exposure to TA need to be displayed in the work area.

5. PREPARING TA SOLUTIONS FOR TRANSPORT, USE & STORAGE

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Locked Labelled Freezer in relevant info for TA storage
QUANTITY	MATERIAL DETAILS
As Required	Frozen labelled syringes of TA prepared by client
As Required	Task appropriate PPE – hair net, P2 mask, nitrile gloves, eyewear, coveralls

5.2. Prepared TA is frozen and placed into syringes by the client. Each syringe is labelled appropriately and contains an aliquoted amount of chemical. Each syringe is for one animal only.

5.3. The syringes are then wrapped in foil & placed inside sealed plastic bags. They are packed into an esky with dry ice. The esky is also labelled appropriately and delivered to relevant info by an appropriate courier.

5.4. Prior to injection into an animal, the TA syringes required are removed from the freezer and defrosted at room temperature.



While handling TAs staff must wear appropriate PPE including eye protection, coveralls and two pairs of disposable nitrile gloves.



Always wash hands with soap and water after removing gloves following the handling of TAs.

5.5. Clean areas where TAs have been handled by adding water and placing paper towels on top. Follow with a soap and water wash. The paper towels should then be placed into a Purple Cytotoxic Waste Pail/ Bin for disposal by an approved waste removal contractor.

6. SET UP OF PROCEDURAL ROOM AND MOVING ANIMALS FOR EXPERIMENT

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Animal scales and weigh bag
1	Thermometer
1	Stethoscope
1	Computer with LabTracks access
QUANTITY	MATERIAL DETAILS
As required	Cytotoxic Waste Disposal containers – Sharps & Pail/Bin
As required	Pens
As required	Cotton tips
As required	Swabs
As required	KY jelly
As required	Absorbent paper
As required	Task specific PPE – Hair net, P2 mask, Nitrile gloves, Hexamour needle stick resistant gloves, Hexamour arm gauntlet,

6.2. All TA procedures are required to be carried out in an isolated room, at [redacted] the designated areas are in the [irrelevant information] Rooms.



A SWI for using TAs is to be posted on the door of the experimental room where the animals are being housed.

6.3. The room is set up with everything required for the duration of the experiment prior to commencement of the project. This may include some of the items listed in the equipment and materials above, to maintain care of the animals under experiment as approved in the client's ethics.

6.4. Cytotoxic waste pails/bins and sharps containers are all labelled **“THYMIDINE ANALOGUES”**

6.5. Each animal cage is labelled with an identifying number.

6.6. Cage floors are covered in several layers of heavy absorbent paper to reduce the risk of staff exposure to aerosols.

6.7. Recording forms and instructions detailed in the client's ethics may be printed, or a separate folder on the share drive created, to record the outcomes as each task is completed for the duration of the project. For example this may include the following; weekly weighing, dose rate of injection, frequency of checks, and frequency of injections.



This information is made available to the client at any time of the experiment.

6.8. Technical services can also be recorded in iLab.

6.9. Animals are moved from their home cage in the colony, into the Experimental Room prior to the injections commencing at the time approved in the client's ethics.



There will always be two animals on test, so that each animal has a companion.



House animals opposite each other for socialisation purposes

7.0 INJECTING ANIMALS WITH THYMIDINE ANALOGUES

7.1 The following equipment and materials are used to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As required	Safety Gumboots (used only in experimental room)
As required	Protective Coveralls
As required	Nitrile Gloves (2 pairs worn at all times)
As required	Safety Glasses
As required	P2 Particulate Respirator
As required	Disposable Hairnets
As required	Hexamour Needlestick Resistant Gloves (various sizes)
As required	Hexamour arm gauntlets
QUANTITY	MATERIAL DETAILS
As Required	TA syringes prepared by the client, defrosted.
As required	Cytotoxic Waste Disposal containers – Sharps & Pail/Bin
As required	Absorbent paper
As required	Labels for cages



Upon entering the Experimental Room you must wear PPE as stated above, along with two pairs of nitrile gloves.

- 7.2 Defrosted syringes with capped needles, containing TA are taken into the Experimental Room ready for injection into the animal. Place syringes onto the bench resting on absorbent paper.
- 7.3 Clean cages are used for the animals at the time of injection.
- 7.4 Test subjects are caught by one staff member wearing the task appropriate PPE, while the second staff member completes the injection.
- 7.5 The injection is completed as per the technique listed on the client's ethics.
- 7.6 Do not recap or bend needles.
- 7.7 Following use, all needles with syringes and possible left-over TA, must be disposed of in a purple cytotoxic sharps container and disposed of by an approved waste contractor.
- 7.8 All cages must be clearly labelled '**THYMIDINE ANALOGUES**' to indicate its presence after the animals have been injected.



Animals are not returned to the Marmoset Breeding Colony once they have had TA injections.



No breeding animals or future breeders are to be exposed to TAs



Always wash hands with soap and water after removing gloves following the handling of Thymidine Analogues.

8.0 CLEANING OF CAGES AND EQUIPMENT DURING TEST PERIOD

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	Mop Bucket
As Required	Mop
As Required	Bucket
As Required	Disposable Cleaning Cloths
1	Purple Cytotoxic Waste Pail/Bin
QUANTITY	MATERIAL DETAILS
As Required	Newspaper for the bottom of the cages
As Required	F10CS Veterinary Disinfectant
As Required	1% Bleach Solution
As required	Cytotoxic or Biohazard Bags
As required	80% v/v ethanol spray
As Required	Task Appropriate PPE – room specific gumboots, coveralls, hair net, P2 mask, 2 pairs of nitrile gloves, eyewear



All '**THYMIDINE ANALOGUE**' cages and everything within them are considered to be contaminated for a minimum of three days after each injection of TA.



Task appropriate PPE stated listed above should always be worn whilst working in this room.



When cleaning or feeding, always start with the animal that has not received the TA injections (control) where appropriate.



PQMS3-MARP-0059 Weekly Cleaning Procedure



PQMS3-MARP-0297 Wash room operations at 



PQMS3-MARP-SGN-0754-V1-AA and PC2/BC2 F10SC Dilutions



PQMS3-MARP-SGN-0755-V1-AA and PC2/BC2 Bleach Dilutions

8.2 On a daily basis, food bowls and enrichment items are removed from the cage/s. They are soaked in 1% Bleach Solution for 10- 30 minutes and scrubbed clean with a scrubbing brush. They are then soaked in F10SC at 1:250 for 30 minutes and allowed to air dry overnight.

8.3 Once washed and dried the equipment can be removed from the room, by spraying the item with 80%v/v ethanol.



All waste from the cages during the test period must be placed into the purple cytotoxic waste pail/bin.

8.4 Post three days after injection and as required, change over the nesting boxes and replace with dry boxes. The dirty boxes can be cleaned in the sink as per section 8.2

8.5 Post three days after the TA injections and as required, cages can be spot cleaned during the test period. Remove the absorbent paper and other waste from the floor of the cages to be cleaned and place into cytotoxic waste pail/bin.

8.6 Fill bucket with F10SC dilution, and obtain disposable cleaning cloth. Commencing with control animal cage first (where applicable), wipe all surfaces in the cages. Dispose of cleaning cloth into cytotoxic waste pail/bin once cleaning has finished.

- 8.7 After cages have been spot clean, place a generous amount of clean absorbent paper onto the floor of the clean cages.
- 8.8 Post three days after injection and as required, the room floor can be washed. The room should be wet mopped, and not hosed down to prevent aerosols. Using a 1:250 dilution of F10SC in a mop bucket filled with cold water, mop the entire room clean.

9.0 CLEANING OF CAGES POST TEST PERIOD

9.1 The following equipment and materials are required for this procedure;

QUANTITY	EQUIPMENT DETAILS
As Required	Empty Dirty Cages
As Required	Mop Bucket
As Required	Mop
As Required	Bucket
As Required	Disposable Cleaning Cloths
1	Foaming Gun
1	Water Hose
1	Purple Cytotoxic Waste Pail/Bin
QUANTITY	MATERIAL DETAILS
As Required	Newspaper for the bottom of the cages
As Required	F10SC Veterinary Disinfectant
As required	Cytotoxic or Biohazard Bags
As required	80% v/v ethanol spray
As required	Task Appropriate PPE – room specific gumboots, coveralls, hair net, P2 mask, 2 pairs of nitrile gloves, eyewear



Task appropriate PPE stated listed above should always be worn whilst working in this room.

- 9.2 Once the test period is complete and the animals are removed as per the client's ethics, the dirty cages and room can be given a thorough clean.
- 9.3 Remove all waste from the cages and place in double biohazard bags and put in a purple cytotoxic pail/bin for disposal for an approved waste contractor.
- 9.4 Clean food bowls, enrichment and nesting boxes as per section 8.2 to 8.4
- 9.5 Repeat steps in section 8.5, 8.6 & 8.8 to reduce the amount of TA waste product from the animals in the room. Completing these steps will reduce aerosol exposure in the following procedures.
- 9.5 Once the dirty cages are spot cleaned, pre-soak the cages using cold water.
- 9.10 Use a foaming gun to apply the F10SC to the dirty cages and floors.
- 9.11 Allow the foam to stand for 30 minutes and then hose off using cold water.
- 9.12 Hose all floors clean, then squeegee dry.
- 9.12 Using bucket filled with F10SC and water at the dilution of 1:250, obtain disposable cloth and wipe down all surfaces in the room including, benches and windows.
- 9.13 Once cages are dry, place clean absorbent paper onto the cage floor for the next project, along with a clean and dry nest box.

10. DISPOSAL OF THYMIDINE ANALOGUES

10.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Purple Cytotoxic Waste Pail/Bin
1	Purple Cytotoxic sharps container
QUANTITY	MATERIAL DETAILS
2	Cytotoxic or Biohazard Bags

- 10.2 All potentially contaminated animal carcasses, tissue samples, bedding, other laboratory or animal house materials and unused TA should be double bagged in biohazard bags, clearly labelled '**THYMIDINE ANALOGUES**' and stored securely in a purple cytotoxic pail/bin whilst awaiting disposal by an approved waste disposal contractor.
- 10.3 Contaminated sharps should be placed into a purple cytotoxic sharps container and the container clearly labelled '**THYMIDINE ANALOGUES**'.
- 10.4 All waste is disposed of through approved waste contractor in compliance with The Environmental Protection (Industrial Waste Resource) Regulations 2009.

11.0 SPILL MANAGEMENT OF THYMIDINE ANALOGUES

11.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Purple Cytotoxic Waste Pail/Bin
QUANTITY	MATERIAL DETAILS
1	Spill Kit
As required	Cytotoxic or Biohazard Bags
As Required	Task specific PPE – hair net, nitrile gloves, coveralls, gumboots, P2 face mask, eyewear

- 11.2 All persons in the area where the spill is shall be evacuated immediately if there is a significant spill of TA.
- 11.3 Follow the chemical spill procedures in the Monash University Emergency Procedures (333) Booklet.
- 11.4 In the event of a small spill, only properly equipped and trained persons should be assigned to the clean-up.
- 11.5 PPE as stated above must be worn.
- 11.6 The material should be wiped up using absorbent paper- if the material is in powder form the absorbent paper should be wetted with water.
- 11.7 The area of the spill should then be cleaned with soap and water. Wash hands with soap and water after cleaning the spill.
- 11.8 Waste generated from the spill should be double bagged and placed in the purple cytotoxic waste pail/bin and clearly labelled '**THYMIDINE ANALOGUES**' and stored securely for collection by an approved waste disposal contractor.

12.0 EXPOSURE OF THYMIDINE ANALOGUES- FIRST AID

12.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	First Aid Kit
1	Eye Wash Station or Shower
1	Purple Cytotoxic Waste Pail/Bin
QUANTITY	MATERIAL DETAILS
As required	Cytotoxic or Biohazard Bags

- 12.2 Personal or significant area contamination must be reported to the Area Supervisor or Animal Facility Manager immediately.
- 12.3 Accidental skin contact with TA should be treated immediately by rinsing the affected parts in cold running water for at least 15 minutes, followed by thorough washing with soap and water. If necessary, the person should shower and change contaminated clothing and shoes, and then must seek medical attention.
- 12.4 In the case of eye exposure, the eye should be irrigated immediately with cold running water for 15 minutes before seeking medical attention.
- 12.5 If inhaled, remove person to fresh air and seek medical attention immediately.
- 12.6 If ingested, DO NOT induce vomiting. Rinse mouth with water (never give anything by mouth to an unconscious person). Seek medical attention immediately.
- 12.7 An incident report on SARAHS must be completed for all above situations.
- 12.8 Coveralls and disposable gloves should be double bagged and placed in the purple cytotoxic waste pail/bin and clearly labelled '**THYMIDINE ANALOGUES**' and stored securely for collection by an approved waste disposal contractor.

13.0 ANIMAL MONITORING & WELFARE

- 13.1 All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 13.2 Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 13.3 Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 13.4 All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

14.0 REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
OHSE Website May 2011	Working with Bromodeoxyuridine (BRDU) – OHS information sheet http://www.monash.edu/ohs/information-and-documents/all-information-sheets/asbestos/working-with-bromodeoxyuridine-brdu-ohs-information-sheet
PQMS3-MARP-SOP0059	Weekly clean down procedure at [REDACTED]
PQMS3-MARP-SOP-0132	Entry and Exit procedures to Marmoset Facilities.
PQMS3-MARP-RA-0160	Marmoset Area Risk Assessment
PQMS3-MARP-SOP-0297	Washroom operations Marmosets [REDACTED]
PQMS3-MARP-SGN-0754	AA and PC2/BC2 F10SC Dilutions
PQMS3-MARP-SGN-0755	AA and PC2/BC2 Bleach Dilutions
EXTERNAL REFERENCES	
Nil	



DOCUMENT HISTORY		irrelevant information	PQMS3-MARP-SOP-0111-V3.docx
Version no.	Date of Issue		Amendments
1	05/06/2017		Original Document
2	07/09/2020		Update and revised. Automatic approval by [redacted] due to document expiring Definitions completed
3	20/01/2021		Section 8 -added in Bleach to Materials list Section 8 -Included dilution signs for Bleach and F10SC Section 8.2- Included bleach soaking time Corrected F10SC spelling throughout document Section 14.0- Included bleach and F10SC signs in the references

HANDLING & RESTRAINT IN MARMOSETS (18/07/2022)

PQMS3-MARP-SOP-0147-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
Irrelevant Information	12-Sep-2022 9:12 AM AEST
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	12-Sep-2022 11:43 AM AEST
	19-Sep-2022 2:03 PM AEST

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the procedures used for capturing and restraining adult, juvenile and neonatal marmosets.

1.2. Scope

This SOP is to be applied in all capture situations that are being performed by staff at Monash Animal Research Platform.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operator list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

 Nil

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Adult Marmoset	Marmoset over 18 months of age
Adolescent Marmoset	Marmoset 12-18 months of age
Juvenile Marmoset	Marmoset that is post weaned before 12 months of age
Neonate Marmoset	Marmoset that is 0 to 4 months of age
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

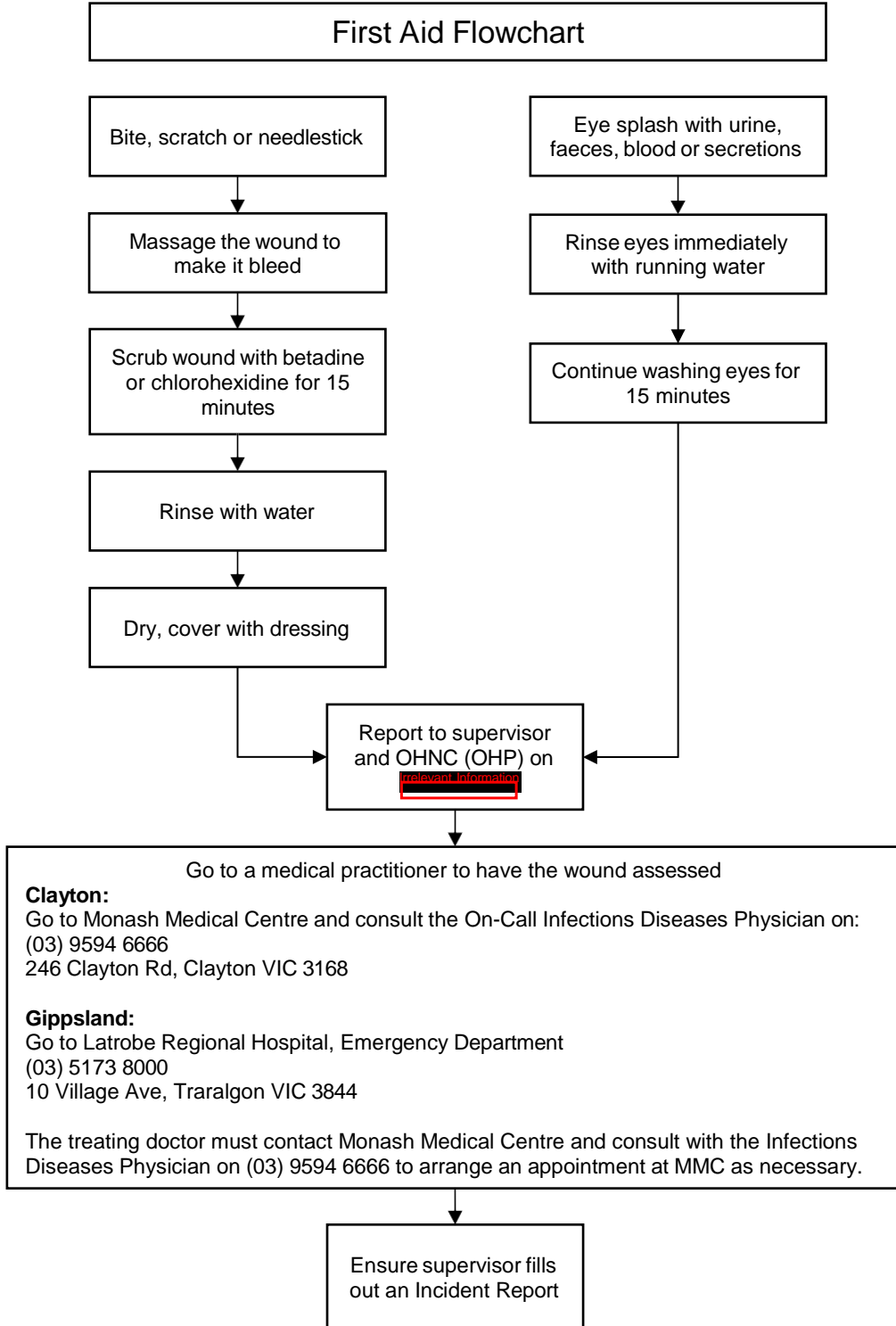
Persons performing this SOP must have read and understood the following documents:

- SARAH Ref no. 23851 Marmoset AREA Risk Assessment irrelevant information
- SARAH Ref no. 39409 MARP- Working with Large Animals and Non-Human Primates
- PQMS3-MARP-SOP-0132 Entry and Exit Procedures for Marmosets – irrelevant info
- PQMS3-MARP-SOP-0144 Entry and Exit Procedures for Marmoset Facility irrelevant
- PQMS3-MARP-SOP-0153 Entry and Exit Procedures for Marmoset Facility irrelevant

Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are always unpredictable. Staff should always be cautious when handling these animals as marmosets are very protective over their families. Staff should always be aware of the animals in the enclosure by keeping an eye on them and avoid turning their back on any animals inside the enclosure.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area, unless they are in use, as this will cause adverse behaviour in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Chemwatch Online for up to date and current SDS.

Marmoset First Aid Procedure



5. CAPTURE OF AN ADULT OR JUVENILE MARMOSET

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	PPE
QUANTITY	MATERIAL DETAILS
As Required	Food Reward

5.2. Unlatch the doors of the enclosure, open doors slightly.

5.3. With the task specific PPE move into the enclosure.

- ☞ Do not stand on the enclosure's trays as they have not been load tested and this will cause the trays to buckle and they will no longer fit properly on their slide frames.

5.4. Observe marmoset behaviour, ensuring that you keep an eye on all animals in the enclosure.

- ☞ Adverse behaviour includes tufts flicking forward, eyes squinted, piloerection (bristly) of the coat, charging and threatening (erh erh) vocalisation. Use your own body language and present as more dominant to the animal exhibiting this type of behaviour. If the animal continues with this adverse behaviour or the behaviour escalates then the animal is removed from the cage.

5.5. Using one hand, quickly catch the marmoset required around the chest cavity area, with one's palm on the marmosets back, and fingers around the front of the chest. Do not catch the animal by the tail, head or limbs. Refer to Figure 1.

5.6. Using the second hand as necessary, remove the marmoset's hands and feet from the object it is holding onto.

- ☞ Take care not to be forceful, as this can cause broken toes and fingers.

5.7. Continuing to observe the behaviour of the marmoset, step back from the enclosure, ensuring the remaining marmosets do not escape.

5.8. Close doors.

- ☞ Check the door frames and hinges for other animals' fingers, toes and tails, before closing.

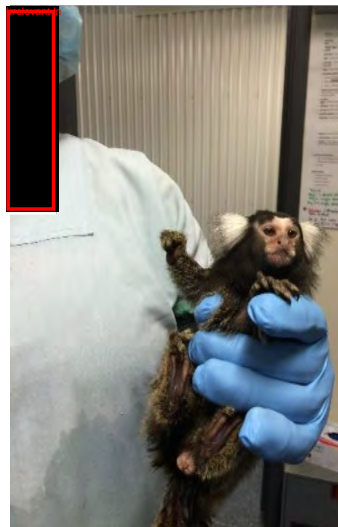


Figure 1: Correct marmoset hand positioning for capture and restraint.



6. RETURNING AN ADULT OR JUVENILE MARMOSET

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	PPE
QUANTITY	MATERIAL DETAILS
As Required	Food Reward

6.2. Open door of the enclosure.

6.3. Place marmoset inside the enclosure and face it towards a perch or branch at the top of the enclosure and allow the animal to grab an object and pull itself away from you.

6.4. Once away from you close and latch the door.

6.5. Offer the marmoset a reward in the food bowl.

7. CAPTURE OF AN NEONATE MARMOSET

7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
	PPE
QUANTITY	MATERIAL DETAILS
	Nil

7.2. Unlatch the doors of the enclosure, open doors slightly.

7.3. Move up into the enclosure and stand at the door frame.

- ☞ Do not stand on the enclosure's trays as they have not been load tested and this will also cause the trays to buckle and in turn they will no longer fit properly on their slide frames.

7.4. Observe marmoset behaviour. Keep your eyes on all animals in the enclosure.

- ☞ Marmosets not carrying the neonate will be particularly aggressive.
- ☞ Adverse behaviour includes tufts flicking forward, eyes squinted, piloerection (bristly) of the coat, charging and threatening (erh erh) vocalisation. Use your own body language and present as more dominant to the animal exhibiting this type of the behaviour. If the animal continues with adverse behaviour or the behaviour escalates then the animal is removed from the cage.

7.5. Using one hand, quickly catch the required marmoset around the body, just below the neonate, with palm of the hand on the adult marmoset's back, allowing thumb and fingers to curl around the front of the chest.

- ☞ Do not catch marmoset by the tail, head, and limbs or place your hand over the neonate.

7.6. Step back and away from the enclosure, whilst observing the remaining marmosets' behaviour so none escape.

7.7. Close doors.

- ☞ Check the door frames and hinges for other animals' fingers, toes and tails, before closing.

7.8. Remove the handling glove from hand not holding the adult.



- 7.9** Place index and middle fingers onto the neonate's shoulders and then place your thumb and ring finger under the neonate's arms.
- 7.10** Gently pull neonate down and away from the adult.
☞ Do not pull neonate's limbs, torso or tail as this will cause injury
- 7.11** Place neonate into humidicrib or box with heat source for technique and return adult to enclosure as described in section 6.

8. RETURN NEONATE TO ENCLOSURE

- 8.1.** The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	PPE
As Required	Food Reward
As Required	Feeding bowl
QUANTITY	MATERIAL DETAILS
	Nil

- 8.2** Remove neonate from humidicrib or box with a heat source.
- 8.3** Place neonate, one at a time into an empty feeding bowl.
Ensure neonates tail is fully in the bowl.
- 8.4** Approach enclosure, slide out enclosure tray and place feeding bowl with neonates in it, onto the enclosure tray.
- 8.5** Slide enclosure tray closed, and supervise adult's collection of the neonate.
- 8.6** Ensure the neonate has transferred successfully and is up high on the carrier, prior to retrieving the feeding bowl.
- 8.7** Once all neonates have been returned, place feeding bowl into sink for washing
Refer to SOP PQMS3-MARP-SOP-0297 Washroom Operations.
- 8.8** Offer the marmosets a reward into their feeding bowl.



9. CAPTURE OF AN ESCAPEE

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	PPE
1	Ladder
1	Net
QUANTITY	MATERIAL DETAILS
	Nil

- 9.2 Ensure the marmoset room door is closed, to prevent the escapee from entering the corridor and potentially other animal rooms.
- 9.3 Collect the ladder and nets from the Service Area relevant informa
- 9.4 Stand the ladder close to the room cages as possible.
- 9.5 Wearing task specific PPE, use the net to catch the marmoset.
- 9.6 Hold the marmoset in the net bag.
- 9.7 Fold back the material of the bag and remove the marmoset, holding the marmoset around the chest. As described in Section 5.5
- 9.8 Return the marmoset to its enclosure, As described in Section 6.

10. RESTRAINING ADULT, JUVENILE AND ADOLESCENT MARMOSETS

10.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
	PPE
QUANTITY	MATERIAL DETAILS
	Nil

10.2 Restraint 1

Examination of the head, teeth, ears and face. This restraint is also suitable for administration of oral medication. (Refer to Figure 2 and 3)

- Using one hand hold the marmoset around the chest.
- Using the same hand, hold one arm of the marmoset down with index finger.
- Place thumb on opposite shoulder.
- Marmoset's body should rest in the handler's palm.



Figure 2 – Restraint 1 Examining teeth



Figure 3 – Restraint 1 Examining ears

10.3 Restraint 2:

Examination of the abdomen. This restraint maybe used for palpation, IP injections or TB testing or subcutaneous injection. (Refer to Figure 4)

- Using one hand hold the marmoset around the chest with its back in the palm of the hand.
 - Remove handling glove from the other free hand.
 - Hold marmoset around the thighs and base of tail with the free hand.
 - Stretch out legs to ensure animal does not kick.
- ☞ For subcutaneous injections: rotate your wrists towards the person giving the injection to present the area for injection.
- ☞ For IP injections the animal is tilted 45 degrees from the floor.

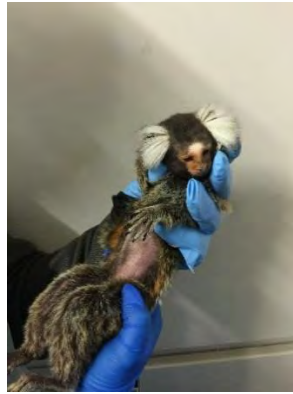


Figure 4 – Restraint 2 for examining abdomen or injection sites.

10.4 Restraint 3:

Examination of one leg. The technique may be used for intramuscular injection or examination. (Refer to Figure 5)

- Using one hand hold the marmoset around the chest with its back in the palm of your hand. Remove Hexamour glove from the other free hand.
- Tilt the marmoset back 45 degrees away from you.
- With the free hand extend the non-required leg, and secure tail at the same time.
- Using thumb on same hand, place along the marmosets' hips at the base of the tail and push slightly forward to limit mobility.
- The other leg is now free for a second operator to complete an intramuscular injection or examination.



Figure 5 – Restraint 3 for IM injection or leg examination

10.5 Restraint 4:

This restraint is suitable for blood collection and IV injection into the femoral vein. (Refer to Figure 6 and 7)

- Hold marmoset as described in restraint 2.
- Release chest hold and immediately slide the marmoset up through the tube of the restraining device
- Wrap the velcro securely around the marmoset's waist.



Figure 6: Sliding Marmoset through Tube of Restraining Device



Figure 7: Secure the Marmoset by Wrapping the Velcro around Waist.

- Remove the remaining handling glove. Extend one leg and secure with Velcro around the thigh just above the knee.
- Repeat for other leg.
- To remove the marmoset from the restrainer, put handling gloves on and remove the velcro of the legs one at a time.
- Hold the marmoset hind legs and tail, undo the waist band and allow the animal to pull itself up and out of the tube.
- Using the second hand, as the marmoset is exiting the tube, collect the animal around the chest cavity with its back resting in the palm of your hand and release one's grip on the legs.

11. RESTRAINING NEONATE MARMOSETS

11.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	PPE
QUANTITY	MATERIAL DETAILS
	Nil

11.2 Neonate Restraint 1:

This restraint is suitable for feeding or oral administration of medication. (Refer to Figure 8)

- Gently hold infant with its back resting in your palm of your hand.
- Cradle the infant's head between thumb and index finger and hold infant vertically.



Figure 8: restraint for feeding or oral administration of medication

11.3 Neonate Restraint 2:

This restraint is suitable for IP injections or examination of the abdomen. (Refer to Figure 9)

- Gently hold the infant on all fours on a towel.
- Scruff the infant gently and lift from towel.
- Lay infant in your palm on its back. Tilt on a 45 degree angle from the floor.
- Secure back legs with your little finger of the restraining hand.



Figure 9: Restraint for IP injections or examination of the abdomen

11.4 Neonate Restraint 3:

This restraint is suitable for administration of fluids via sub cutaneous injection. (Refer to figure 10)

- Gently hold infant on all fours on a towel.
- Using one hand, tent the skin at the shoulder blades



Figure 10: restraint for administration of fluids via sub cutaneous injection

11.5 Neonate Restraint 4:

This restraint is suitable for intramuscular injections. (Refer to Figure 11)

- Gently hold infant with its back in the palm of your hand.
- Using the second hand gently stretch out the leg while holding the tail at the same time.
- One leg is now free to complete injections.



Figure 11: Infant Restraint 4

12. ANIMAL MONITORING & WELFARE

- 12.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 12.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 12.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 12.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

13. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref no. 23851	Marmoset AREA Risk Assessment [redacted]
SARAH Ref no. 39409	MARP- Working with Large Animals and Non-Human Primates
PQMS3-MARP-SOP-0132	Marmoset Entry and Exit
PQMS3-MARP-SOP-0144	Entry and Exit Procedures for Marmoset Facility [redacted]
PQMS3-MARP-SOP-0153	Entry and Exit Procedures for Marmoset Facility [redacted]
PQMS3-MARP-SOP-0297	Washroom Operations Marmosets [redacted]
EXTERNAL REFERENCES	
NHMRC Codes of Practice	Australian code for the care and use of animals for scientific purposes (8 th Edition – 2013)
NHMRC	Australian code for the care and use non- human primates for scientific purposes. (2016)



DOCUMENT HISTORY		PQMS3-MARP-SOP-0147-V3.docx	
Version no.	Date of Issue	Amendments	
1	16/03/2017	Original Document	
2	28/10/2019	Update to Animal Monitoring & Welfare Statement	
		Removal of superseded docs SOP 0298, REF 0350 Update of internal and external references Add information regarding Building [REDACTED]	
3	15/06/2022	Reviewed	
		Updated Authorization and footer sections Section 4: updated First Aid procedures Section 13: Updated references Added in SARAH Ref no.	

Irrelevant Information



IDENTIFICATION IN MARMOSETS (01/06/2020)

PQMS3-MARP-SOP-0192-V2.docx

Irrelevant Information

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8- Jun- 2020

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1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used to microchip marmosets for identification purposes.



1.2. Scope

This SOP is to be applied when microchipping all marmosets at MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0147, Handling and Restraint in Marmosets
-  PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
Microchip	A microchip is an identifying integrated circuit placed under the skin of an animal. The chip, about the size of a large grain of rice, uses passive RFID (Radio Frequency Identification) technology

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

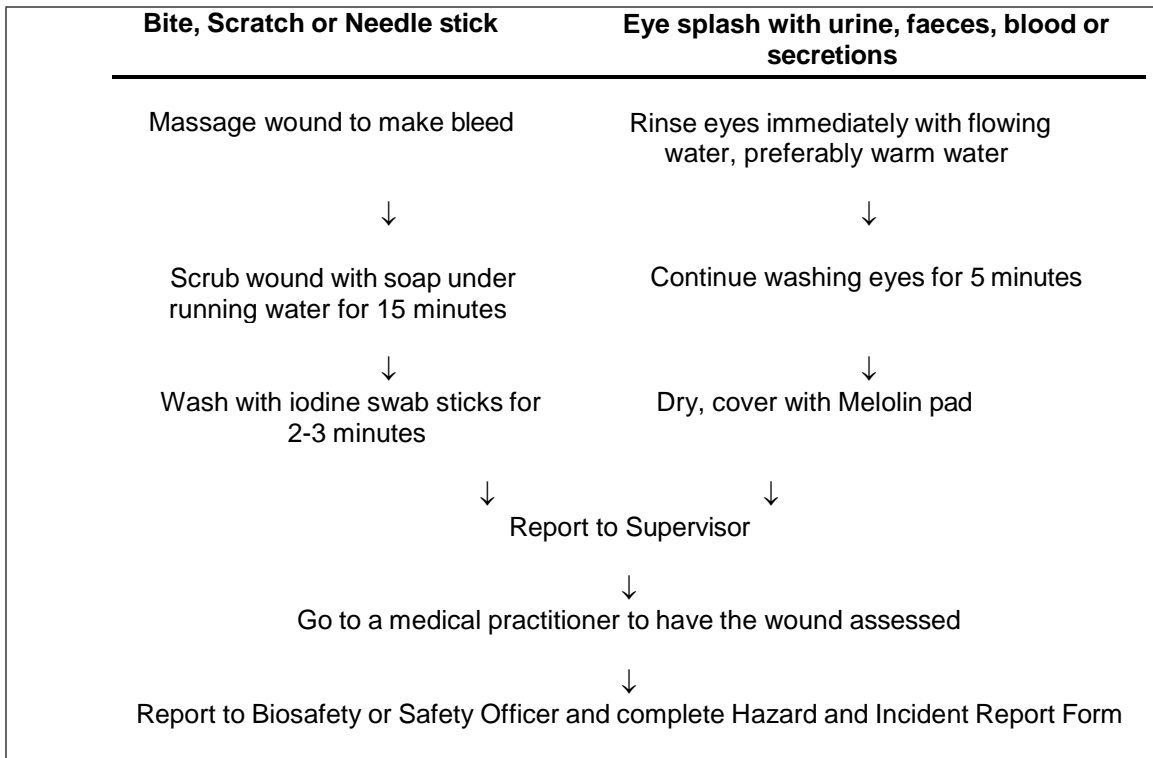
Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-FRM0011 irrelevant information Conditions of Entry Statement

PQMS3 – MARP-SOP-0132 Marmoset Entry and Exit

Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective of their families. Staff should constantly be aware of the animals in the enclosure by monitoring their behavior, without turning their back.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area as this will cause adverse behavior in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office irrelevant information.



5. MICROCHIPPING MARMOSETS

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Anaesthetic Machine with Medical Oxygen & Appropriate Setup for Marmosets
1	Microchip Reader - Suitable RFID Compact Reader or ISO Multireader
1	Clippers
1	Disposable Pad or Bluey
1	Surgery Table
QUANTITY	MATERIAL DETAILS
As required	Gaseous Anaesthetic Agent
As required	Preloaded microchip applicator or midi-chip ISO 11784/85 FDX-B certified
As required	Tissue Adhesive
As required	80% v/v alcohol
As required	Gauze swabs

Microchipping can be a permanent method of electronic identification in marmosets, as each microchip has a unique number that is detected using a microchip reader.

- ☐ The microchip or midi-chip that can be used for marmosets is only 8mm long & 1.4mm diameter.
- 🐒 Marmosets in the colony can be microchipped around 3 months of age.
- ☐ There are some instances including research projects, where this may occur at a younger age.

5.2. Catch the required animal from its cage as per SOP.

📖 PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets

5.3. Using the microchip reader, check that the microchip being implanted is correct.

Refer Figures 1 & 2.



Figure 1 – Example of Microchip reader



Figure 2 – Example of microchip or midi-chip applicator and number

- 5.4** Remove the preloaded microchip applicator from the pouch. Refer Figure 3.



Figure 3 – Preloaded Microchip Implant Device


- 5.5** Anaesthetise the marmoset as per SOP
-  PQMS3-MARP-SOP-0272 Gas Anesthesia in Marmosets
- 5.6** Place the anaesthetised marmoset onto a disposable pad or bluey, on the heated surgery table.
- 5.7** Clip the hair on the back of the marmoset between the shoulder blades, the approximate size of a ten cent piece. Refer Figure 4.



Figure 4 – Hair clipped between the shoulder blades

- 5.8** Using a gauze swab spray with alcohol and clean the shaved area of the skin.
- 5.9** Tent the skin just above the area to be implanted with the microchip. Refer Figure 5.




Figure 5 – Skin tented for injection of microchip

- 5.10** Remove cap on applicator. With the bevel facing upward, insert the needle under the skin. Refer Figure 6.



Figure 6 – Needle microchip applicator inserted under the skin

- 5.11** Push the plunger of the microchip applicator until it is all the way forward.
 You will feel the microchip under the skin once it comes out of the needle and is implanted correctly.
- 5.12** Hold onto the microchip and slowly remove the needle from the skin.
 The microchip is held to ensure that it does not come out of the skin when the needle is removed.

 Safely dispose of the used needle in the sharps container.




- 5.13** Using Tissue Adhesive, place a drop into the hole of the skin created by the Needle. Refer Figure 7.
-  Tissue Adhesive is used to prevent the microchip being picked out by other animals in the cage.



Figure 7 – Applying tissue adhesive


- 5.14** Using the microchip scanner, check that the implanted microchip is functional.
- 5.15** Allow the marmoset to recover from the gaseous anaesthesia as per SOP  PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets
- 5.17** Return the marmoset to its cage when recovered from the anaesthetic.
- 5.18** Update animal records by adding microchip number sticker to the paper animal records.
- 5.19** Update Labtracks animal records by adding in the microchip number to the animal record as per SOP  PQMS3-SOP-MARP 0392 – Labtracks Basics
- 5.20** Check the implantation site is healed on all animals that have been microchipped while performing routine weighing.
- 5.21** Please notify the Senior Animal Technologist of any animals that are found to be missing their microchip. These will be re-microchipped at the next available opportunity.


6. IDENTIFICATION OTHER THAN MICROCHIPPING

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
NILL	
QUANTITY	MATERIAL DETAILS
As required	Food safe colour dyes
As required	Cotton tip

6.2 Food Safe Colour Dyes

 Food safe colour dyes are used to mark marmosets' ear tufts for a temporary visual identification.

 This identification method is performed during regular procedures such as weighing, to reduce handling stress of catching an animal unnecessarily in error.

6.2.1 Remove lid from food safe colour dye container, and dip cotton tip into dye container. Allow the cotton tip to take up a small amount of dye.

6.2.2 Restraining marmoset as per SOP, gently stroke the marmoset's tuft with the dyed cotton tip, transferring a small amount of colour from the cotton tip, to the marmoset's tuft. See figure 8 below.

 PQS3-MARP-SOP-147 – Handling and Restraint in Marmosets



Figure 8: Marmosets tuft dyed blue with food safe dye

6.2.3 Return marmoset to its cage as described in the above SOP once the marking is complete.

6.3 Marmosets less than 3 months of age

Marmosets that are less than 3 months of age that are not yet microchipped are identified by hair clipping. This procedure is described in the following SOP

 PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

7. ANIMAL MONITORING & WELFARE

- 7.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 7.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 7.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 7.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

8. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0272	Gas Anaesthesia in Marmosets
PQMS3-MARP-SOP-147	Handling and Restraint in Marmosets
PQMS3-MARP-SOP-0056	Specialised Care of Marmoset Neonates
PQMS3-MARP-SOP-0392	Labtracks- Basics
EXTERNAL REFERENCES	
List any relevant references including those from which reference ranges may have been derived, those used in the preparation of the document or in the establishment of the method	
http://www.microchips.com.au/	
Australian code for the care and use of animals for scientific purposes	
Principles and guidelines for the care and use of non-human primates for scientific purposes	

DOCUMENT HISTORY		PQMS3-MARP-SOP-0192-V2.docx
Version no.	Date of Issue	
1	26/06/2017	AS.GIPPS.049 Marmoset Techniques
2	01/06/2020	Update to Animal Monitoring & Welfare Statement Removal of superseded doc REF 0350, update of external references Revised document

ANIMAL RECORDS MARMOSETS (07/09/2020)

PQMS3-MARP-SOP-0193-V2.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from Date of Issue

Irrelevant Information

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20-Sep-2020 | 10:00 PM AES

21-Sep-2020 | 1:38 PM AES

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe animal records kept at MARP for marmosets.

1.2. Scope

This SOP is to be applied to all staff members working in the Marmoset Area of irrelevant Information at irrelevant Information.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites: Nil

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
AEC	Animal Ethics Committee
[REDACTED]	irrelevant Information
MARP	Monash Animal Research Platform
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
PPE	Personal Protective Equipment

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

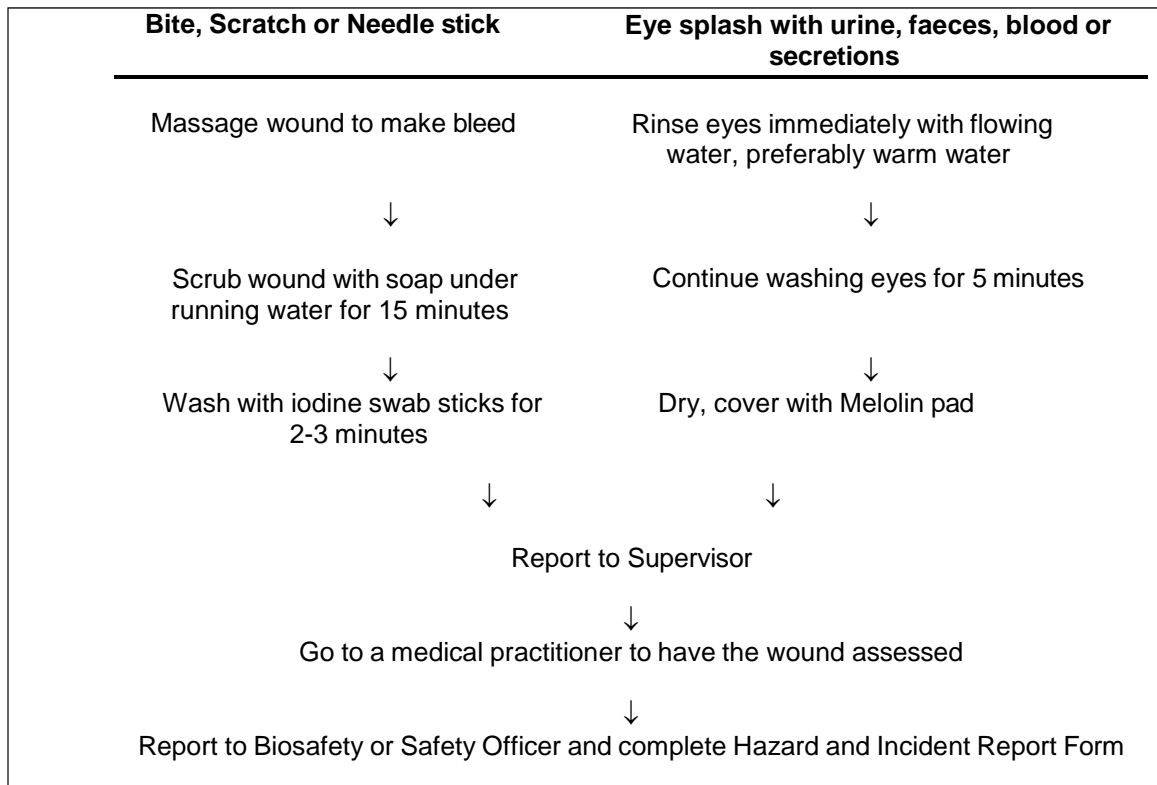
PQMS3-MARP-REF-0350 Personal Protective Equipment required at MARP

PQMS3-MARP-RA-0160 Marmoset Area Risk Assessment [REDACTED]

PQMS3-MARP-FRM0011 [REDACTED] Conditions of Entry Statement

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to Chemwatch online.




5. ANIMAL RECORDS

5.1. Individual Animal Records

An individual paper record can be kept per marmoset. The information included on this record may be as follows;

- Unique colony identification number
- Microchip number
- Date of birth
- Sex
- Parents



 Refer to PQMS3-MARP-FRM-119 Marmoset Individual Record Sheet

- Any additional information about the animal may be kept with this record. This may include test results or treatment records where required.
- The paper animal records can be kept in folders in numerical order, located in the marmoset treatment area.

5.2 LabTracks Records

The database known as LabTracks is used to maintain individual marmoset records on a daily basis.

5.3 Non-Human Primate Daily Checks and Outside Access Sheet

 Refer to PQMS-MARP-SOP-0058 Daily duties Marmosets at  and complete the following checks daily;

 PQMS3-MARP-FRM-0009 Non-Human Primate Daily Checks and Outside Access Sheet

5.4 Breeding Records

Specific Data for each breeding pair and offspring

 Refer to PQMS3-MARP-FRM-0116 Marmoset Stud Records

A record of pregnant marmosets & palpation dates

 Refer to PQMS3-MARP-FRM-0130 Marmoset Palpations

Monthly record of Births in the Marmoset Colony

 Refer to PQMS3-MARP-FRM-0117 Marmoset Birth Records

5.5 Forms for Animal Health and Assessment

- During monthly animal weighing and checks, a physical exam can be completed in LabTracks.
- 📖 PQMS3-MARP-SOP-0447 Health and Monitoring in Marmosets
- The following reference document can be used as a guide to assist with completing the physical exam
- 📖 PQMS3-MARP-REF-0509 Non Human Primate Monitoring
- 📖 PQMS3-MARP-REF-0512 Body Condition Scoring in Non-human Primates

- Any marmoset that requires examination from the veterinarian, a wellness report is created on LabTracks
- For any animal that is receiving daily veterinary treatment
- ✂️ PQMS3-MARP-FRM-0302 Animal Treatment Record

5.6 Animal Allocation and Dispatch Records

- Records detailing all of the marmosets allocated for every client per year.
- 📖 PQMS3-MARP-FRM-0151 Allocated Marmosets

- A Marmoset Dispatch List is a summary of all marmosets dispatched on a monthly basis for each calendar year
- 📖 PQMS3-MARP-FRM-0150 Marmoset Dispatch List

- Marmosets that are dispatched may have an individual Examination Report completed prior to dispatch. This report can be provided to the client along with the individual LabTracks record.
- 📖 PQMS3-MARP-FRM-0152 Marmoset Travel Assessment


5.7 Animal Death Records

Any marmosets that are found deceased, euthanised or culled in the colony, their information is recorded onto the following form;

- 📖 PQMS3-MARP-FRM-0160 Marmoset Deaths and Culls

6.0 ORDERING FRUIT AND VEGETABLES

The marmoset fresh food can be ordered weekly from a fresh food supplier. The following form can be used as a guide for ordering.

 Refer to Marmoset Fresh Food Ordering PQMS3-MARP-FRM-0121

7.0 MARMOSET MONTHLY STOCKTAKES

- 7.1 The Marmoset Stock Database is located at:
S:\MNHS-MARP\nhmrc\irrelevant information\Marmosets\Stocktakes
- 7.2 LabTracks data sorting, birth records, monthly Death & Culls and monthly animal Dispatch List are used for the monthly marmoset stocktake.
- 7.3 LabTracks is used to ascertain number of pregnant females in the colony
- 7.4 LabTracks of visual observation can be used to ascertain the number of group housed and single housed marmosets.

8.0 ANIMAL MONITORING & WELFARE

- 8.1 All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 8.2 Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 8.3 Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 8.4 All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

9.0 REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-FRM-0009	Non-human Primate Daily checks and Outside access sheet
PQMS3-MARP-FRM-0116	Marmoset Stud records
PQMS3-MARP-FRM-0117	Marmoset Birth records
PQMS3-MARP-FRM-0119	Marmoset Individual Record Sheet
PQMS3-MARP-FRM-0121	Marmoset Fresh Food Ordering
PQMS3-MARP-FRM-0130	Marmoset Palpations
PQMS3-MARP-FRM-0150	Marmoset Dispatch List
PQMS3-MARP-FRM-0151	Allocated Marmosets
PQMS3-MARP-FRM-0152	Marmoset Travel Assessment
PQMS3-MARP-FRM-0160	Marmoset Deaths and Culls
PQMS3-MARP-REF-0509	Non-Human Primate Monitoring
PQMS3-MARP-REF-0512	Body Condition Scoring in Non-Human Primates
PQMS3-MARP-SOP-0058	Daily Duties – Marmosets at [redacted]
PQMS3-MARP-SOP-0447	Health Monitoring in Marmosets
EXTERNAL REFERENCES	
Australian Code of Practice for the Care and Use of Animals for Scientific Purposes	
Code of Practice for the Housing and Care of Laboratory Mice, Rats, Guinea Pigs and Rabbits	
Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals	
Policy on the Care and Use of Non-Human Primates for Scientific Purposes	
Code of Accepted Farming Practice for the Welfare of Sheep – Victoria	
The Victorian Standards & Guidelines for the Welfare of Pigs	



DOCUMENT HISTORY			PQMS3-MARP-SOP-0193-V2.docx
Version no.	Date of Issue		Amendments
1	15/08/2017		Original Document Written
2	07/09/2020		Revised document. Included LabTracks and iLab databases. Updated records in association with new databases. Removed forms no longer in use due to new databases. Placed definitions and references into alphabetical order. Justified document. Removed Material safety data sheets to safety data sheets. Removed hazardous substances folders to Chemwatch online. Wellness report submission information updated Update to Animal Monitoring & Welfare Statement

INJECTABLE ANAESTHESIA IN MARMOSETS (10/11/2022)

PQMS3-MARP-SOP-0194-V4.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue	
Irrelevant Information		

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used to induce anaesthesia, by injection, in marmosets prior to euthanasia.



1.2. Scope

This SOP is for the use of clinical veterinarians or Animal Technologists.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0147, Handling and Restraint of Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
BDK	Anaesthetic Mixture containing Butorphanol, Domitor, Atropine and Ketamine
IM	Intramuscular Injection
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

SARAH Ref no. 23851 - Marmoset AREA Risk Assessment irrelevant information

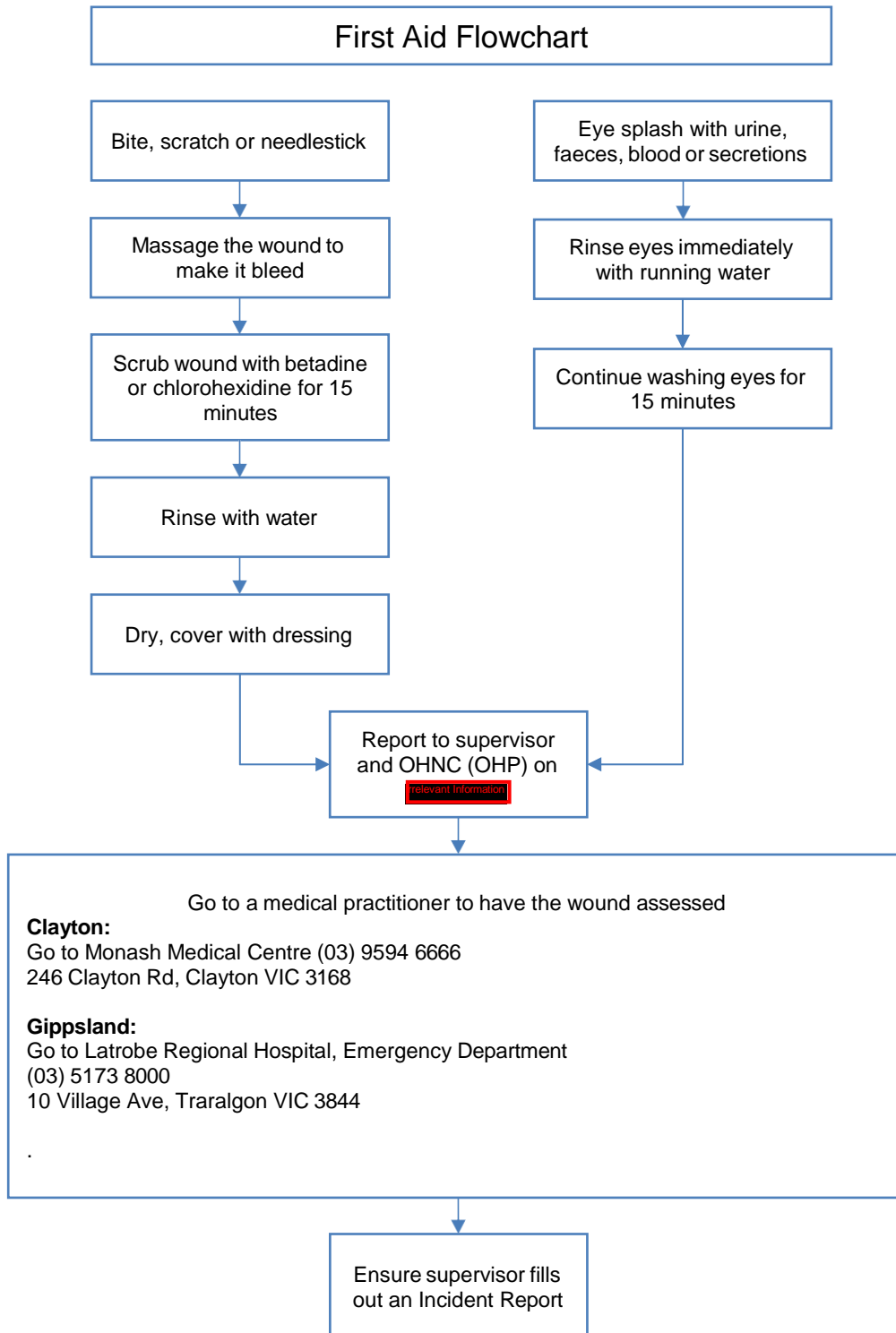
PQMS3–MARP-SOP-0132 Entry and Exit for Marmosets - irrelevant

Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective of their families. Staff should constantly be aware of the animals in the enclosure by monitoring their behavior, without turning their back.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area as this will cause adverse behaviour in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Chemwatch Online for up to date and current SDS.



Marmoset First Aid Procedure



5. ANAESTHETISING MARMOSETS




This procedure is used as an alternative procedure to gas anaesthesia for terminal procedures such as euthanasia.

Marmosets can be anaesthetised using BDAK anaesthetic mixture for procedural training prior to euthanasia.

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	0.3ml insulin syringe – 12mm with 29g needle
1	Heat Pad or Heated Surgery Table
QUANTITY	MATERIAL DETAILS
1	BDAK anaesthetic mixture (pre-prepared and accessed from Macaque Facility)

5.2. Catch and weigh the marmoset. Refer to

-  PQMS3-MARP-SOP-0147 Handling and Restraint of Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets
-  PQMS3-MARP-SOP-0273 Weighing Marmosets

5.3. Use a 0.3mL insulin syringe in order to accurately measure the small volume of BDAK anaesthetic solution required.

5.4. Prepare the syringe with the dose of BDAK mixture according to the marmosets' body weight. The dose rate given is 0.01ml/100g of bodyweight.

5.5. Administer the correct volume of BDAK anaesthetic by intramuscular injection into the quadriceps muscle of the thigh.

5.6. Monitor anaesthetic depth using withdrawal and the palpebral reflex. A surgical plane of anaesthesia is reached when the withdrawal reflex is abolished

5.7. Commence the procedure once a surgical plane of anaesthesia is reached.

5.8. The animal is closely observed to assess depth of anaesthesia during the procedure

5.9. Euthanase the marmoset using an overdose of Pentobarbitone when the training procedure is finished.

-  For euthanasia - refer to PQMS3-MARP-SOP-0200 Euthanasia in Marmosets



6. ANIMAL MONITORING & WELFARE

- 6.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 6.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 6.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 6.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

7. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref no. 23851	Marmoset AREA Risk irrelevant information
PQMS3-MARP-SOP-0132	Entry and Exit Procedures to Marmoset Facilities - document
PQMS3-MARP-SOP-0147	Handling and Restraint of Marmosets
PQMS3-MARP-SOP-0192	Identification in Marmosets
PQMS3-MARP-SOP-0273	Weighing Marmosets
PQMS3-MARP-SOP-0200	Euthanasia in Marmosets
PQMS3-MARP-SOP-0186	Anaesthesia in Macaques
EXTERNAL REFERENCES	
NHMRC Codes of Practice	Australian code for the care and use of animals for scientific purposes (8 th Edition – 2013)
NHMRC	Australian code for the care and use non- human primates for scientific purposes. (2016)



DOCUMENT HISTORY		PQMS3-MARP-SOP-0194-V4.docx	
Version no.	Date of Issue	Amendments	
1	29/03/2017	Original document	
2	28/10//2019	Update to Animal Monitoring & Welfare Statement	
3	15/06/2022	Reviewed.	
		Changed approver from Irrelevant Information Added OHS column to Document History Updated Document Authorisation and footer formatting Section 7: Updated references Added SARAH Ref No: 23851 Marmoset AREA Risk Assessment Irrelevant Information Removed reference to PQMS3-MARP-SOP-0183-V1 and replaced with PQMS3-MARP-SOP-0186-V2	
4	25/10/2022	Rewrote to simplify procedure and purpose	

BLOOD COLLECTION IN MARMOSETS (18/07/2022)

PQMS3-MARP-SOP-0195-V3.docx

DOCUMENT AUTHORISATION

Date of Next Review: 3 years from date of issue

Irrelevant Information

2-Sep-2022 | 9: 14 AM AEST

12-Sep-2022 | 11: 32 AM AEST

12-Sep-2022 | 11: 44 AM AEST

19-Sep-2022 | 2: 02 PM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the appropriate techniques for collecting blood from a marmoset.





1.2. Scope

This SOP is to be applied to staff in the marmoset area wanting to collect blood for health monitoring or for client requirements under a current research project.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0147 Handling and Restraint of Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets
-  PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets
-  PQMS3-MARP-SOP-0200 Euthanasia Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

- SARAH Ref no. 23851 Marmoset AREA Risk Assessment irrelevant information
- PQMS3-MARP-FRM-0011 irrelevant information Conditions of Entry Statement
- PQMS3-MARP-SOP-0132 Marmoset Entry and Exit

Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are always unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective over their families. Staff should always be aware of the animals in the enclosure by keeping an eye on them and staff should avoid turning their back on the animals inside the enclosure.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area as this will cause adverse behaviour in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office irrelevant information

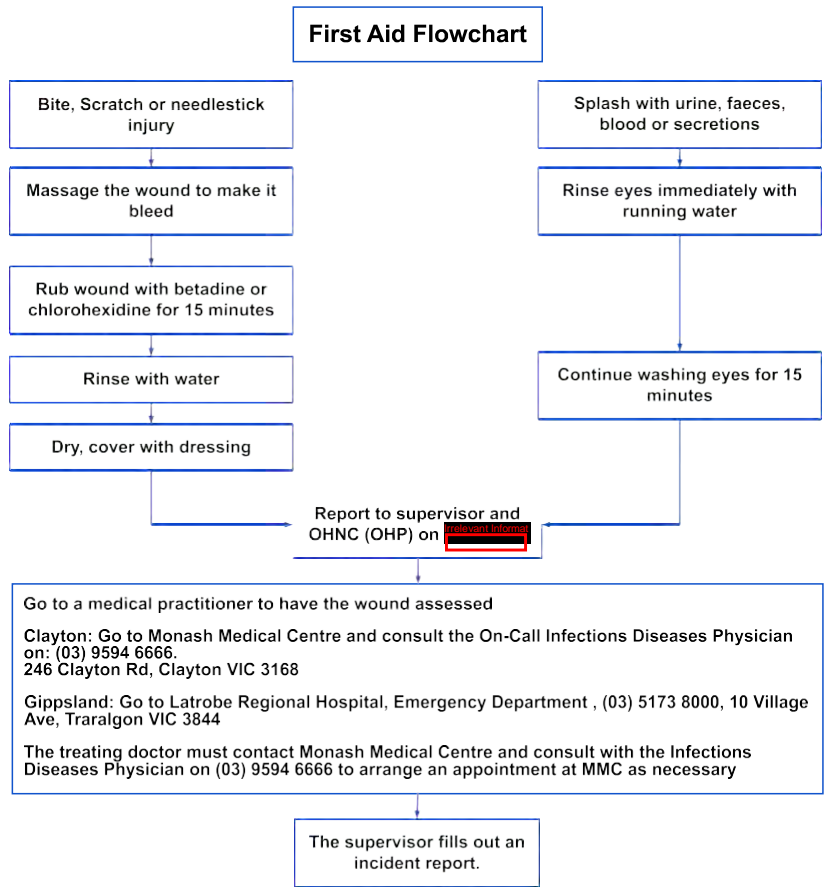






Figure 1: First Aid Flow Chart.

5. FEMORAL BLOOD COLLECTION


5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Marmoset Restrainer
1	1mL Syringe
As required	Vacutainer tubes
1	25- 27G Needle
1	Anaesthesia machine with sevoflurane vaporiser and appropriate circuitry
1	Darvell ZDS Qube with face mask suitable for marmoset size
1	Heated Surgery Table or Heat Pad
As Required	PPE
QUANTITY	MATERIAL DETAILS
As Required	80% v/v Ethanol
As Required	Swabs
As needed	Gas Anaesthetic Agent Sevoflurane
As needed	Medical Oxygen in gas cylinders


Please refer to

-  PQMS3-MARP-REF-0024- Blood Volumes and Frequency Guidelines
-  PQMS3-MARP-REF-0023- Macaque and Marmoset Injection Guidelines
-  PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets
-  PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets




5.2. Femoral blood collection can be carried out in two ways

-  Placing the animal under a light anaesthesia induced with sevoflurane, refer to PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets

Using a marmoset restraining device – refer to

-  PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets
 - The collection of blood from a conscious animal using a restraint device is no longer routinely performed, as this technique results in excessive movement of the marmoset in many cases, with large haematoma formation and extensive bruising. Gas anaesthesia with sevoflurane, is the preferred method of restraint.

5.3. Blood Collection


- Clean femoral area with an ethanol swab.
- Using a 1mL syringe and a 25- 27G needle, insert the needle bevel up, into the femoral vein and slowly draw up the blood.
- The blood should be a dark red colour.
-  If it is bright red and pulsing, stop! You are in the artery, and will cause a haematoma. Apply pressure for several minutes to stop bleeding
-  Apply gentle pressure to the injection site for 1 minute to stop bleeding.
-  Place blood into the required vacutainer tube by running the blood down the side of the tube to avoid cell damage.

- For EDTA blood collection tube, the samples must be mixed thoroughly by inverting the tube for at least 20 seconds.
 - Tubes must be labelled with animal number
- 5.4.** If the animal has been in the restrainer for collection, offer a sultana to the marmoset as a reward after collection once back in the cage. Using handling glove and gauntlet, remove the animal from the restrainer and return to its cage.
 - 5.5.** If the animal has been under anaesthesia, monitor it closely, and as soon as it has recovered put back in its home cage.
 - 5.6.** Monitor animal for the rest of the day to ensure it is mobile, eating and drinking.

6. CARDIAC BLOOD COLLECTION

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Heated Surgery Table
1	3 mL Syringe
1	23G Needle
As required	Vacutainers
As Required	PPE
QUANTITY	MATERIAL DETAILS
As Required	80% v/v Ethanol
As Required	Swabs

 This is a terminal procedure only. Researchers must have this approved in their ethics by the AEC.

Please refer to

 PQMS3-MARP-REF-0024- Blood Volumes and Frequency Guidelines

 PQMS3-MARP-REF-0023- Macaque and Marmoset Injection Guidelines.


6.2. Restrain the animal

 Refer to PQMS3-MARP-SOP-0147.

6.3. Anaesthetise the animal

Refer to

 PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets and/ or

 PQMS3-MARP-SOP-0194 Injectable Anaesthesia in Marmosets.

6.4. Lay animal on its back or side, on the heated surgery table on a Blueey absorption pad. Ensure you tilt the head slightly back to maintain an open airway.

6.5. Check the animal is sufficiently anaesthetised by checking blinking reflexes and the pedal reflex.

6.6. Feel between the 5th and 6th rib for a heartbeat.


6.7. Swab the injection site with an ethanol swab.

6.8. Insert a 3mL syringe and 23G needle into the heart and slowly withdraw blood.

6.9. Place blood into the appropriate vacutainer.

6.10. Once collection is complete, the animal can now be euthanased.

Refer to

 PQMS3-MARP-SOP-0200, Euthanasia Marmosets.

7. ANIMAL MONITORING & WELFARE

- 7.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 7.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 7.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 7.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for Reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

8. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref no. 23851	Marmoset AREA Risk Assessment [irrelevant information]
PQMS3-MARP-SOP-0132	Entry and Exit Procedures to Marmoset Facilities - [redacted]
PQMS3-MARP-SOP-0147	Capture, Restraint and Handling Marmosets
PQMS3-MARP-SOP-0194	Injectable Anaesthesia Marmosets
PQMS3-MARP-SOP-0272	Gas Anaesthesia in Marmosets
PQMS3-MARP-SOP-0200	Euthanasia Marmosets
PQMS3-MARP-REF-0023	Macaque and Marmoset Injection Guidelines
PQMS3-MARP-REF-0024	Blood Volume and Frequency Guidelines
EXTERNAL REFERENCES	
Nil	



DOCUMENT HISTORY			PQMS3-MARP-SOP-0195-V3.docx
Version no.	Date of Issue	Reviewed by: Name	Amendments
1	24/03/2017	[Redacted Name Column]	Original document
2	28/10/2019		Updated Animal Monitoring and Welfare statement
3	22/06/2022		Changed approver from [Redacted Name] [Redacted Name] Removed the approver table. Added OHS column to Document History Updated Document Authorisation and footer formatting Section 4: Updated reference to risk assessment Section 8: Updated references Section 4: Updated First Aid flowchart Section 4: Removed PQMS3-MARP-REF-0350-V1

ENVIRONMENTAL ENRICHMENT FOR MARMOSETS (22/06/2022)

PQMS3-MARP-SOP-0197-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
Irrelevant Information	11-Jul-2022 9:04 AM AEST
	11-Jul-2022 9:49 AM AEST
	11-Jul-2022 1:47 PM AEST

1. INTRODUCTION

The objective of our environmental enrichment program is to provide the marmosets' with varied non-consecutive stimulation and activity every day. This is achieved by the setup of the animals' environment including home cages inside and outside, and by additional items being added to the cage on a rotational basis via this program.

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for preparing and distributing environmental enrichment for marmosets.

1.2. Scope

This SOP is to be applied all staff members working in the Marmoset Area of **irrelevant information** at **irrelevant information** and at Building **irrelevant information**

*please note:

This SOP may interfere with animals under experimentation. Specific projects may be exempt, by AEC approval, from some aspects of the enrichment and staff need to be aware of this.

1.3 Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
MARP [redacted]	Monash Animal Research Platform [relevant information]
Browse	Short cuttings from non-toxic edible plants

4. HEALTH AND SAFETY CONSIDERATIONS


A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Specific health and safety considerations while performing this procedure are:

- PPE should be worn and adhered to at all times, appropriate for the task required.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office [redacted] of [relevant information] or in the appropriate work site at buildings [relevant information]

5. PREPARATION FOR ENVIRONMENTAL ENRICHMENT PROGRAM FOR MARMOSETS

The environmental enrichment provided to marmosets is varied each week, according to an enrichment schedule. The schedule contains three program variations for each group of rooms of animals. This is done to maintain interest and novelty in the enrichment by the animals.

-  Refer to PQMS3-MARP-REF-0026-V1.docx Environmental Enrichment Schedule for Marmosets

The types of enrichment provided via the Enrichment Programs include

- Acacia Gum Sticks
- Browse
- Forage Baskets
- Forage Boxes
- Herb and Essential Oils Smells
- Popcorn Acacia Boxes
- Mirrors
- Scented Feathers
- Treacle Rollers

5.1 Acacia Gum Sticks

Acacia gum sticks are used to promote marmosets' natural gnawing behaviours. Sticks have holes drilled into them on angles down their full length.

5.1.1 Prepare acacia gum in proportion 60g powder plus 40ml water

5.1.2 Place sticks required onto a plastic bag

5.1.3 Using a 60ml syringe, the acacia gum is placed into the holes along the length of the stick. Allow one side to dry and then fill the second side



Fig 5.1 Acacia Sticks

5.2 Browse

Browse is given to marmosets, along with branches & dowel perches to provide foliage stimulation. It also provides tactile and sensory stimulation. Fresh browse is given on a two weekly basis, this coincides with when outdoor enclosures are cleaned.



Fig 5.2 An example of Browse Trees at [redacted]

Refer to information below:

BROWSE PLANTS FED AT MELBOURNE ZOO PRIMATE DEPARTMENT

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Abutilon megapotamicum</i>	Chinese lantern	<i>Fraxinus excelsior</i>	Golden ash
<i>Acacia baileyana</i>	Cootamundra wattle	<i>Fraxinus oxycarper</i>	Desert ash
<i>Acacia sailigna</i>	Golden wrath wattle	<i>Fraxinus raywoodii</i>	Claret ash
<i>Acacia retinoides</i>	Wirilda	<i>Hedychium gardnerianum</i>	Ginger
<i>Acacia longiflora</i>	Sallow wattle	<i>Liquidamber strcitlua</i>	Liquid amber
<i>Acacia floribunda</i>	Gossamer wattle		
<i>Acacia iteaphylla</i>	Flinders range wattle	<i>Musa spp.</i>	Banana
<i>Acacia dealbata</i>	Silver wattle	<i>Omalanthus populifolius</i>	Bleeding heart
<i>Acer negundo</i>	Box elder	<i>Pittosporum undalatum</i>	Sweet pittosporum
<i>Alnus jorullensis</i>	Evergreen alda	<i>Plantanus orientalis</i>	Oriental Plain Tree
<i>Arundo donax</i>	Aruna bamboo	<i>Pollia crispate</i>	Polia
<i>Betula spp.</i>	Birch	<i>Populus spp.</i>	Poplar
<i>Blea europaea</i>	Olive	<i>Prunus ceracifera</i>	Plum
<i>Brachychiton acerifolium</i>	Flame Tree	<i>Prunus armeniaca</i>	Apricot
		<i>Prunus persica</i>	Peach
<i>Comprosmia variagata</i>	Variagated mirror plant	<i>Prunus persica</i>	Nectarine
<i>Comprosmia repens</i>	Mirror plant	<i>Salix humbolatiana</i>	Chilean willow
<i>Cotoeaster spp.</i>	Cotton ester	<i>Salix matsudana</i>	Tortured willow
<i>Cyperus papyrus</i>	Papyrus	<i>Salix babylonica</i>	Weeping willow
<i>Eriobotrya japonica</i>	Loquat	<i>Salix caprea</i>	Pussy willow
<i>Erythrina caffra</i>	Coral tree	<i>Sparmania africana</i>	African hemp
<i>Ficus pumila</i>	Creeping fig	<i>Tagasaste proliferata</i>	Tree lucerne
<i>Ficus elastic</i>	Rubber plant	<i>Ulmus parvifolia</i>	Chinese elm
<i>Ficus macrophylla</i>	Morton bay fig		

For all primate species only small amounts of *Acacia* spp., *Musa* spp., *Hedychium* spp. and any other fibrous species are fed and then only once a week. If fed in large quantities they can lead to difficulties in defaecation, bowel obstructions and possibly death.

Fraxinus spp. When the bark is eaten can cause the urine to be red in colouration in some primate species.

Compiled by [redacted]
Melbourne Zoo Horticultural Department.

5.2.1 Staff will determine the amount of browse required. This is dependent upon which outside enclosures are being cleaned at the given time.


5.2.2 Browse is collected from the tree plantations on the MARP [redacted] properties for [redacted]. For [redacted] browse is obtained from Buildings and Properties when available. All trees planted on the [redacted] property have been specially selected as they are suitable for Non-Human Primates, according to our references in 5.3.

5.3 Forage Baskets

Forage baskets are provided to promote natural foraging behaviour.

5.3.1 Canvas hammocks are filled with shredded paper. Coir baskets are used at Relevant Information for this.

5.3.2 Treats are distributed in the paper for the animals to fossick to find.

 Treats can include any of the following items:

Popcorn, sultanas, shredded coconut, mixed nuts, seeds




Fig 5.3 Forage Basket

5.4 Forage Boxes

Forage boxes are provided to promote natural foraging behaviour

5.4.1 Boxes are filled with shredded paper

5.4.2 Treats are distributed in the paper for animals to fossick and find

 Treats can include any of the following items:

Popcorn, sultanas, shredded coconut, mixed nuts, seeds

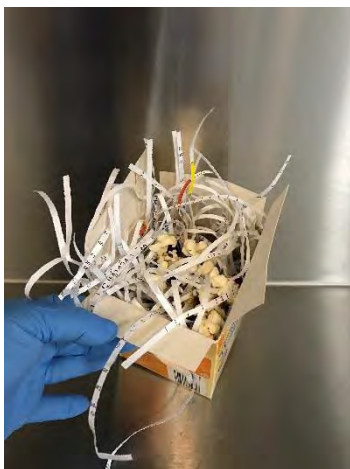



Fig 5.4 Forage Box

5.5 Herb & Essential Oils Smells

Using herbs and essential oils in marmosets cages, is a way to stimulate their olfactory senses. This in turn has an effect in maintaining an overall positive wellbeing.

 Refer to PQMS3-MARP-REF-0495 Essential Oils & Herbs Used for Marmoset Environmental Enrichment for preparation.

A copy of this is on the Enrichment Board in relevant informa at relevant in



Fig 5.5 Spray Bottle of Herb or Essential Oils Smells

5.6 Popcorn Acacia Boxes

Acacia gum is used in or on boxes to stick the freshly prepared popcorn to the box.



Fig 5.6 Preparing Popcorn Boxes

5.7 Scented Feathers

Feathers are given to the marmosets to promote sensory and tactile stimulation.

- 5.7.1 Scented Feathers are prepared using brightly coloured craft feathers, masking tape and cotton buds
- 5.7.2 The feathers are placed onto the masking tape with the cotton bud facing in the opposite direction, as pictured in Fig 5.8
- 5.7.3 The day before use, feathers are sprayed with the essential oils of the week, see Daily Task List in [relevant information](#). This allows them to be dry before being placed into the marmosets' cages.



Fig 5.7 Scented Feathers Ready to be Distributed

5.8 Treacle Rollers

Treacle rollers are prepared using rollers on a skewer with treacle & tactile edible items such as mix of crushed nuts and coconut.


- 5.8.1 Using a spatula a strip of treacle is placed onto either side of the roller
 - 5.8.2 The roller is then placed into the tray containing the mix of crushed nuts/coconut, the result being the mixture is stuck to the roller
 - 5.8.3 Rollers are then placed onto a clean tray and put in the freezer.
-  Rollers can be prepared the week prior to use.



Fig 5.8.1



Fig 5.8.2

Preparing Treacle Rollers

6. DISTRIBUTING ENVIRONMENTAL ENRICHMENT IN THE MARMOSETS

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
	Prepared Enrichment items being distributed, according to Enrichment Schedule
	Mirrors
QUANTITY	MATERIALS DETAILS
	Browse
	Prepared Herb, Perfume & Tea Smells

6.2. Acacia Gum Sticks

Collect prepared sticks required and attach to ring in marmoset cage. One acacia stick per 6 animals

See Fig 6.2.1 and 6.2.2



Fig 6.2.1
Acacia Gum Sticks in Marmoset Cage



Fig 6.2.2

6.3. Browse

Collected browse is placed into pipes (used like a vase) located in the back corner of the marmosets outside enclosure. See Fig 6.3.

Pipes are designed to hold water like a vase, this is to prolong the life of the browse and keep it "fresh" for the marmosets.

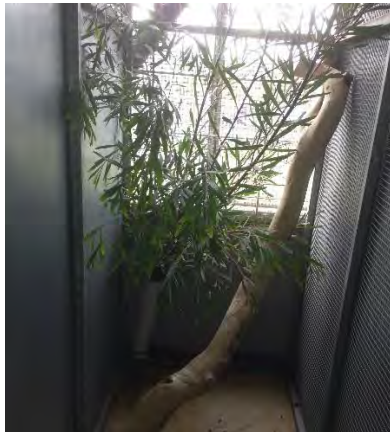


Fig 6.3 Browse in Marmoset Outside Enclosures

6.4. Forage Baskets

Collect prepared baskets. Attach to a ring in the marmosets' cage.
See Fig 6.4



Fig 6.4 Hanging Forage Baskets

6.5. Forage Boxes


Prepared forage boxes are placed onto the cage floor.



Fig 6.5 Forage Boxes in Cage

6.6. Herb & Essential oils/ Tea Smells

Prepared Herbs or Essential Oils/Teas are sprayed onto items around the marmosets' enclosure inside and outside.

 Please do not spray directly onto animals

6.7. Jam Smears

Jam is lightly smeared onto branches and other items around the cage using the back of a large spoon. Diet Jam is used as it is low in sugar. See Fig 6.7

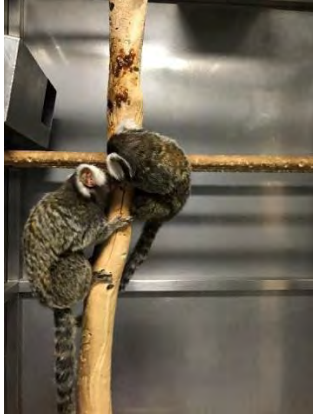


Fig 6.7 Marmosets eating Jam Smears

6.8. Mirrors with Bells

Collect mirrors from storage cupboard in [redacted]
Attach either to ring or on front cage mesh of the marmoset cage.
See Fig 6.8



Fig 6.8 Mirrors placed in Marmoset Cage

6.9. Popcorn Acacia Boxes

Prepared popcorn boxes are placed onto the cage floor.



Fig 6.9 Popcorn Boxes in Marmoset Cage

6.10. Scented Feathers

Place feathers in the cage by threading cotton bud through the front cage mesh from the inside of the cage, see Fig 6.10



Fig 6.10 Feathers in Marmoset Cage

6.11. Treacle Rollers

Prepared treacle rollers are placed onto cage rings at top of the cage or onto the front cage mesh. One per cage.



Fig 6.11 Completed Treacle Rollers








6.12. Providing ambient sounds

Ambient sounds are provided for marmosets during waking hours by a radio playing in the facility areas. The radios are on a timer. Once a week bird songs are played quietly to the colony from a variety of small birds accompanied by relaxation music. This is for auditory stimulation.

7. CLEANING SCHEDULED ENRICHMENT ITEMS

 Refer to PQMS3-MARP-SOP-0297 Washroom Operations Marmosets 

7.1 Scheduled Enrichment that has been added to the cage is removed as follows

- 7.1.1** Acacia Gum Sticks and Mirrors are removed the week following being put in the cage, on the day of regular scheduled cage cleaning. They are then cleaned at  according to Section 9 of PQMS3-MARP-SOP-0297 Washroom Operations Marmosets 
- 7.1.2** Treacle Rollers are removed the day after being placed in the marmoset cage. They are soaked in a bucket of water to remove any large debris such as treacle and bits on them, and then at  cleaned as per Section 9 of PQMS3-MARP-SOP-0297 Washroom Operations Marmosets 
- 7.1.3** Other enrichment items are disposable. This includes Browse, Scented Feathers, Forage Boxes and Popcorn Acacia Boxes. Any pieces of these items remaining are removed when the cages are scheduled for regular cleaning and disposed of in the rubbish with other marmoset cage waste.
- 7.1.4** Browse is replaced on a fortnightly basis, at the same time that the outside enclosures are cleaned.
- 7.1.5** Forage Baskets are removed from the cage the following day. Any remaining foraging material is disposed of appropriately and at  cleaned according to section 9 of PQMS3-MARP-SOP-0297 Washroom Operations Marmosets 
- 7.1.6** Enrichment materials at building  will be washed in the washroom/sinks available

Those from the outdoor enclosures are then hung back up, as they are part of the regular cage furnishings as hammocks for the marmosets, when they are not used as forage baskets.

8. ANIMAL MONITORING & WELFARE

- 1.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 1.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 1.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 1.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for Reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

9. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-REF-0026	Environmental Enrichment Schedule for Marmosets
PQMS3-MARP-REF-0027	Browse Plants suitable for Non-Human Primates
PQMS3-MARP-SOP-0297	Washroom Operations Marmosets [REDACTED]
PQMS3-MARP-REF-0495	Essential Oils & Herbs Used for Marmoset Environmental Enrichment for preparation.
EXTERNAL REFERENCES	
Principles of Environmental Enrichment at the National Non-Human Primate Facility	

DOCUMENT HISTORY			PQMS3-MARP-SOP-0197-V3.docx
Version no.	Date of Issue	Reviewed by: Name	Amendments
1	31/5/2017	Irrelevant Information	Original document
2	02/09/2019		Updated Animal Monitoring and Welfare statement Added information regarding irrelevant information
3	22/06/2022		Fixed typo in document title Minor page separation formatting changes Changed approver from irrelevant information [REDACTED] Added OHS column to Document History Updated Document Authorisation and footer formatting Section 4 – Changed vaccination listing from Quanterferon Gold Tuberculosis Screening to QuantiFERON Gold Tuberculosis Screening Section 9 – Moved external reference from internal references to external references

TRANSPORT OF MARMOSETS (18/07/2022)

PQMS3-MARP-SOP-0199-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
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	12-Oct-2022 9:37 AM AEDT
	20-Oct-2022 1:29 PM AEDT

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used for transporting marmosets of all ages.





1.2. Scope

This SOP is to be applied to all staff issuing marmosets. This procedure will ensure that all marmosets requiring transport will be contained safely until they reach their desired destination and transported in accordance with any relevant transport regulation.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0147 Handling and Restraint of Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets
-  PQMS3-MARP-SOP-0273 Weighing Marmosets
-  PQMS3-MARP-SOP-0432 Allocating and Issuing Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.






3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Adult Marmoset	Marmoset over 12 months of age.
AFM	Animal Facility Manager
relevant information	[REDACTED]
Hydro-foamer	Equipment used to dispense disinfectant to an area
Neonate Marmoset	Marmoset that is 0 to 4 months of age.
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

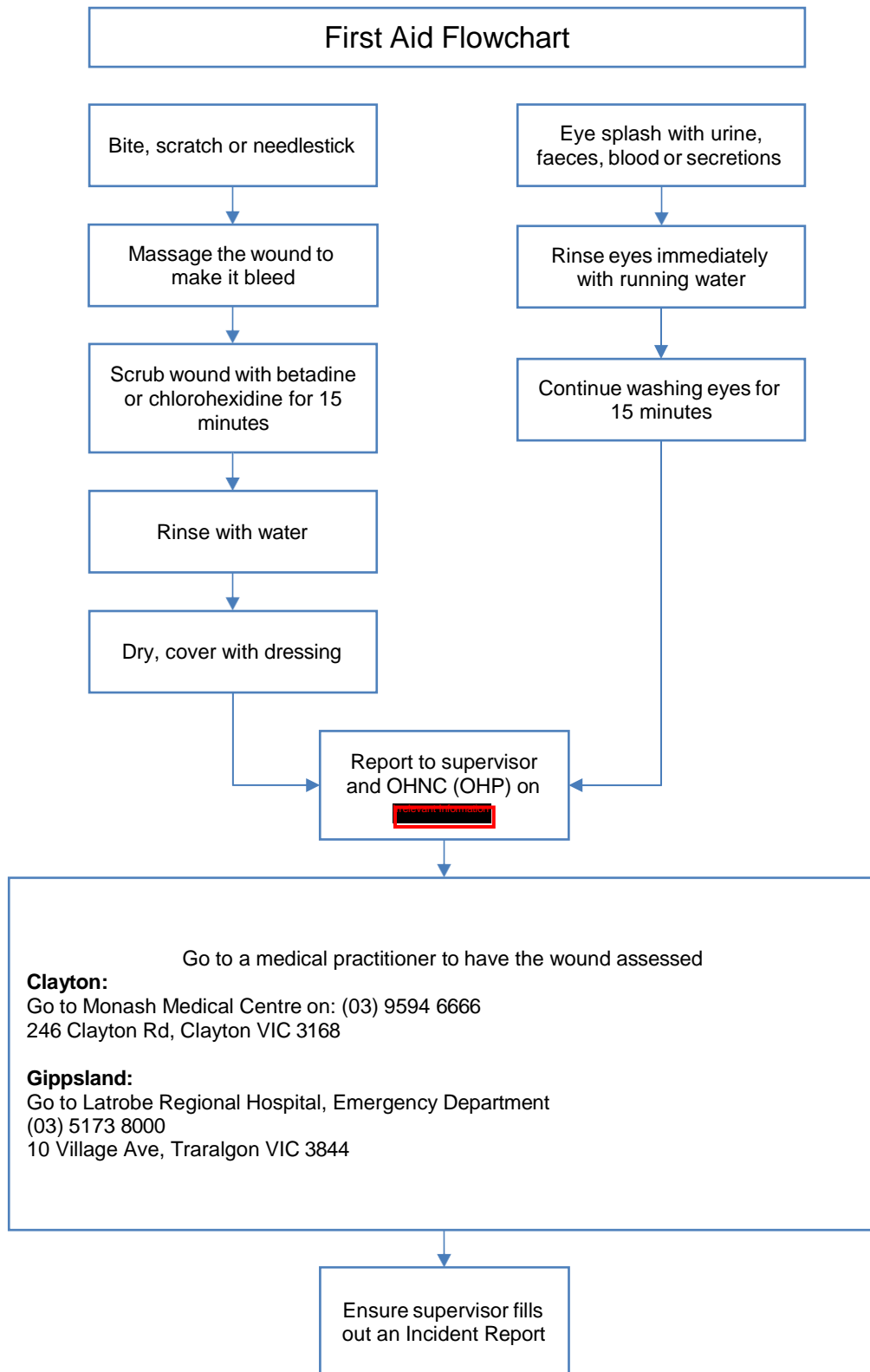
Persons performing this SOP must have read and understood the following documents:

-  SARAH Ref no. 23851 Marmoset AREA Risk Assessment relevant information
-  SARAH Ref No. 39409 MARP- Working with Large Animals and Non-Human Primates
-  PQMS3-MARP-SOP-0132 Entry and Exit Procedures for Marmosets – relevant information
-  PQMS3-MARP-SOP-0144 Entry and Exit Procedures for Marmoset Facility relevant information
-  PQMS3-MARP-SOP-0153 Entry and Exit Procedures for Marmoset Facility relevant information

Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective of their families. Staff should constantly be aware of the animals in the enclosure by monitoring their behavior, without turning their back.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area as this will cause adverse behavior in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Chemwatch Online for the updated and current SDS.

Marmoset First Aid Procedure





5. TRANSPORTING NEONATES

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Perspex Neonate Box
1	Lock
QUANTITY	MATERIAL DETAILS
1	Handtowel
1	500mL saline fluid Bag
As Required	80% v/v Ethanol

All neonate transport boxes are cleaned with F10 SC and the soft toys and towels are laundered prior to reuse and this is done when the box is returned. The saline bag that is used as a heat source is checked and if worn it is discarded and replaced. The saline bag is wiped with 80% v/v Ethanol prior to reuse.

The neonate box is designed for local road transport only. Neonates are not transported outside of Victoria.

5.2. Obtain a neonate Perspex box from store room.

5.3. Inspect the box and wipe down with 80% v/v Ethanol.

5.4. Prepare and print out correct delivery address label including:

- Client name and address.
- Our address for the box return.
- Emergency contact details, name and mobile number.

5.5. Attach label to the box.

5.6. Remove the 500 mL bag of saline and warm in microwave on high for 90 seconds.

This heat source is to be used as neonates are unable to thermo-regulate until 4 weeks of age. After this age the heat source is still used with an unheated area within the box, as neonates are still carried within the family unit until 3- 4 months of age. (weaning age)

5.7. Take the warm bag out of the microwave and roll in only half of the hand towel.

5.8. Place rolled bag into one end of the box and loosely place the remainder of the towel across the rest of the box.


This is to ensure the marmoset can choose to move away from the heat source if it so desires.

5.9. Scrunch up two tissues and place into the box. Alternatively, add a small plush toy to the box.

As neonatal marmosets have a natural clinging reflex, the use of such items is to ensure they can complete this behaviour.




5.10. Place on appropriate task specific PPE.

5.11. Collect neonate from family cage.




 Refer to PQMS3-MARP-SOP-147, Handling and Restraint of Marmosets.

5.12. Identify that you have the correct animal.

Refer to the animal's record for any identifying marks, as neonates are not microchipped and are identified by sex and/or hair clipping.

-  Refer to PQMS3-MARP-SOP-0192 Identification in Marmosets
-  Refer to PQMS3-MARP-SOP-0273 Weighing Marmosets
-  The neonate will start calling at frequent intervals for its family immediately. This is a natural and normal neonate behaviour as the neonate has been removed from the group

5.13. Weigh and record information on the dispatch list and examination report. Refer to

-  PQMS3-MARP-FRM-0152 Examination Report for Marmosets being issued
-  PQMS3-MARP-FRM-0150 Marmoset Dispatch List
-  PQMS3-MARP-SOP-0432 Allocating and Issuing Marmosets

5.14. Place the scrunched tissues or the plush toy in the hands of the neonate.

5.15. Place the neonate on top of the wrapped saline bag.

5.16. Close lid and secure lock.

5.17. Place a towel over the neonate transport box.

- This is to provide a darkened environment within the box to calm the neonate and will also hide the contents of the box upon arrival at the destination.

5.18. The neonate should continue to call at frequent intervals for its family group for a certain period of time depending upon the individual. Generally, the animal will usually calm down with the movement of the vehicle and fall asleep on its way to its destination.

5.19. Dogtainers are the only courier company that will deliver neonatal marmosets. relevant information staff will hand over the covered box to the driver and it is placed in the back of the van. The driver will have the heater in the back of the van on, as the neonate must never be placed into a cold environment. The Dogtainers driver will then drive to the destination to deliver the neonate.



5.20. If MARP staff deliver the neonate, it is placed in the middle of the back seat. The seat belt is then wrapped around the covered box to ensure that the box is secured and stable. The air temperature is kept at a comfortable level for the driver and if required the heating is turned on. The animal is then delivered to the client without delay.


5.21. At relevant information researchers frequently pick-up neonates for surgery and for MRI scans, in this case, the researchers transport the animal in their personal cars, in adherence to their AEC approved protocol.


6. TRANSPORTING ADULT MARMOSETS

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Transport Box
1	Lock
QUANTITY	MATERIAL DETAILS
As Required	Shredded paper
As Required	Sawdust from animal's home cage

 Adult wooden transport boxes should be cleaned out by the person who received the animal/s before they are returned to .

6.2. When the boxes are returned to  the box is checked to ensure that it is empty. It is then hosed out with hot water and F10 SC is applied with the Hydro-foamer at a dilution rate of 1:125. It is allowed to stand for 30 minutes, and then rinsed with hot water and allowed to dry.

 The transport box is prepared the day before travel.

6.3. Collect the required number of boxes from store room and inspect each box to ensure it is clean, its structure is intact and it is fit for use.

6.4. Prepare and print out a delivery label including:

- Client name and address
- Our address for box return
- Emergency contact details; name and mobile number


6.5. Attach label to top of the box.

6.6. Add shredded paper to the box.


6.7. Cover front mesh of the box with disposable surgical drape.


6.8. If applicable, set the lock combination to the Julian date of the transport.

6.9. On the day of delivery, collect the transport box and 'mark' out the box using a handful of soiled sawdust from the family or group cage waste tray and sprinkle it over the shredded paper.

 Collection of these items is to minimise transport stress by providing a familiar smell to the animal within the transport box.


6.10. For animals travelling interstate, fill a food dish with dry marmoset pellets and attach to the wire inside the transport box.

 No fresh fruit or vegetables are to be provided due to interstate fruit fly regulations.

 Agar gel is provided as a water replacement for the journey.

6.11. Put on appropriate task specific PPE.





6.12. Collect the marmoset from its family or group cage. Identify that you have the correct animal. Refer to the animal's record for microchip number and read using the microchip reader.

 Refer to PQMS3-MARP-SOP-0147 Handling and Restraint of Marmosets

 Refer to PQMS3-MARP-SOP-0192 Identification in Marmosets

 Refer to PQMS3-MARP-SOP-0273 Weighing Marmosets




- 6.13.** Weigh and record information on the dispatch list and examination report
-  PQMS3-MARP-FRM-0152 Examination Report for Marmosets being issued
 -  PQMS3-MARP-FRM-0150 Marmoset Dispatch List
 -  PQMS3-MARP-SOP-0432 Allocating and Issuing Marmosets
- 6.14.** The marmoset is now placed into the transport box. Holding the marmoset in one hand open the door to the transport box with the other and allow the marmoset to move into the transport box.
- 6.15.** As the marmoset moves into the transport box, close the door behind it, ensuring that all body parts are free from being caught in the door.
- 6.16.** Secure the door with the latch.
- 6.17.** Secure the lock.
- 6.18.** All adult marmosets are transported in a wooden box that is placed inside a secured metal cage in the back of an appropriately fitted out vehicle. This is so that there is a secondary containment for the animal if any damage happens to its box during transport, for example, a car accident.
- 6.19.** Marmosets are transported in a temperature controlled environment
- 6.20.** MARP uses approved animal couriers for marmoset transport, e.g. Dogtainers and Jet Pets.
-  Refer to PQMS3-MARP-EXT-0040 Dogtainers Transport Contingency Plan for Lab Animals

7. TRANSPORT OF MARMOSETS AT CLAYTON

7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Transport cage
1	External transport cage
1	Lock
1	Trolley
QUANTITY	MATERIAL DETAILS
As Required	Towels


 This process is for short distance transport of marmosets between and within Building relevant information and relevant information.

- 7.2. Ensure the correct animal is located, identified and the receiving facility is aware of the incoming animal.
- 7.3. Prepare the transport cage for the animal – consisting of a primary locked cage and a secondary cage.
- 7.4. Open the top of the primary cage and remove the wire base, wrap a towel around it and place back in. Ensure the top us properly closed. See figure 1 below.



Figure 1.

- 7.5. Locate and catch the correct animal.

 Refer to PQMS3-MARP-SOP-0147 Handling and Restraint of Marmosets

- 7.6. Open the small door on the side of the cage and place the marmoset inside. Close the door and close using the lock and padlock. Lock with code relevant information. See figure 2 below.



Figure 2.

7.7. Place 1-2 more towels over the top of the cage and then place the primary cage into the secondary cage and zip it up. See figure 3.

- Additional towels can be added to the base of the secondary cage for added padding.



Figure 3.

7.8. To transport marmosets to REDACTED refer to section 6.

8. CHAIN OF CUSTODY DURING THE TRANSPORT PROCESS

- All people involved in the process of transporting marmosets are responsible to ensure that management processes are in place to minimise risks to marmoset welfare.

The responsibility for the marmoset welfare during the transport process is:

- 8.1** As the Consignor, MARP, is responsible for the marmoset until they are loaded onto the transport vehicle. The Consignor must ensure:
- Animals with appropriate health are transported
 - The marmoset being transported has undergone a health examination prior to transport, and is fit for transport on the day of issue
 - The transport box used for sending the marmoset is intact, correctly labelled with Receiver details, has appropriate locks and is suitable for transport to its location.
 - Providing food and water / water substitutes where appropriate.
 - Providing the Transport Provider with all the information required to contact the Receiver in order to deliver the marmoset safely to their destination.
 - Providing the Receiver with all relevant information for their marmoset/s
- 8.2** The Transport Provider, is responsible for the marmoset from the point of loading until the point of unloading, and contacting the receiver at the point of destination. The Transporter must ensure:
- They visually inspect that boxes they are collecting are suitable for transport
 - That the vehicle they are using for transport, is able to provide the required environmental conditions
 - That they have the contact details for the Receiver
 - That they safely load the box/boxes into their vehicle for transport
 - The vehicle is not overloaded during transport
 - Travel to the destination is via the most direct route, with minimal planned stops
 - They safely unload the box/boxes at the destination.
 - They follow the contingency plan, when appropriate
 - They inform the Consignor, of any problems encountered during transport
 - They drive in a manner that minimises impact on the welfare of the marmoset/s
- 8.3** The Receiver, is responsible for the marmoset from the point of unloading from the Transport Provider. The Receiver must ensure:
- The marmoset is removed from the transport box, and placed into its new cage
 - The marmoset is provided with food and water
 - The marmoset is monitored to ensure it is recovering from the stress of transport
 - That the Monash Veterinarian is notified if the Receiver has any concerns about the health of the marmosets following transport.
 - That they contact MARP Consignor to notify them of the safe arrival of their marmoset/s

9 ANIMAL MONITORING & WELFARE

- 9.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 9.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 9.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 9.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on the following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

10. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-FRM-0150	Marmoset Dispatch List
PQMS3-MARP-FRM-0152	Examination Report for Marmosets being issued
SARAH Ref no. 23851	Marmoset Area Risk Assessment [REDACTED]
SARAH Ref no. 39409	MARP- Working with Large Animals and Non-Human Primates
PQMS3-MARP-SOP-0132	Entry and Exit Procedures for Marmosets – [REDACTED]
PQMS3-MARP-SOP-0144	Entry and Exit Procedures for Marmoset Facility [REDACTED]
PQMS3-MARP-SOP-0147	Handling and Restraint of Marmosets
PQMS3-MARP-SOP-0153	Entry and Exit Procedures for Marmoset Facility [REDACTED]
PQMS3-MARP-SOP-0192	Identification in Marmosets
PQMS3-MARP-SOP-0273	Weighing Marmosets
PQMS3-MARP-SOP-0432	Allocating and Issuing Marmosets
EXTERNAL REFERENCES	
PQMS3-MARP-EXT-0040	Dogtainers Transport Contingency Plan for Lab Animals
NHMRC Codes of Practice	Australian code for the care and use of animals for scientific purposes (8 th Edition – 2013)
NHMRC	Australian code for the care and use non- human primates for scientific purposes. (2016)

DOCUMENT HISTORY			PQMS3-MARP-SOP-0199-V3.docx
Version no.	Date of Issue	Amendments	
1	27/03/2017	<div style="background-color: black; color: red; text-align: center; padding: 5px;"> Irrelevant Information </div>	
2	28/10/2019		
3	31/05/2022		
			Original document Updated Animal Monitoring and Welfare statement Reviewed. Changed approver from [redacted] Added OHS column to Document History Updated Document Authorisation and footer formatting Minor formatting issues Section 4: Updated Risk Assessment information – SARAH Ref numbers. Section 5.21: Added information about [redacted] processes Section 6.20: Updated reference of superseded document Section 8.1: Added information about [redacted] processes Section 10: Updated references Added SARAH Ref. numbers.

EUTHANASIA IN MARMOSETS (01/07/2021)

PQMS3-MARP-SOP-0200-V3.docx

DOCUMENT AUTHORISATION

Date of Next Review: 2 years from Date of Issue

[Redacted Information]

29-Sep-2021

29-Sep-2021

10: 44 AM A

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12: 52 PM A

1. INTRODUCTION

10.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is describe the procedure for inducing anaesthesia by injection in marmosets for euthanasia.





10.2. Scope

This SOP is for the use of the clinical veterinarians and the Senior Animal Technologist.

10.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0147 Handling and Restraint of Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets
-  PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets
-  PQMS3-MARP-SOP-0194 Injectable Anaesthesia Marmoset

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
PM	Post Mortem
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
PM	Post Mortem
AFM	Animal Facility Manager
OM	Operations Manager
CI	Chief Investigator of Project

4. HEALTH AND SAFETY CONSIDERATIONS



A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

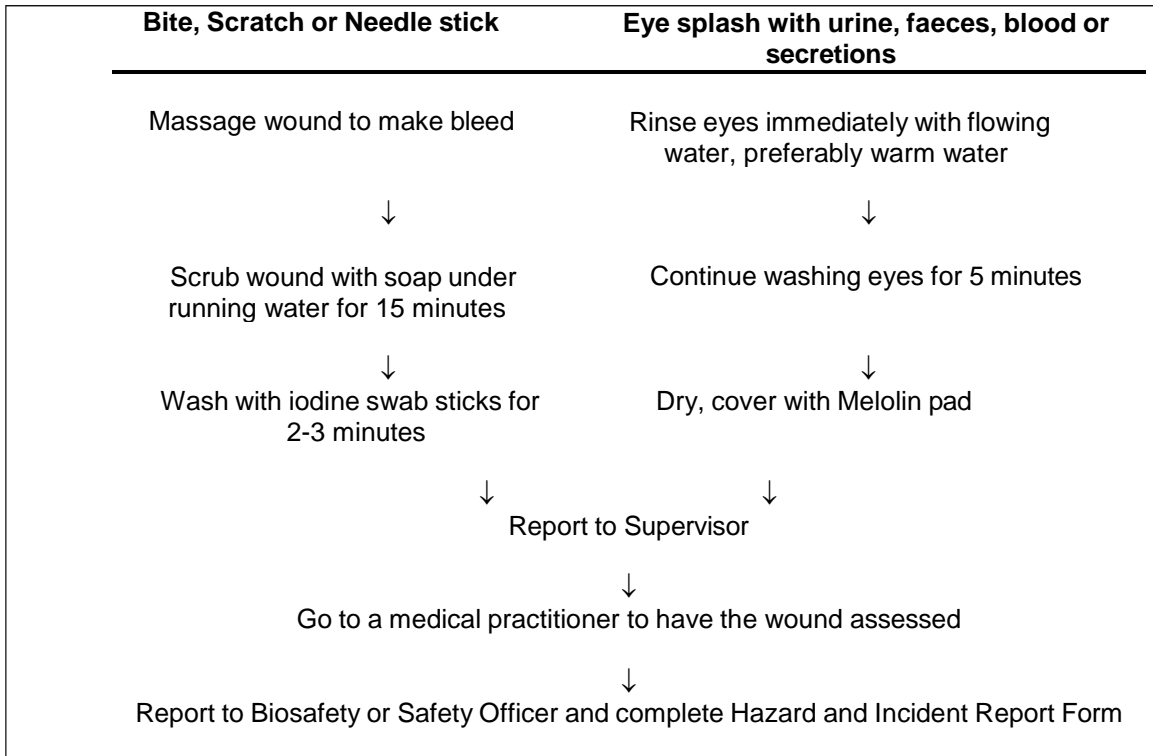
Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-RA-0160 Marmoset Area Risk Assessment 

PQMS3 – MARP-SOP-0132 Marmoset Entry and Exit

Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective of their families. Staff should constantly be aware of the animals in the enclosure by monitoring their behavior, without turning their back.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area as this will cause adverse behaviour in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office  of 



5. MARMOSSET EUTHANASIA

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	0.3ml insulin syringe – 12mm with 29g needle
1	Heated Surgery Table in AS121 or heatpad
QUANTITY	MATERIAL DETAILS
As required	Injectable anaesthetic such as BDAK
As required	Gas Anaesthetic Machine & Anaesthetic Gas such as Sevoflurane
Volume by bodyweight	Lethabarb (0.1ml/100g)
As required	Yellow Biohazard Bag


5.2. Capture & restrain the required marmoset.


 Refer to PQMS3-MARP-SOP-147, Capture, Restraint and Handling Marmosets

5.3. Use the microchip reader to identify you have the correct animal.

 Refer to PQMS3-MARP-SOP-192 Identification in Marmosets

5.4 Anaesthetise the marmoset using inhalation or injectable anaesthesia for euthanasia

 Refer to PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets

 Refer to PQMS3-MARP-SOP-0194 Injectable Anaesthesia Marmoset

5.5 Monitor depth of anaesthesia until the withdrawal reflex is abolished.
The marmoset is now ready to have Lethabarb administered

5.6 Withdraw the required volume of Lethabarb into a 1ml syringe. The dose rate is 0.1ml per 100g bodyweight.

5.7 Inject the required volume of Lethabarb either intravenously into the femoral vein, or intracardiac or intraperitoneal in animals that are too small or too sick to have a well-defined femoral vein

5.8 Place any used needles and syringes in the appropriate sharps container.

5.9 Confirm death by absence of heart beat and breathing. Pupils will be fixed and dilated.

5.10 A post mortem can now be conducted.

5.11 After PM is complete, place the marmoset body in a yellow biohazard bag and tie closed.

5.12 Place in the anatomical waste bin in the walk in freezer, in relevant information, for collection.

The volume of Lethabarb used must be recorded in the Drug of Addiction Register, which is located in the locked cabinet in irrelevant. See Fig 1 and Fig. 2

Refer to:

 PQMS3-MARP-SOP-0166 Procurement and Use of Scheduled Poisons

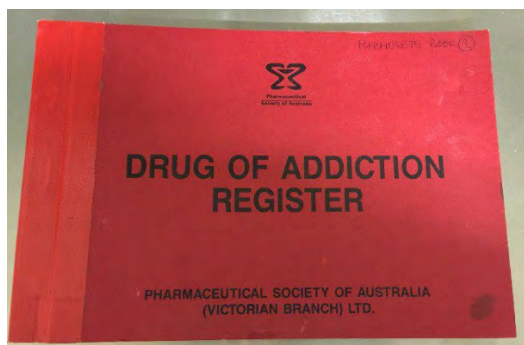


Fig 1. Drug of Addiction Register



Fig 2: Restricted Drugs Safe in

Irrelevant

Record animal deaths in Labtracks



6. HUMANE END POINTS

EUTHANASIA CRITERIA
Moribund /comatose – little/no response to stimulation/handling
No voluntary food intake over 48 hours
Little / no response to handling
Seizures lasting > 10 mins OR recurrent seizures without regaining consciousness for more than 5 mins
Body Condition Score of one according to PQMS3-MARP-REF-0512 Body Condition Scoring in Marmosets
Laboured, irregular breathing
Paralysis of 1 limb > 48 hours/ Paralysis of 2 limbs
Organ failure as determined by blood tests
Failure to regain consciousness >6 hours post anaesthesia
Evidence of brain damage > 12hrs eg blindness, circling, or severe incoordination preventing movement around cage safely.
Any acute or chronic condition that impacts upon the welfare of the animal that euthanasia is advised by the Veterinarian or Animal Welfare Officer

7. PROCESS OF NOTIFICATION

7.1 Marmoset reaches a defined end point for which euthanasia is advised, according to the Humane Endpoints defined in Section 6

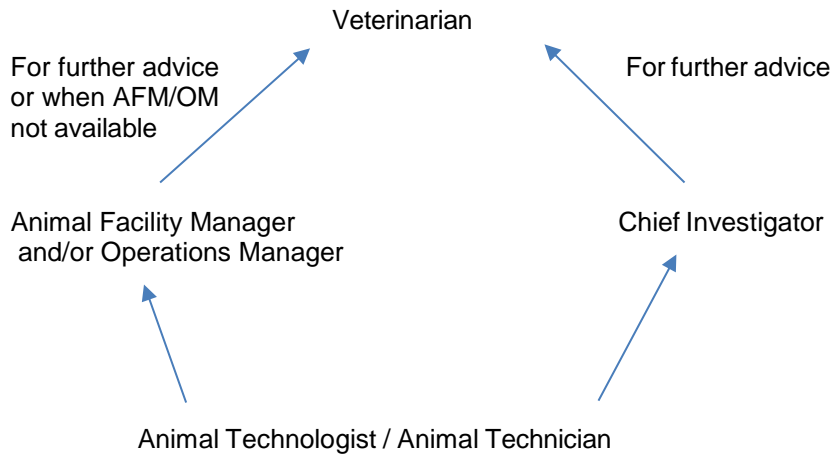
 Non-Human Primate Monitoring Form, Nov 2016, Monash Research Office

For Research Animals

Report any adverse observations to the supervisor for discussion with the client/owner and veterinarian as required. Notify the AFM/OM.

For All Other Animals

Report any adverse observations to the supervisor for discussion with the AFM / OM and veterinarian as required.



8. ANIMAL MONITORING & WELFARE

- 8.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 8.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 8.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 8.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

9. REFERENCES


INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-147	Capture, Restraint and Handling Marmosets
PQMS3-MARP-SOP-192	Identification in Marmosets
PQMS3-MARP-SOP-0194	Injectable Anaesthesia in Marmosets
PQMS3-MARP-SOP-0272	Gas Anaesthesia in Marmosets
PQMS3-MARP-FRM-0160	Marmoset Deaths and Culls
PQMS3-MARP-SOP-0183	Injectable Anaesthesia in Macaques
EXTERNAL REFERENCES	
Australian Code of Practice for the Care and Use of Animals for Scientific Purposes	
Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals	
Principles and guidelines for the care and use of non-human primates for scientific purposes 2016	



DOCUMENT HISTORY		irrelevant information	PQMS3-MARP-SOP-0200-V3.docx
Version no.	Date of Issue		Amendments
1	28/03/2017		Original document
2	14/08/2018		Revised euthanasia criteria

SEXING OF MARMOSETS (01/06/2020)

PQMS3-MARP-SOP-0269-V2.docx

DOCUMENT AUTHORISATION	Date of Next Review: 2 years from Date of Issue	
	03- Jun- 2020	1: 54 PM AES
	04- Jun- 2020	10: 05 AM AB
	05- Jun- 2020	9: 13 AM AES

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to demonstrate how to determine the sex of neonate and adult marmosets

1.2. Scope


This SOP is to be applied with staff working with Marmosets across MARP

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:



 PQMS3-MARP-SOP-147, Handling and Restraint in Marmosets

 PQMS3-MARP-SOP-0192 Identification in Marmosets

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained. Refer to PQMS-MARP-SOP-0298.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

2. DEFINITIONS

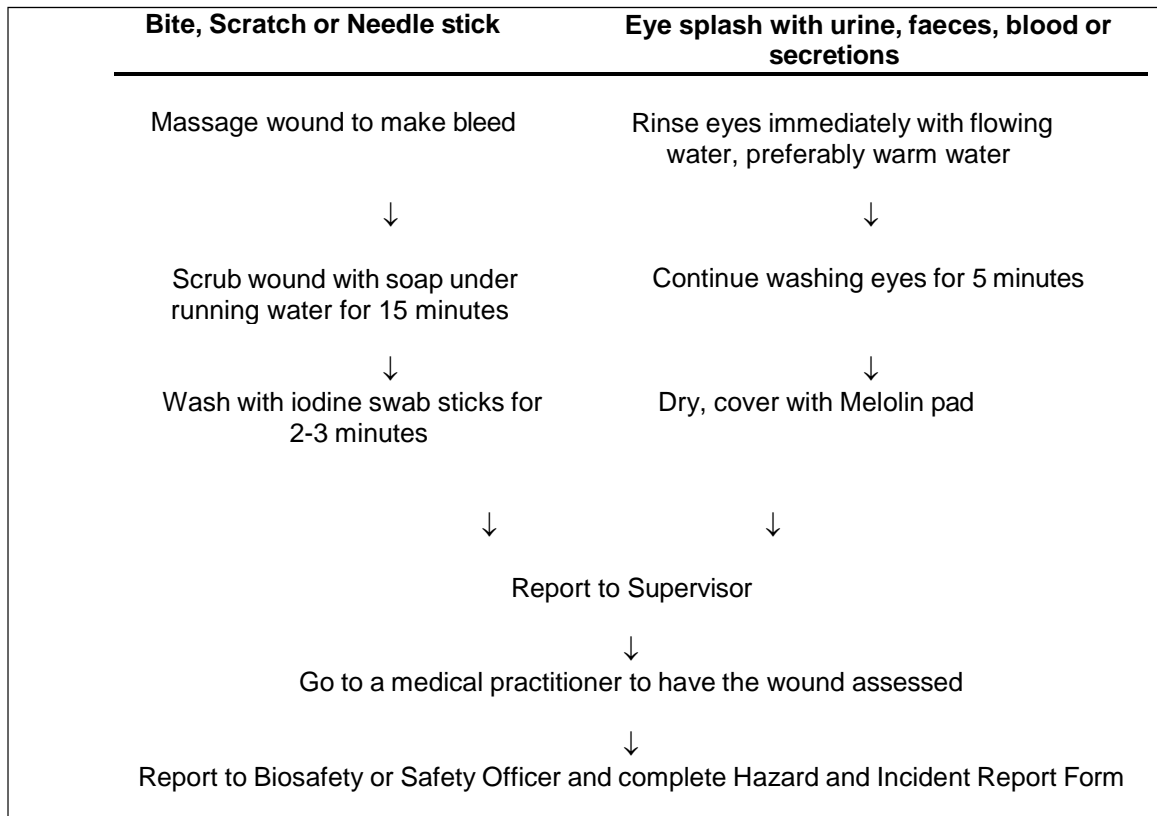
DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
MARP 	Monash Animal Research 

3. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Specific health and safety considerations while performing this procedure are:

- PPE should be worn and adhered to at all times, appropriate for the task required.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office of relevant information



4. SEXING NEONATES


4.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
NILL	
QUANTITY	MATERIAL DETAILS
As required	Task Specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

4.2 When a birth is noted, the newborn's sex must be determined. Marmoset Neonates can be sexed accurately at birth.

4.3 Catch the adult carrying the new neonate/s as per SOP

 PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets

 Refer to PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

4.4 Once neonate is obtained from its family cage, sex neonate referring to the pictures in Figure 1 and Figure 2 below.

4.4.1 For Male Neonates, refer to Figure 1

- Observe circular urethral orifice
- Observe long distance between anus and urethral orifice
- Scrotal swelling indicating presence of testicles directly above the anus



FIGURE 1 : MALE NEONATE GENITALIA

4.4.2 For Female Neonates, refer to Figure 2.

- Observe linear labial vaginal folds
- Observe short distance between anus and labial folds



FIGURE 2: FEMALE NEONATE GENITALIA

5. IDENTIFYING SEX IN ADULTS

5.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
Nil	
QUANTITY	MATERIAL DETAILS
As required	Task Specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

- As marmosets typically present their genitalia as a territorial display, it is not difficult to distinguish between sexes without handling.
- There is no visual dimorphism, or distinguishing sizes differences between male and female marmosets.

5.2 Adult female marmosets have distinctive linear labial folds of the vulva as shown in figure 3 below.

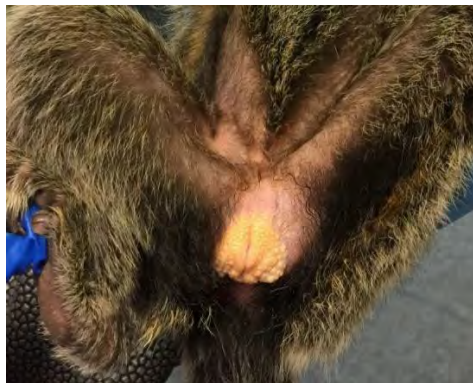


FIGURE 3: FEMALE ADULT GENITALIA

5.3 Adult male marmosets have a prominent scrotal sac with clearly visible testes. Their penis is not outwardly visible but its location can be noted by the circular urethral orifice. Refer to figure 4 below.

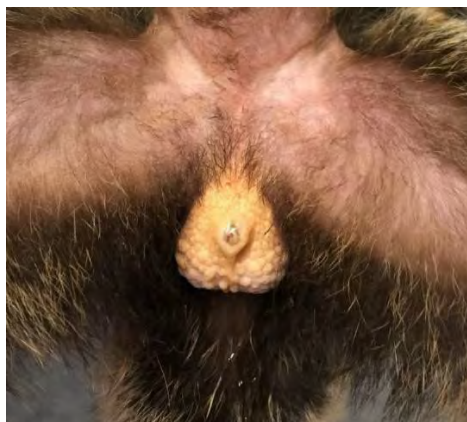


FIGURE 4: MALE ADULT GENITALIA

6. ANIMAL MONITORING & WELFARE

- 6.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 6.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 6.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 6.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

7. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0147	Handling and Restraint in Marmosets
PQMS3-MARP-REF-0106	Marmosets Births Information
PQMS3-MARP-SOP-0056	Specialised Care of Marmoset Neonates
EXTERNAL REFERENCES	
List any relevant references including those from which reference ranges may have been derived, those used in the preparation of the document or in the establishment of the method	



MONASH University
Technology Research Platforms

DOCUMENT HISTORY		[Redacted: Irrelevant Information]	PQMS3-MARP-SOP-0269-V2.docx
Version no.	Date of Issue		Amendments
1	05/06/2017		Original Document
2	01/06/2020		Updated Animal Monitoring and Welfare statement Reviewed Document

GAS ANAESTHESIA IN MARMOSETS (01/06/2020)

PQMS3-MARP-SOP-0272-V2.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
Irrelevant Information	03- Jun- 2020 5: 35 PM A
	04- Jun- 2020 10: 52 AM AE
	05- Jun- 2020 9: 14 AM AE

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is describe the procedure used to induce anaesthesia, by gas, in marmosets for medical procedures.

1.2. Scope

This SOP is for the use of clinical veterinarians or technicians who have been deemed competent in this procedure.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets

PQMS3-MARP-SOP-0192 Identification in Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Irrelevant Information	Irrelevant Information
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

PQMS3-MARP-REF-0350 Personal Protective Equipment required at MARP

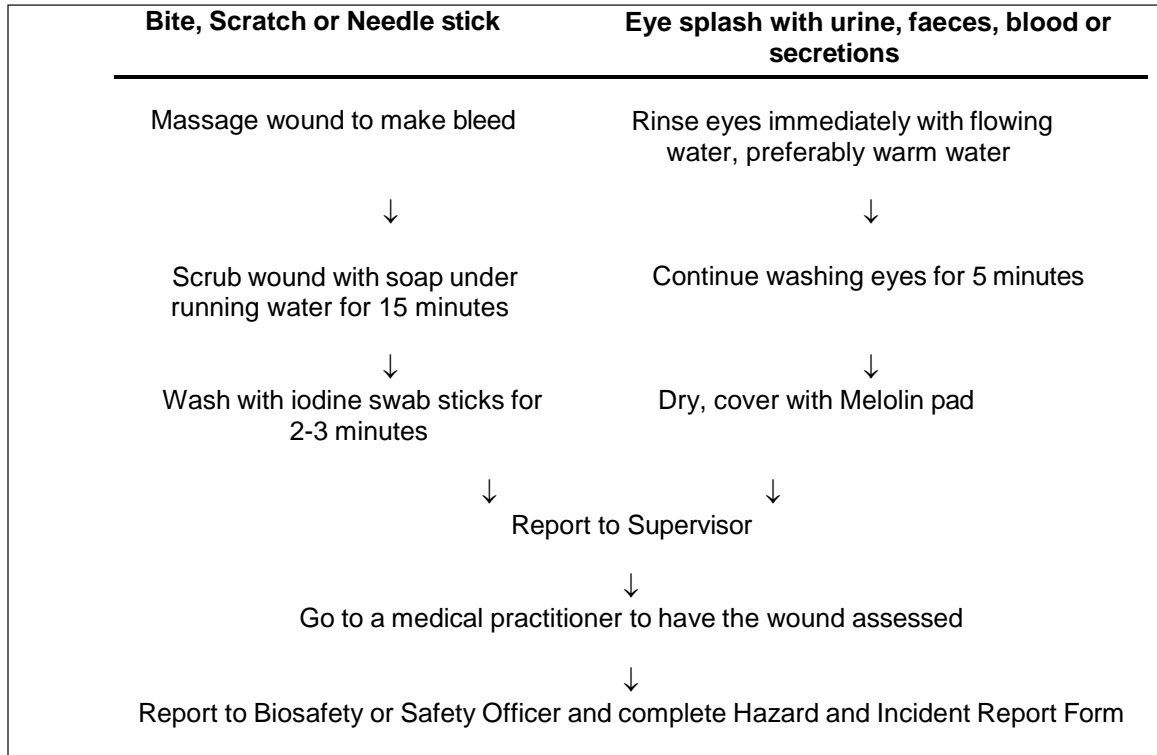
PQMS3-MARP-RA-0160 Marmoset Area Risk Assessment relevant information

PQMS3-MARP-FRM0011 relevant information Conditions of Entry Statement

PQMS3 – MARP-SOP-0132 Marmoset Entry and Exit

Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective of their families. Staff should constantly be aware of the animals in the enclosure by monitoring their behavior, without turning their back.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area as this will cause adverse behaviour in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office relevant information of Building relevant information
- Chemical exposure hazards – a person may experience dizziness and nausea if exposed to inhalation of isoflurane. This may occur if the work area is not well ventilated and the anesthetic circuit is leaking.



5. PREPARATION

5.8 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Anaesthesia machine with sevoflurane vaporiser & appropriate circuitry
1	Darvell ZDS Qube with facemask suitable for marmosets (adult or neonate sizes).
1	Heated Surgery Table located in laboratory or Heat Pad
QUANTITY	MATERIAL DETAILS
As needed	Gas Anaesthetic Agent Sevoflurane
As needed	Medical Oxygen in gas cylinders

5.9 Warm Heated Surgery table or heat pad. Place a wet/dry bedding with bluey mat on top, onto the table

5.10 Check vaporiser is turned off. See Fig 1.



Fig. 1 Anaesthetic Machine

Fig. 1 Key

1. Oxygen Flow Meter
2. Sevoflurane Vapouriser
3. Pressure Meter
4. Oxygen Flush Button
5. Fresh Gas Outflow with circuit attached

- 5.11** Check the regulator is attached to oxygen cylinder. See Fig 2.
 If regulator is not attached, to attach refer to Section 6.
 ⚠ Never open the oxygen flow on the cylinder when the regulator is not attached



Fig 2. Medical Oxygen Gas Cylinder with Regulator on Trolley

- 5.12** Turn on oxygen flow at the cylinder by turning the knob anti-clockwise. See Fig. 3
 Observe the gauge on the regulator to check the level of oxygen in cylinder. See Fig. 4
 Replace cylinder if empty- Refer to section 6.



Fig 3



Fig. 4

- 5.6** Check oxygen is turned off at flow meter on the anaesthetic machine. See Fig. 5



Fig. 5

- ☐ When turning off the oxygen flow meter, ensure that it is not overtightened as this damages the valve

- 5.7** Check level of liquid anaesthesia agent in the vaporiser. Top up if low – refer to Section 8

- 5.8** Set up the non-rebreathing circuit and attach to the gas anaesthetic machine at the fresh air outlet See Fig 1, Number 5.

- 5.8.1** Attach the minimum volume fresh gas tubing to the (Gas In) inlet, at the back of the Darvall ZDS Qube, Fig 6

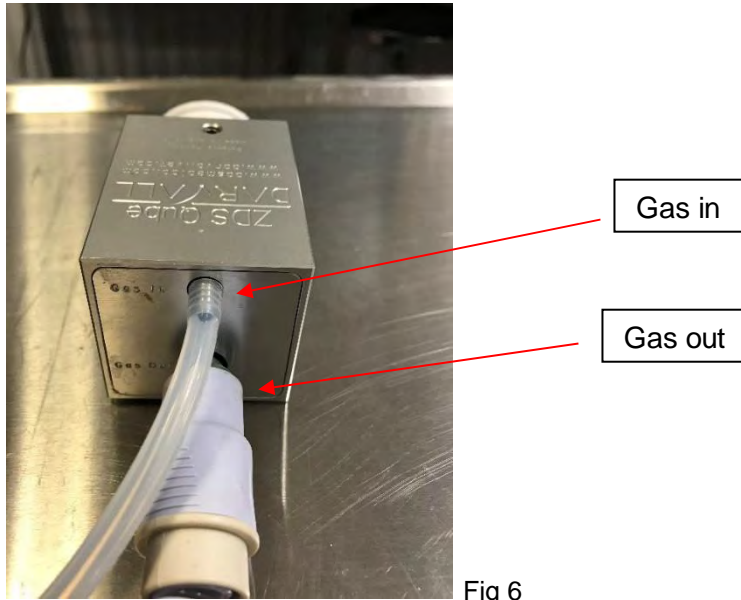


Fig 6

- 5.8.2** Attach the Scavenge tubing to the (Gas Out) outlet, at the back of the Darvall ZDS Qube, Fig 6

- 5.8.3** Attach the other end of the large bore scavenge tubing to the charcoal canister. See Fig 7



Fig. 7

- ☞ As part of the routine of using the anaesthetic machine, the charcoal absorber is weighed monthly, to ensure it is safe to use.
- ☐ The charcoal granules in the absorber **MUST** be replaced once the cylinder weighs 125g more than the original weight. ie: 575g
 - ☐ Using the fume hood – empty the used charcoal into a plastic bag. Tie this plastic bag and then place into a second plastic bag. Securely tie the second bag, and dispose of in the regular marmoset waste, to go to deep landfill.
 - ☐ To refill, place the charcoal canister on the scales, in the fume hood. Fill the canister with charcoal granules to a combined weight of 450g. The refill date is placed on the charcoal absorber container. Reattach the large bore scavenge tubing and place charcoal canister in its holder at the base of the anaesthetic machine
- ☞ The charcoal container must be in its holder to allow flow through of air.

5.8.4 Select a suitable marmoset face mask. See Fig 8

- ☐ Check there is no damage to the rubber diaphragm, and that it will fit snugly over the marmosets' nose. This is to make sure that no gas will leak out
- ☐ The small mask is suitable for neonates and small juveniles
- ☐ The larger mask is suitable for older juveniles and adults



Fig. 8

6. CHANGING AN EMPTY OXYGEN CYLINDER

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Appropriate tool to remove regulator from oxygen cylinder
QUANTITY	MATERIAL DETAILS
1	Full replacement oxygen cylinder


 **Check that the Oxygen is turned off before this procedure is performed.**

6.2. Detach regulator from the empty oxygen cylinder, by turning the black handle anticlockwise, See Fig. 9



Fig. 9

6.3. Wheel the empty gas cylinder in its holder, to the Gas Cylinder Safety Locker, located outside relevant information

 Care must always be taken when handling gas cylinders as they are a potential hazard.

6.4. Swap the empty cylinder for a full cylinder.

6.5. Place the full cylinder into its holder, and wheel back to the surgery, relevant information

6.6. Remove any plastic wrapping on the oxygen cylinder valve

6.7. To attach the regulator to the full oxygen bottle, first align the valve perpendicular to the inlet on the neck of the gas cylinder by inserting the lugs into the lug holes.

6.8. Turn the black handle clockwise to advance the screw, ensuring the tip is located in the indentation in the neck of the cylinder.

6.9. Tighten the black handle to ensure there is no leakage.

- If there is leakage a whistling sound of escaping oxygen is heard when the oxygen flow is turned on at the cylinder
- Empty cylinders are routinely replaced by the Service Assistant.

7. FILLING VAPORISER WITH SEVOFLURANE

7.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Sevoflurane Vaporiser
QUANTITY	MATERIAL DETAILS
As needed	Bottle of Sevoflurane

7.2 To fill the sevoflurane vaporiser. Unscrew the cap of the fill point on the vaporizer, and remove the cap of the sevoflurane bottle. See Fig. 9 and Fig.10

☞ The sevoflurane bottle is specially designed to fill the sevoflurane vaporiser safely.

7.3 Invert the sevoflurane bottle and place it into the fill point of the vaporizer

Press the bottle gently, so that the fill point pin is depressed, and the sevoflurane starts flowing from the bottle into the vaporizer.



Fig.9 Sevoflurane Bottle



Fig.10 Sevoflurane Vaporiser

7.4 The glass vial on the left bottom side of the vaporiser, indicates how full the vaporiser is. Once the level in the glass vial, reaches the black triangle, release the pressure on the bottle to stop the flow of sevoflurane, and withdraw the bottle from the fill point.

7.5 Place the caps back on the vaporizer and sevoflurane bottle.

7.6 Return any un-used sevoflurane to the drug cabinet.

8. INDUCTION AND MAINTENANCE ANAESTHESIA

8.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Anaesthetic machine with oxygen cylinder, appropriate vaporiser and tubing for circuits
1	Darvell ZDS Qube with facemask, suitable for marmosets (adult or neonate sizes)
QUANTITY	MATERIAL DETAILS
As needed	Sevoflurane
As needed	Medical Oxygen Cylinder

8.2. The animal to be anaesthetised has been caught, and the anaesthetic machine is prepared, refer to section 5

 Refer to PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets

8.3. Turn on the Sevoflurane vaporiser, and move to a setting of 8%

8.4. Place the face mask, that is attached to the Darvell ZDS Qube, over the animals' nose and mouth.

8.5. Set the oxygen flow rate to 1 litre per minute

8.6. Continue to hold the animal with its face in the mask, until it is unconscious.

Observe for cessation of movement and relaxation.

Monitor rate and depth of breathing. Breathing rate should slow and become regular.

8.7. Place the animal with face still in the mask, onto the prepared area on the heated table.

8.8. Check the blink and withdrawal reflexes, and monitor breathing.

Withdrawal reflex is checked by pinching the foot between your thumb and forefinger to make sure the animal is properly anaesthetised.

The blink reflex is checked by gently touching the corner of the eye with your finger.

The blink reflex will be abolished before the withdrawal reflex, as the level of anaesthesia deepens.

8.9. If required, place the Pulse Oximeter probe on the animals hand or foot. See Fig.11

The pulse oximeter measures the animals' heart rate and blood oxygenation.



Fig. 11 Cardell Veterinary Monitor 9500D

8.10. The vaporiser setting is adjusted to a lower setting, as indicated by monitoring of the aforementioned parameters

usually, at this point, the sevoflurane vaporiser is set at 3-5 %

8.11. Continue to monitor the withdrawal reflex, blink reflex, heart rate, oxygen levels, breathing rate and character.



- 8.12** Maintain a surgical plane of anaesthesia (i.e. absence of pinch reflex) for the duration of the surgical procedure, by adjusting the setting on the vaporiser between the settings of 0 – 8% according to information obtained from monitoring.
- ☐ If respiration slows and becomes laboured, turn vaporiser setting to zero immediately. Flush the system with fresh oxygen, and continue with 100% oxygen until the breathing returns to normal. Then reset the vaporiser setting to a lower value than before.
 - ☐ If withdrawal reflex returns, turn the vaporiser level up until the withdrawal reflex is abolished.
- 8.13** Once the procedure is finished, turn the vaporiser setting to OFF
- 8.14** Turn oxygen flow rate to zero on the anaesthetic machine.
- 8.15** Remove face mask from animal.
- 8.16** Pick the animal up and hold as it recovers from anaesthesia.
- 8.17** Monitor animal's breathing and observe for return of righting reflex and movement.
- ☐ This should only take a few minutes.
- 8.18** Continue to hold animal until it able to grip firmly
- 8.19** Return animal to normal housing once recovered from anaesthetic.
- ☐ Refer to PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets
- 8.20** If all procedures are completed, turn oxygen off at regulator on the oxygen cylinder.
- 8.21** Purge the system by holding the mask inverted on the tabletop and pressing Oxygen Flush Button until the pressure releases, see Fig 1

9. ANIMAL MONITORING & WELFARE

- 9.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 9.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 9.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
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10. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0147	Handling and Restraint in Marmosets
EXTERNAL REFERENCES	
List any relevant references including those from which reference ranges may have been derived, those used in the preparation of the document or in the establishment of the method	
http://www.aasmedical.com.au/	

DOCUMENT HISTORY		PQMS3-MARP-SOP-0272-V2.docx
Version no.	Date of Issue	
1	08/05/2017	Original document
2	01/06/2020	Updated Animal Monitoring and Welfare statement Automatic approval from document control

irrelevant information

WEIGHING MARMOSETS (22/06/2022)

PQMS3-MARP-SOP-0273-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
Irrelevant Information	7- Jul - 2022 3: 30 PM AEST
	8- Jul - 2022 10: 30 AM AEST
	8- Jul - 2022 10: 42 AM AEST

1. INTRODUCTION

Marmosets are routinely weighed. This information is primarily used to ensure animals are in optimum health. Information collected has been used to create weight for age, growth charts for marmosets.

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the process of weighing of marmosets.

1.2. Scope

This SOP is to be applied by all staff that weigh marmosets at Monash Animal Research Platform facilities.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:



-  PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.



3. DEFINITIONS


DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
MARP 	Monash Animal Research Platform 

4. HEALTH AND SAFETY CONSIDERATIONS

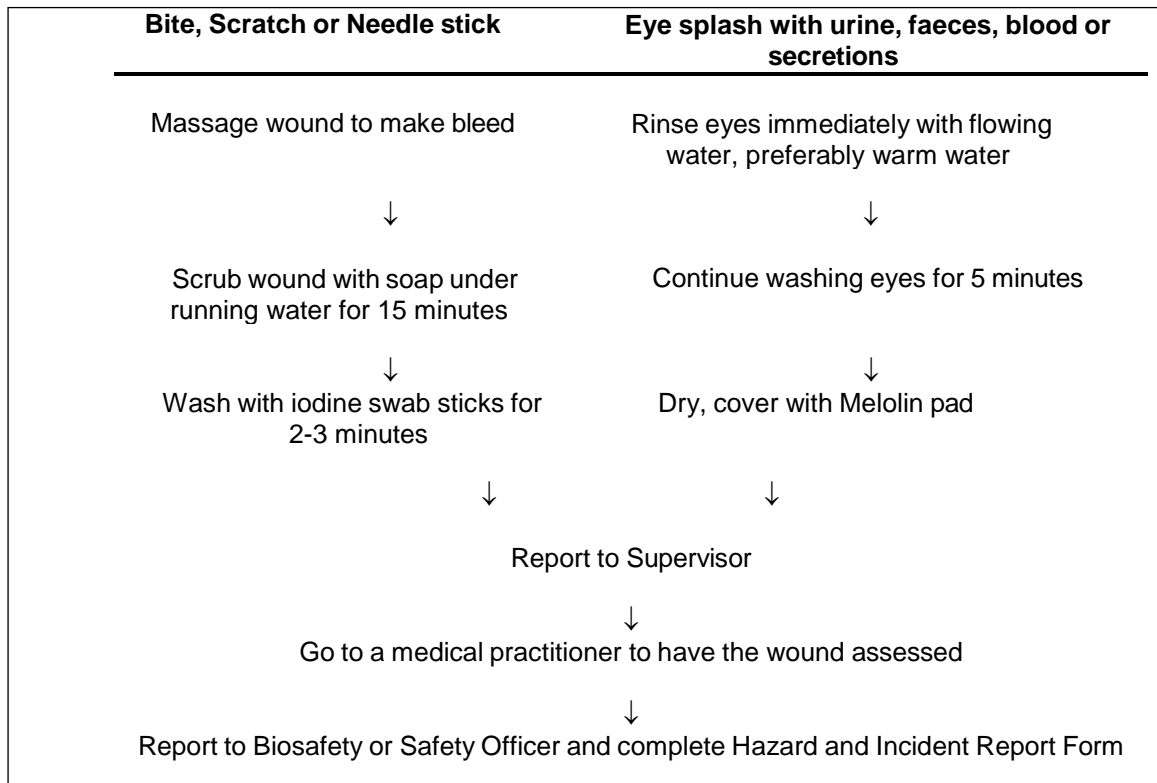
A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

 PQMS3-MARP-RA-0160 Marmoset Area Risk Assessment 

PQMS3-MARP-FRM0011  Conditions of Entry Statement Specific health and safety considerations while performing this procedure are:

- Non-Human Primates (NHPs) are unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective of their families.
- Staff should constantly be aware of the animals in the enclosure by monitoring their behavior, without turning their back.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Appropriate Work area



5. WEIGHING SCHEDULE FOR MARMOSETS

5.1. Neonates

Marmoset Neonates are weighed on a daily basis until they are two weeks of age.

Once the neonate is two weeks of age and assessment is made of their suitability to now be weighed on a weekly basis.

 Refer to PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

To be put onto weekly weighing, a neonate must have put on 0.5g in the last three days of the first two weeks of life, ie: PD12,13,14, without any intervention such as supplementary feeding.

The neonate will stay on daily weighing until it meets this requirement. Triplets, Quadruplets and Neonates with no Mother

 Refer to PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

For specific information on assessment for triplets, see Section 7.3 in PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

For specific information on assessment for quadruplets, see Section 7.4 in PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

For specific information on assessment for neonates with no mother, see Section 7.5 in PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

Once taken off daily weighs, neonates are then weighed once weekly until 2 months of age.

Neonates undergoing surgery as part of a project must be weighed according to the monitoring/weighing schedule within the approved protocol.



5.2. Juvenile and Adult Marmosets

Once Marmosets are 2 months of age they are weighed on a 5 weekly basis. See below for Rooms Weighed Schedule




For 

Rooms Weighing

 and 
 and 
 and 




 Both Male and Female sides

For 

At  marmosets over two months of age are weighed every two weeks. The two animal rooms  and  are on rotation and on opposing weeks to the cages being cleaned. The room diary will have the schedule already noted.

If weight loss occurs, refer to PQMS3-MARP-SOP-0447- Health monitoring in marmosets for further action. For experimental animals, refer to the approved protocol for the weighing schedule, in particular post-surgical animals.

Information collected from weighing, along with other information gathered using the Non-Human Primate Monitoring Sheet & Clinical Signs Severity Score System is used to make a health assessment of each animal in the rooms weighed.

-  Refer to PQMS3-MARP-SOP-0374 Diet Analysis in the Marmoset Colony
-  Refer to PQMS3-MARP-REF-0509 Non-Human Primate Monitoring

6. WEIGHING MARMOSETS

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
	Scales, Weighing Box and Black Cotton Bag
	Microchip Reader
QUANTITY	MATERIAL DETAILS
	Appropriate PPE for task
	Animal Records

6.2. Prepare for weighing marmosets.

6.2.1 This includes putting on all the required PPE for the task. See Fig 1.



When weighing marmosets you must wear extra PPE including Hexarmour Gloves and Arm Guards and Glasses



Fig 1. PPE for Weighing Marmosets

6.2.2 Setup the weigh station with the equipment required for the task. See Fig 2.

This includes Scales, Weigh Box, Weigh Bag, Animal Records, Microchip Reader



Fig 2. Marmoset Weigh Station


- 6.3.** Catch the marmosets from the rooms on the schedule in section 5.2
 Refer to Handling and Restraint in Marmosets PQMS3-MARP-SOP-0147



Fig 3. Holding a marmoset


- 6.4** Using the microchip reader, scan the animal to identify who you have
 Refer to PQMS3-MARP-SOP-0192 Identification in Marmosets
- 6.5** Ensure the scales are on and tared to 0
- 6.6** Using your hand not holding the animal, hold the bag open
- 6.7** Now place the marmoset into the black cotton bag, positioning it into one corner of the inside of the bag. See Fig. 4



Fig 4. Placing Marmoset in Bag

- 6.8** Now grasp the animal from the outside of the bag with your other hand.

- 6.9** Twist bottom section of bag, ensuring tail is not all caught up and wrap excess bag around the animal. See fig. 5



Fig 5 Holding animal from outside & twisting bag closed

- 6.10** Place animal into the Perspex box on the scales, and record weight on the animals' record. Refer to fig 6.

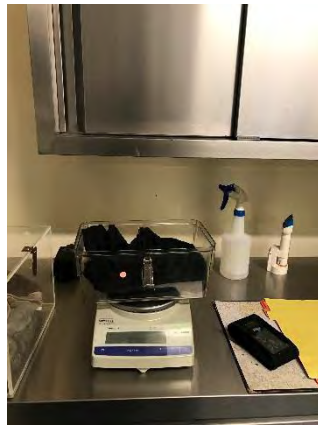








Fig 6 Animal in Bag in Box on Scales

- 6.11** Remove the animal from the bag,
- 6.12** While holding onto the animal, see Fig 3, follow the guidelines given on the Non-Human Primate Monitoring Checklist to complete all the information about each specific animal being weighed.
-  PQMS3-MARP-REF-0509 Non-Human Primate Monitoring
This includes a Checklist, Clinical Signs Severity Score Key & Endpoints
 -  The information gathered is used to assess the status of each marmoset, and give a clinical signs severity score.
 -  Any animals that are out of the Normal range should be reported to the Veterinarian

-  The Veterinarian will make an assessment with the information gathered of any further treatment required for the marmoset in question.
-  Refer to PQMS3-MARP-SOP-0196 Treatments of Marmosets
- 6.13** Palpate all breeding females from the rooms that are being weighed, and record. Only if trained to do so
 -  Refer to PQMS3-MARP-SOP-0389 Breeding Management in Marmosets
- 6.14** When finished, return the marmoset to its home cage
- 6.15** Reward each marmoset being weighed, with some sultana's in their food bowl.

7. ANIMAL MONITORING & WELFARE

- 7.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 7.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 7.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 7.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for Reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

8. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0147	Handling and Restraint in Marmosets
PQMS3-MARP-SOP-0056	Specialised Care of Marmoset Neonates
PQMS3-MARP-SOP-0374	Diet Analysis in the Marmoset Colony
PQMS3-MARP-SOP-0196	Treatments of Marmosets
PQMS3-MARP-REF-509	Non-Human Primate Monitoring
PQMS3-MARP-SOP-0192	Identification in Marmosets
EXTERNAL REFERENCES	
Non-Human Primate Monitoring Form and Non-Human Primate Body Weight Monitoring Form http://www.intranet.monash/researchadmin/start/ethics/animal/approval/app-forms/monitor-rec	



DOCUMENT HISTORY			PQMS3-MARP-SOP-0273-V3.docx
Version no.	Date of Issue	Irrelevant information	Amendments
1	8/05/2017	Irrelevant information	Original document
2	05/08/2019		Updated Animal Monitoring and Welfare statement Added [redacted] information
3	22/06/2022		Changed authoriser from [redacted] [redacted] Added OHS column to Document History Updated Document Authorisation Panel and footer formatting Section 4 – Changed vaccination listing from Quanterferon Gold Tuberculosis Screening to QuantiFERON Gold Tuberculosis Screening

PROVISION OF WATER FOR MARMOSETS AT MARP (18/07/2022)

PQMS3-MARP-SOP-0364-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from date of issue
Irrelevant Information	2- Sep- 2022 9: 13 AM AEST
	12- Sep- 2022 9: 16 AM AEST
	19- Sep- 2022 2: 04 PM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used to provide water to marmosets at MARP facilities.

1.2. Scope

This SOP is to be applied when providing water to all marmosets housed at Monash Animal Research Platform facilities.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0297 Washroom Operations Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
AA	Approved Arrangement
Irrelevant Information	Irrelevant Information
MARP	Monash Animal Research Platform
PPE	Personal Protective Equipment
RA	Risk Assessment
REF	Reference Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

SARAH Ref no. 23851 Marmoset AREA Risk Assessment irrelevant information

SARAH Ref No. 39409 MARP- Working with Large Animals and Non-Human Primates

PQMS3 – MARP-SOP-0132 Marmoset Entry and Exit

Specific health and safety considerations while performing this procedure are:

All staff must have the necessary and up to date vaccinations required to work with NHP's

- Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager if they require vaccinations and/ or boosters.
 - The task specific PPE must be worn at all times.
 - Be aware of first aid precautions following a scratch or bite from a Marmoset.
 - For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Chemwatch Online for up to date and current SDS.

- Marmoset First Aid Procedure

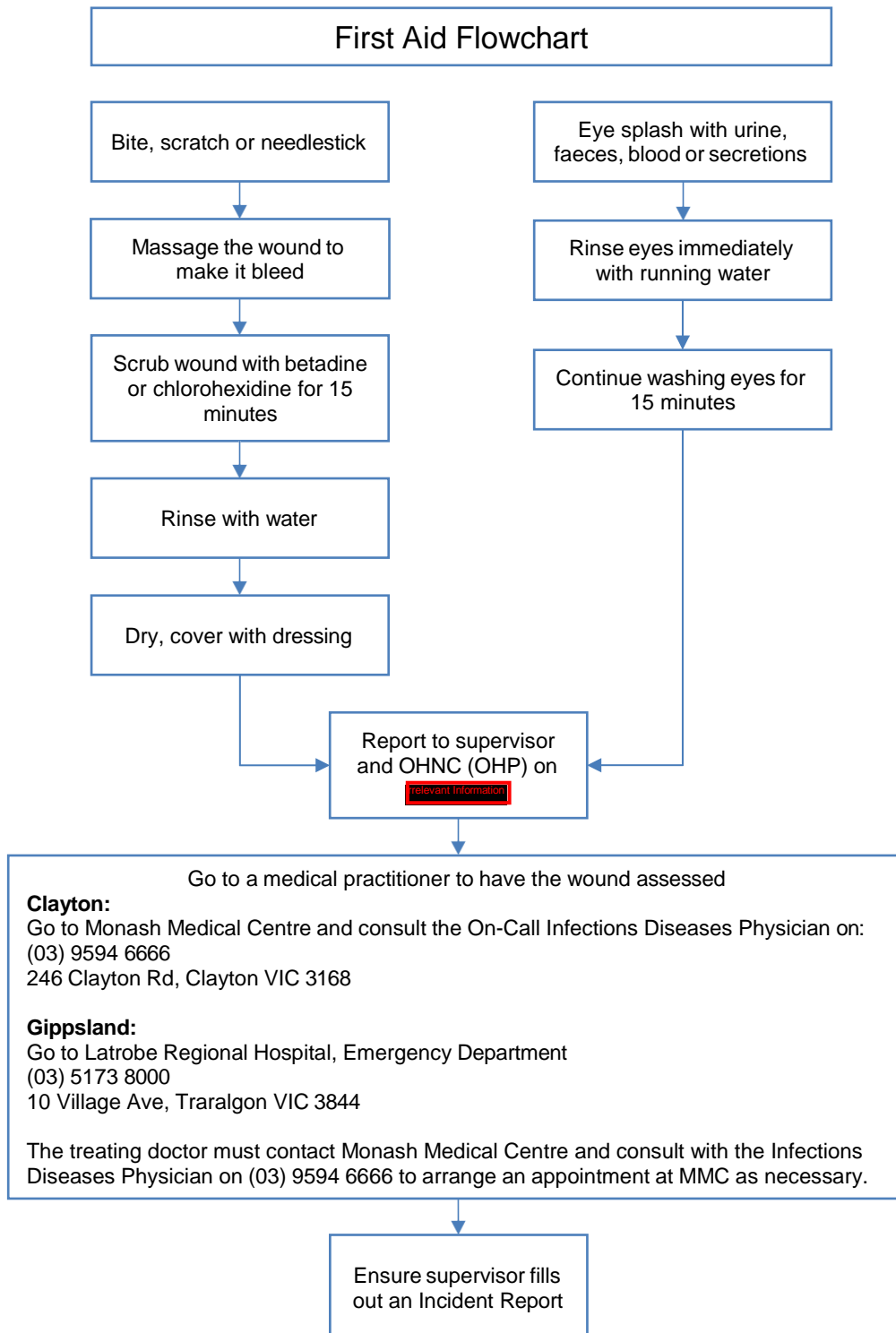


Figure 1: First Aid flow chart

5. PREPARATION AND FILLING OF ALL WATER BOTTLES AT RESEARCH

5.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
1	Container with rubber bungs and sippers
As required	600mL Plastic Water bottles
1	Storage table
1	Two tiered trolley
As required	Water bottle racks
QUANTITY	MATERIAL
As required	Tap water

Preparation and filling of water bottles can be completed at any time, ready for future use.

5.2. Collect two-tiered trolley located in the marmoset wash room, and wheel to marmoset storage room.

5.3. Place plastic box of rubber bungs and sippers, along with racks containing the water bottles required, onto the two-tiered trolley and wheel back into wash room.

5.4. If not already done so, assemble bungs and sippers together by placing flat surface of sipper into the bung. Continue to pass sipper through the bung, until half way to the angle point. Refer to Figure 2:




Figure 2: Bung and sipper assembled.

5.5. Water bottles are filled using the cold water. Fill each water bottle with water, stopping at the neck or 600mL mark of the bottle. Refer to Figure 3:



Figure 3: Water bottle filled to 600ml mark


5.6. Ensure bung inside sipper is mobile by giving a little shake prior to assembly.

 If the ball bearing is immobile, the marmosets will not be able to get any water.

- 5.7. Place prepared bung and sipper onto water bottle as shown below. Ensure bung is pressed firmly into bottle. Refer to Figure 4.



Figure 4: Bung inside water bottle

 Bungs can be placed in water prior to inserting them into the water bottle to make the handling easier and act as a control to reduce manual handling injuries.

- 5.8. The prepared water bottles are now ready for distribution, using the two-tiered trolley, or alternatively on the storage table located in the corridor for later use.


6. COLLECTION AND DISTRIBUTION OF WATER BOTTLES

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
1	Two tiered trolley
QUANTITY	MATERIAL
As Required	Prepared water bottles in water bottle racks

Marmoset water bottles are checked every day. If the water level on a water bottle is less than a quarter full, i.e.: <150mLs the water bottle should be replaced no matter what day it is.

These checks are recorded daily on the Marmoset Daily Checks and Access Sheet, located on the door of each room

 PQMS3-MARP-FRM-0009 Non Human Primate Daily Checks and Outside Access Sheet.

 PQMS3-MARP-SOP-0297 Washroom Operations Marmosets

Fresh water bottles are given to marmosets on a twice weekly regardless of the water level.

- 6.2. Remove all dirty water bottles for cleaning, refer to PQMS3-MARP-SOP-0297 Washroom Operations for Marmosets.
- 6.3. Collect two-tiered trolley with prepared water bottles from the corridor.
- 6.4. Proceed to rooms.
- 6.5. Wearing appropriate PPE for the task, remove existing water bottle from animal cage and place aside on two tiered trolley for cleaning at a later stage.
- 6.5 Collect prepared water bottle from trolley and place vertically onto marmoset cage, held in place by the single wire system. In doing so ensure the wire is placed half way on the bottles securely, so it is unable to fall off the marmoset cage. Refer to Figure 5. Ensure the water bottle is placed on vertically so the ball bearing is able to function correctly, and marmosets can access water.



Figure 5: Water bottle placed on marmoset cage

- 6.6 If there are more than 6 animals per cage, give two water bottles per cage
- 6.7 Repeat this procedure until all animal cages have fresh water bottles.

7. COLLECTION AND DISTRIBUTION OF WATER BOTTLES FOR AA/EXPERIMENTAL ROOM/PC2/BC2 ROOM.

7.1. The following equipment and materials are required to perform this procedure

QUANTITY	EQUIPMENT
1	Two tiered trolley
QUANTITY	MATERIAL
As required	Prepared water bottles in water bottle racks

- Marmoset water bottles are checked every day. If the water level on a water bottle is less than a quarter, i.e.: <150mLs the water bottle should be replaced no matter what day it is.
- Fresh water bottles are given to marmosets twice weekly regardless of the water level.

7.2. Collect two-tiered trolley with prepared water bottles. Proceed to room and place trolley outside the door leading into the room.

7.3. Once in room, wearing appropriate task specific PPE, remove existing water bottle from animal cage and place aside on sink for cleaning at a later stage.

7.4. Remove prepared water bottle from trolley and place vertically onto marmoset cage, held in place by the single wire system. In doing so ensure the wire is placed half way on the bottles securely, so it is unable to fall off the marmoset cage. Refer to Figure 6.


-  Ensure the water bottle is placed on vertically so the ball bearing is able to function correctly, and marmosets can access water.



Figure 6: Water bottle attached to marmoset cage

7.5 If there are more than 6 animals per cage, give two water bottles

7.6 Repeat this procedure until all animal cages have fresh water bottles.

8. CLEANING WATER BOTTLES FROM AA/EXPERIMENTAL ROOM/ PC2/BC2.

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
1	Bottle Brush
1	Bung and Sipper Container
As required	Dirty water bottles, bungs and sippers
1	Measuring jug
1	Two tiered trolley
As required	Warm water
As required	Water bottle racks
1	Chux Cleaning Cloth
As required	F10SC (1:125)
As Required	80% v/v Ethanol

8.2 Ensure task specific PPE is adhered to.

8.3 Empty water bottles by removing the bung and sipper from bottle.

8.4 Place bung and sipper into empty sink in room, along with any waste water from the bottle.

8.5 Once all water bottles are empty, place plugs into both sinks.

8.6 Don appropriate PPE for working with F10SC.

8.7 Located next to the sink, collect measuring jug and obtain 20mL F10SC. Place disinfectant into the sink with rubber bungs, and fill with 5L of warm water.

8.8 In the second sink, fill a further 5L of clean warm water. This is to be used for rinsing only.

8.9 Ensure all dirty water bottles and bungs into sink containing F10SC are immersed and leave in the disinfectant to soak for 30 minutes.

8.10 After 30minutes, use bottle brush to clean the inside and outside of each water bottle, along with the bung and sipper.

8.11 Once item is clean, place into second sink to rinse.

8.12 Once rinsed, place clean water bottle upside down in water bottle rack to dry, see figure 6 section 7, and bung with sipper on wire rack next to sink to also dry.

8.13 When the water bottles, sippers and bungs are fully dry, spray with 80% v/v Ethanol and place on trolley outside the door.

8.14 Rewash water bottles and bungs in wash area refer to



PQMS3-MARP-SOP-0297 Washroom Operations.

9. PROVIDING WATER TO ROOMS relevant irrelevant information

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
As required	Clean bottles
As required	Clean/cold water

9.2 All bottles are cleaned once a week, Refer to



PQMS3-MARP-SOP-0050 – Cage cleaning - Marmosets at relevant information for the cleaning process.

9.3 All bottles are emptied and refilled on Monday and Friday with fresh water, available from the sink in the prep areas of both rooms.

9.4 During daily checks, if any bottles are 2/3 empty, refill regardless of the day.

9.5 Any cage that has more than 6 animals requires 2 bottles.

9.6 When returning the bottles back to the cage, ensure that the sipper does not sit on an angle on the cage wire, if it does, the ball bearing will not fall to the tip of the sipper, hence not allowing water to flow through. See figure 7 below.



Figure 7.

10. ANIMAL MONITORING & WELFARE

- 10.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 10.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 10.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 10.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

11. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref no. 23851	Marmoset AREA Risk [redacted]
SARAH Ref no. 39409	MARP- Working with Large Animals and Non-Human Primates
PQMS3-MARP-FRM-0009	Non Human Primate Daily Checks and Outside Access Sheet
PQMS3-MARP-SOP-0050	Cage Cleaning – Marmosets at [redacted]
PQMS3-MARP-SOP-0132	Entry and Exit Procedures to Marmoset Facilities - [redacted]
PQMS3-MARP-SOP-0297	Washroom Operations Marmosets
EXTERNAL REFERENCES	
NHMRC Codes of Practice	Australian code for the care and use of animals for scientific purposes (8 th Edition – 2013)
NHMRC	Australian code for the care and use non- human primates for scientific purposes. (2016)

DOCUMENT HISTORY			PQMS3-MARP-SOP-0364-V3.docx
Version no.	Date of Issue	Reviewed by: Name	Amendments
1	16/03/2017	Irrelevant Information	Original Document
2	28/10/2019		Updated Animal Monitoring and Welfare statement Added information regarding [redacted] Reviewed and checked formatting
3	21/06/2022		Changed approver from [redacted] [redacted] Added OHS column to Document History Updated Document Authorisation and footer formatting Changed title of document to reflect all of MARP activity Section 4: Updated reference to risk assessment Section 4: Added SARAH Ref numbers. Section 4: Updated First aid. Section 11: Updated references



DOCUMENT AUTHORISATION	Date of Next Review: 3 years from date of issue
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Irrelevant Information

12-Sep-2022 | 9:13 AM AEST

12-Sep-2022 | 9:15 AM AEST

19-Sep-2022 | 2:04 PM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure to prepare marmoset food and feed the marmosets at MARP.


1.2. Scope

This SOP is to be applied when preparing food and feeding all marmosets at MARP

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:





 PQMS3-MARP-SOP-0058 Daily Duties-Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
AA	Approved Arrangement
	
	
MARP	Monash Animal Research Platform
PPE	Personal Protective equipment
RA	Risk Assessment
REF	Reference Document
SOP	Standard Operating Protocol
HEHP Drink	High Energy / High Protein Drink



4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

SARAH Ref no. 23851 Marmoset AREA Risk Assessment **irrelevant information**

SARAH Ref No. 39409 MARP- Working with Large Animals and Non-Human Primates

PQMS3-MARP-SOP-0132 Marmoset Entry and Exit at **relevant**

PQMS3-MARP-SOP-0153 Marmoset Entry and Exit at **relevant**

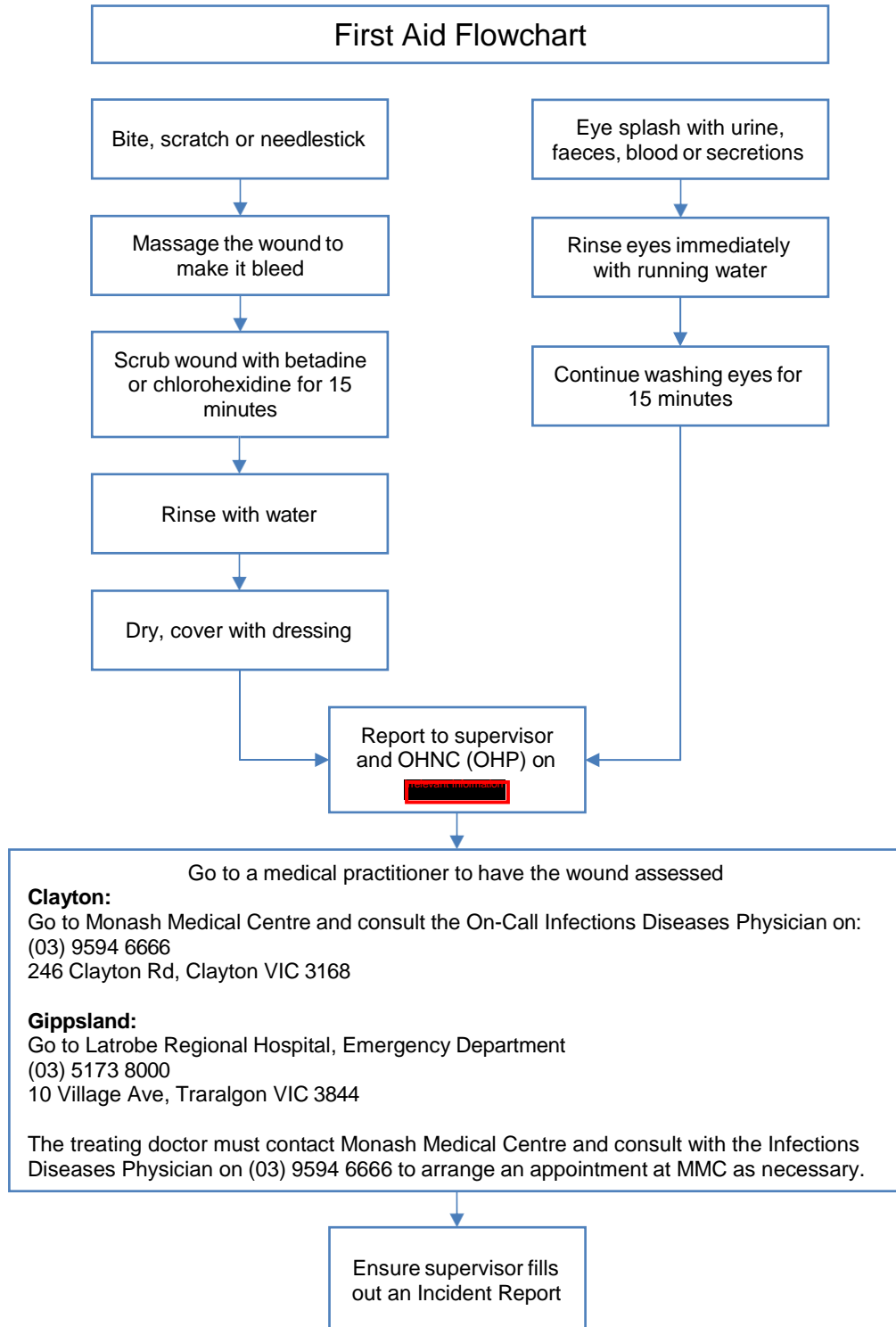
PQMS3-MARP-SOP-0144 Marmoset Entry and Exit at **relevant**

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON®- TB Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager if they require vaccinations and/or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Chemwatch Online for up to date and current SDS.



- Marmoset First Aid Procedure





5. PREPARING PELLETS FOR DISTRIBUTION AT REDACTED

5.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
As required	Clean food bowls
1	Food Scales
1	Commercial Pelleted Diet sealed storage container
1	Scissors
QUANTITY	CONSUMABLES
As required	Commercial Pelleted Diet

At MARP REDACTED marmoset pellets are weighed into food bowls as required.

5.2 Collect required number of bags of pellets from store room, clean food bowls, pellet storage container and scales.

5.3 Using scissors, open a bag of pellets and fill the pellet storage container with pellets.

5.4 Place an empty food bowl on the food scale and turn on, TARE to 0.

5.5 Following the Marmoset Feeding Routine located on the pin board above the food preparation table, start with the last cage in a room. Weigh the required pellets for this cage, and place into a bowl.

Refer to Table 1 for an example of a Marmoset Feeding Routine.

5.6 Repeat for each cage thereafter in the room, by weighing and placing each cages pellets into separate food bowls. When complete, stack the bowls on top of each other so that the first cage is on top of the pile. Refer to Figures 1 & 2



Figure 1: Weighing pellets for distribution



Figure 2: Pellets weighed into food bowls for colony

5.7 Repeat Step 5.5 until all the rooms pellets are weighed

The pellets are stored on the preparation table in the same order as the Marmoset Feeding Routine

Any leftover pellets are stored in a sealed container.

Discard all waste packaging into the bin.

Table 1: Example of Feeding Routine for Marmosets at MARP REDACTED

AS143		ROOM 1					
CAGE	ANIMAL NUMBER	PELLETS	PRIMATE CAKE (gms)	HEHP DRINK (mls)	# OF BOWLS	FEED FOR #	COMMENTS
143-1	236E, M1765, M1940	60	15	30	1	3	Egg & Mealworms daily
143-2	M1842, M1843	40		20	2	2	
143-3	M1653, M1802	40	10	20	1	2	BANANA daily
143-7	M1670	20	5	10	1	1	
143-9	M1750	20	5	10	1	1	
143-4	M1647, M1648	40		20	1	2	
143-5	M1681, M1771	40	10	20	1	2	egg daily
143-6	CJM1413, CJM1425	40		20	2	2	
		200	30	100			

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6. PREPARATION OF FRUIT, VEGETABLES & EGGS




6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
1	Bin
1	Chopping board
1	Knife
1	Smaller storage container for mealworms
1	Spoon
As required	Storage containers with lids
QUANTITY	CONSUMABLES
As required	Fruit & Vegetables, as per Daily Food Ration in Table 4
As required	Mealworms
As required	Peanuts in shells
As required	Pumpkin seeds


Table 2: Examples of foods that can be used for the Marmoset Daily Food Ration

FRUITS & VEGETABLES [#]	OTHER
Banana	Crickets
Beans	Mealworms
Berries – Blueberries, Boysenberries, Cranberries, Raspberries, Strawberries	Nuts
Broccoli	Seeds
Carrot	
Celery	
Corn	
Dried Fruits	
Grapes	
Kiwi Fruit	
Citrus – Mandarin, Orange	
Melons – Cantaloupe, Honey Dew Melon, Pawpaw	
Okra	
Pineapple	
Potato	
Pumpkin	
Star Fruit	
Sweet Potato	

[#] subject to availability

-  At MARP, Fruit and Vegetables are prepared a minimum of three times a week. Prepare each fruit and vegetable prior to its use, as required.
-  Berries, Dried Fruits and Grapes do not require any preparation.
-  All fruit and vegetables are washed when received from the supplier, prior to placing them in the refrigerator.

6.2 Fruit and Vegetable Preparations

 Remove all stickers from fruit and vegetables prior to beginning preparation.

- Collect preparation equipment required i.e. knife, chopping board, spoon, peeler, storage containers from storage.
- Specific Fruits and Vegetables are prepared as follows:

Table 3: Example of Preparation of Fruit and Vegetables

FRUIT OR VEGETABLE [#]	PREPARATION
Bean	Cut into lengths suitable for marmoset hands.
Broccoli	Cut broccoli into florets suitable for marmoset hands. Put into storage container and place in the refrigerator. <i>Prior to feeding par cook using the microwave, until just soft.</i>
Carrot & Washed Potato	Leave skin on and cut into cubes suitable for marmoset hands. Put into storage container and place in the refrigerator <i>Prior to feeding par cook using the microwave, until just soft.</i>
Citrus, Kiwi Fruit, Star Fruit & Okra	Leave skin on and cut into cubes suitable for marmoset hands. Put into storage container and place in the refrigerator
Mandarin	Peel, break fruit into segments and cut segments in half.
Melons including Cantaloupe, Honey Dew and Pawpaw	Remove skin and seeds. Cut into cubes suitable for marmoset hands. Put into storage container and place in the refrigerator
Pineapple	Remove skin and cut core out of the middle. Cut into cubes suitable for marmoset hands. Put into storage container and place in the refrigerator.
Pumpkin	Remove skin and seeds, and cut into cubes suitable for marmoset hands. <i>Prior to feeding par cook using the microwave, until just soft.</i>
Sweet Potato	Peel and cut into cubes suitable for marmoset hands. Place into storage container and place in refrigerator <i>Prior to feeding par cook using the microwave, until just soft.</i>

[#] MARP staff will ensure that a variety of options are available for the animals to consume. Some variations in the type of fruit and vegetables offered to the animals are subject to availability.

6.3 Egg Preparation

- Use Feeding Routine and Table 4 to determine how many eggs needed.
- Mix the required amount of eggs, using the blender until the whites and yolk are combined. Cook in the microwave until firm. Break egg up into small pieces that are able to be held by a marmoset.


 When cooking a larger number of eggs, you will need to cook for half the cook time, then stop the microwave and mix the part cooked eggs, and then cook for the remainder of the cook time.

Table 4: Cooking Eggs for Marmosets

NUMBER OF EGGS (LARGE SIZE 600-700g)	NUMBER OF ANIMALS TO FEED	MICROWAVE COOK TIME (APPROXIMATE- MAY VARY BETWEEN MICROWAVES)
1	8	45 seconds
2	16	1 minute 45 seconds
3	24	2 minutes
12	72	8 minutes
24	144	10 minutes







**7. PREPARING MARMOSET FOOD FOR DISTRIBUTION AT MARP**

7.1 The following equipment and materials are required to perform this procedure:



QUANTITY	EQUIPMENT
1	Chopping board
1	Food Preparation table
1	Knife
1	Scales
As Required	Microwave safe containers
1	Spoon
1	Two-tiered trolley
QUANTITY	CONSUMABLES
As Required	Eggs
As Required	Mealworms
As Required	Peanuts in Shells
As Required	Prepared Commercial Pelleted Diet
As Required	Prepared Fruit & Vegetables
As Required	Primate cake

Table 5: Example of Daily Food Ration for Marmosets [#] DAY OF THE WEEK	DAILY FOOD RATION ITEM
MONDAY	Banana, Carrot, Mandarin, Pumpkin Seeds
TUESDAY	Grape, Honeydew, Potato
WEDNESDAY	Banana, Sweet Potato, Kiwi, Peanut in shell
THURSDAY	Broccoli, Cantaloupe, Blueberries
FRIDAY	Banana, Pumpkin, Grape, Mealworms
SATURDAY	Kiwi, Sweet Potato, Blueberries
SUNDAY	Grape, Honeydew, Bean, Mealworms







[#] Subject to availability. Substitutions may occur.

-  Marmosets are fed 2 fruits and 1 vegetable daily.
 Plus, one of the following additional foods are usually fed every second day
 Nuts
 Seeds
 Insects, such as mealworms or crickets
-  At MARP  the Marmoset Feeding Routine for all rooms is located on the pin board next to the food preparation table.
-  Animals that are given any supplements, such as Egg, Primate Cake or Mealworms, are noted on the Marmoset Feeding Routine.
-  Mealworms are stored in refrigerator in  this is set at a warmer temperature of approximately 10°C



-  Mealworms must not be put into a refrigerator for food storage as the low temperature in a cool refrigerator will kill them
-  Discard any leftover food that has not been used.

7.2 Referring to Table 4, take out the prepared daily food ration required from the refrigerator or prepare according to Section 6

-  If feeding peanuts: give 1 nut per animal
-  If feeding pumpkin seeds; give approx. 5 seeds per individual
-  Bananas are cut on the day of use into 10mm slices
-  If feeding mealworms, give 3 mealworms per individual
-  If feeding eggs, give ¼ teaspoon per individual
-  If feeding primate cake, give 10g per individual. Ensure cake is crumbled into manageable pieces for a marmoset.


7.3 Pellets prepared in Section 5, will be located on the marmoset food preparation table

7.4 Completing one room at a time, set bowls out on the table in cage number order. Refer to Figure 3.



Figure 3: Bowl set out on the preparation table

7.5 Referring to the example in Table 1 Marmoset Feeding Routine, and the example in Table 5 Daily Food Ration table for the designated day of the week, place one serving of each daily food item, into each cage bowl for the total number of animals per cage.

-  The number of animals to feed for in each cage is specified in the example for Table 1, Marmoset Feeding Routine.

7.6 Note any extra supplements given to the cage as shown in the example for Table 1 on the Marmoset Feeding Routine.

This may include Primate Cake, Eggs and Mealworms. Place these required supplements into the specified bowls following the instructions in 7.2.

7.7 The example in Table 1 Marmoset Feeding Routine, will also specify many bowls are required for each cage. If more than one bowl, collect additional bowls and spread the total prepared diet between the number of allocated bowls.

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7.8 Place the bowls for each room in order on the 2-tiered trolley.

7.9 Repeat steps 7.4 – 7.6 for each room, until all of the food rations have been prepared for the day. Refer to Figures 4 and 5.



Figure 4: Example of food bowls ready for distribution



Figure 5: Food Bowls ready to be fed out on two-tiered trolley



Refer to PQMS3-MARP-SOP-0297 Washroom Operations Marmosets, regarding cleaning of any equipment used.



8. FOOD DISTRIBUTION AT

8.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
1	Two-tiered trolley
QUANTITY	CONSUMABLES
1	Prepared food in bowls



Marmosets can be fed their daily diet after any medical procedures or weighing has been completed for the day. This ensures marmoset technical procedures are done before food and animal weights are completed under the same conditions for statistical purposes.

8.2 Wearing the Task Specific PPE, collect the two-tiered trolley with prepared food bowls, and proceed to the animal room.

- With stainless steel cages, open bottom door of animal enclosure by twisting and removing the U pin off the hinge. By using the bottom door of the large internal breeding cages for access minimises marmoset's ability to escape, as these animals are arboreal.
- With white cages, remove the pin from the food bowl sliding door

8.3 Collect prepared food bowl/bowls from the two-tiered trolley. Place prepared food bowl into the cage food bowl holder, then close the door and ensure the lock/locking pins are in place. See Figures 6 & 7



Figure 6: Prepared food in food bowl holder in stainless steel cage



Figure 7: Prepared food in food bowl holder in white cages

8.4 If there are not enough food bowl holders, place one of the food bowls into the enclosure tray on top of the sawdust. The enclosure trays can be accessed by holding the latch up and sliding the tray towards oneself.

8.5 Continue until all marmosets have their food.

**9 FOOD DISTRIBUTION TO AA/ EXPERIMENTAL/PC2/BC2 AREAS AT [redacted]**

9.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
1	Two-tiered trolley
QUANTITY	CONSUMABLES
1	Prepared food in bowls

9.2 Collect two-tiered trolley with prepared food and proceed to room. Place trolley outside the room door, leading into the room.

9.3 Enter the room, and put on task specific PPE. Collect prepared food off the trolley and place onto work bench inside room.

9.4 Commence feeding marmosets. To open the food bowl holder on each cage, remove the pin and the turning door can be opened. Place the prepared food bowl into food bowl holder. Once finished close the door again ensure the locking pins are in place.

9.5 If there are not enough food bowl holders, place one of the food bowls into the enclosure tray on top of the sawdust. The enclosure trays can be accessed by sliding the tray towards oneself.

9.6 Continue until all marmosets in the room have their food.

Please follow any specific feeding order within the room.
i.e. feed companion “clean” animals prior to, on test animals.

10. FOOD PREPARATION AND DISTRIBUTION AT [redacted]

10.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
As required	Food bowls
1	Fork
1	Knife
1	Scales
QUANTITY	CONSUMABLES
As required	Prepared daily fruit and vegetables
As required	Primate Cake
As required	Prepared egg
As required	Commercial Pelleted Diet

At [redacted] the Marmoset Feeding Routine is located on the whiteboard in the kitchen area of [redacted] for the [redacted] facilities. This is updated frequently dependant on animal movements

Prepare Daily fruit and vegetables.
Refer to Section 6 - Table 3 “Example of Food Preparation” and
Section 7 - Table 5 “Example of Marmoset Daily Food Ration”.

Animals that are given any supplements, such as Egg, Primate Cake or Mealworms, are noted on the Marmoset Feeding Routine.

If feeding Primate Cake, feed at amount given on the area Marmoset Feeding Routine

If feeding mealworms, give 3 mealworms per individual

Bananas are cut on the day of use into 10mm slices



- 👉 If feeding pumpkin seeds; give approx. 5 seeds per individual
- 👉 If feeding peanuts: give 1 nut per animal (half a pod)
- 10.2 Prepare egg required. Refer to Section 6.3., Table 4.
- 10.3 The whiteboard will note the number of bowls and pellet quantities for the relevant information facilities. This is updated frequently, and is dependent on animal movements.
- 10.4 Use the scales to weigh out the Commercial Pelleted Diet per bowl.
 - ☐ The Commercial Pelleted Diet is located in a clear tub in the cupboard opposite the bench. Each animal receives 20g of Commercial Pelleted Diet along with the daily allocated fruit and vegetables, and any supplements required.
- 10.5 Clean bowls are located on the drying rack above the sink. You may need to collect the bowls from irrelevant information
- 10.6 One portion/piece of each daily food ration item is given per animal.
e.g. If there are 3 animals in the cage, 3 portions/pieces are given, etc.
- 10.7 Once all bowls are prepared and placed on the trolley ready for distribution.
- 10.8 Access to the food bowl is gained via a small flip door. Removed the pin and flip the bowl holder so the bowl is on the outer side, remove empty bowl and replace with prepared food bowl. Flip bowl inwards and close with the pin.
- 10.9 Dirty bowls and equipment are to be washed as per PQMS3-MARP-SOP-0050.
Cage Cleaning Marmosets at irrelevant information



11. MAKING MARMOSET HEHP DRINK

- 👉 HEHP Drink is made using a High Energy/High Protein supplement powder that has negligible or no lactose.
- 🐿️ Protexin is a multi-strain live probiotic that contains live beneficial bacteria. Benefits of using this probiotic include but are not limited to:
 - Improved utilization of food by increasing the efficiency of the existing digestive processes and/or by promoting the digestion of previously indigestible substances
 - Reduced intestinal dysfunction – this includes treatment and control of scouring or diarrhoea and the exclusion or suppression of pathogens E.coli, Salmonella and Aeromonas spp.
 - Improved health is generated by increasing resistance to infectious disease either by direct antagonism or by stimulating immunity
 - Establishment / Re-establishment of microflora
- 👉 Protexin soluble probiotic is given at a dose of 2g/animal in 10ml of HEHP daily. 400g Protexin Soluble per 2 litres of HEHP drink.
- 👉 Dose rate for Liquid Calcium Carbonate supplement is 0.25mL per 400gm animal. 50mL liquid Calcium Carbonate per 2L of HEHP drink.
- 👉 Dry ingredients can be prepared in advance and set aside in a dark cupboard for later use
- 👉 Once wet ingredients are added to the dry ingredients, it is used within 24 hours or as per the manufacturer's instructions.

- 11.1 The following equipment and materials are used for this procedure at MARP irrelevant information

QUANTITY	EQUIPMENT DETAILS
1	Refrigerator
1	Stick Blender
As required	2L & 3-5L Jugs
1	60mL syringe
1	Scales
QUANTITY	MATERIAL DETAILS
100g per 2L	High Energy/ High Protein Supplement Powder (kids Essentials)
50mL per 2L	Liquid Calcium Carbonate Supplement
400g per 2L	Soluble probiotic powder (Protexin Soluble)
To fill jug	Water




- 11.2 Weigh dry ingredients into a 3.25L jug
- 11.3 Using syringe, place 50mL Liquid Calcium Carbonate supplement into the dry ingredients in the 3 to 5L jug
- 11.4 Using 2L jug, collect 2L of cool water
- 11.5 Tip the water into the 3-5L jug with dry ingredients and mix well with the blender. HEHP is now ready for use.

 Refer to PQMS3-MARP-SOP-0297 Washroom Operations Marmosets if at MARP  for cleaning of equipment.

12. PREPARING HEHP DRINK FOR DISTRIBUTION AT


12.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
As Required	HEHP bowls
1	Two-tiered trolley
1	60mL sterile syringe
1	Marker
QUANTITY	CONSUMABLES
As Required	Prepared HEHP drink
As Required	Soluble probiotic powder (Protexin Soluble)

-  HEHP Drink is made using instructions in Section 11.
-  HEHP Drink is given to the marmosets in the afternoon.
-  On weekends HEHP Drink can be fed out to the marmosets at the same time as feeding the daily food ration

12.2 Collect small HEHP Drink bowls, 60ml syringe and prepared HEHP Drink. Following the example in Table 1 Marmoset Feeding Routine, lay out the number of bowls you require for the room.

12.3 Measure out the required volumes of HEHP Drink and place in each bowl.

-  To ensure the soluble probiotic powder is a uniform consistency in the jug, agitate regularly



- 12.4 Stack the bowls in cage order e.g. [redacted] to [redacted]. Label top bowl with Room number with a marker, and place on Two-Tiered Trolley. See Figure 8

☞ If there are 8 or more marmosets in the cage, divide the HEHP Drink over two bowls



Figure 8: Nectar bowls on two-tiered trolley

- 12.5 Repeat step 12.3 to 12.4 for every room on the Marmoset Feeding Routine.



PQMS3-MARP-SOP-0297 Washroom Operations Marmosets [redacted] for cleaning of any equipment used.

13 FEEDING OUT PREPARED HEHP DRINK AT [redacted]

- 13.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
1	Two-tiered trolley
QUANTITY	CONSUMABLES
1	Prepared HEHP Drink in bowls


- 13.2 Collect prepared HEHP Drink in bowls on two-tiered trolley and proceed to required animal room.
- 13.3 Starting at the first cage in the animal room, collect bowl from trolley.
- 13.4 Proceed to required cage and slide out tray from the enclosure. Place HEPE drink on top of the sawdust.
- 13.5 Slide enclosure tray closed and secure latch.
- 13.6 Repeat steps 13.3 to 13.5 until all marmosets have their HEHP Drink.

14. FEEDING OUT PREPARED HEHP DRINK TO AA/EXPERIMENTAL ROOM & [redacted] AT [redacted]

- 14.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
1	Two-tiered trolley
QUANTITY	CONSUMABLES
1	Prepared HEHP Drink in bowls




- 14.2 Collect two-tiered trolley with prepared HEHP Drink in bowls and proceed to room. Place trolley outside the door leading into the room.
 - 14.3 Enter the room, and put on task specific PPE.
 - 14.4 Collect prepared HEHP Drink bowls from the trolley and place onto work bench in the room.
 - 14.5 Proceed to required cage and slide out tray from enclosure. Place HEPE drink on top of the sawdust.
 - 14.6 Slide enclosure tray closed and secure latch.
 - 14.7 Repeat steps 14.5 to 14.6 until all marmosets have their drink.
-  Please follow any specific feeding order within the room.
i.e. feed companion “clean” animals prior to, on test animals.

15. CHECKING OF SUPPLIES FOR FOLLOWING DAY AT

- 15.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT
As required	Clean food Bowls
As required	Clean HEHP Drink bowls
1	Marker
QUANTITY	CONSUMABLES
As required	Protexin Soluble powder
As required	Prepared fruit and vegetables
As required	Mealworms
As required	Prepared HEHP drink
As required	Prepared Commercially Available Pelleted Diet
As required	Defrosted Primate cake

-  Prior to the end of each work day, supplies should be checked to ensure that food is ready for distribution the following day. By doing so, this has proven to be a more efficient use of time when managing the daily workload in the area.

- 15.2 Prepare any pellets required following the procedures in section 5.
- 15.3 Prepare any fruit, vegetables or eggs following the procedures in section 6
- 15.4 Check the refrigerator for primate cake. If there is an insufficient amount of primate cake for the following day, remove oldest container from the freezer. See Figure 9 for fridge and freezer locations.





Figure 9: Refrigerator (left) and freezer (right)


- 15.5 Using a marker, write on the Primate cake container date placed into refrigerator. See figure 10.
- 15.6 Defrost the primate cake in the fridge overnight.





Figure 10: Date made label and Placed in fridge label for primate cake

- 15.7 Check the cupboard for HEHP Drink jugs. If there is insufficient amount of dry ingredients for the HEHP drink weighed in the jugs for the follow day, prepare according to section 11.
- 15.8 Check the amount of the Soluble Probiotic Powder (Protexin Soluble), stored in the blue bins near the door of [REDACTED]
-  Please notify your supervisor, if down to one bag, so more can be ordered.
- 15.9 Ensure food and HEHP Drink bowls are washed and drying.
 Refer to PQMS3-MARP-SOP-0297 Washroom Operations Marmosets
- 15.10 If it is a Friday, or if the following work day is a public holiday, ensure that everything is prepared for the duration of the weekend or holiday period until we are back to regular working hours.

16 MAKING PRIMATE CAKE AT MARP


 The primate cake is given to animals that are unwell, not putting on sufficient weight or who have had surgery. It is also given to pregnant and lactating mothers.

 Primate cake has a shelf life of 3 to 5 days in the refrigerator and 3 months in the freezer, or as per the instructions of the manufacturer.

16.1 The following equipment and materials are used to make large Primate Cakes at 

QUANTITY	EQUIPMENT DETAILS
As required	PPE
1	Microwave
6	Microwave Safe Baking Dish
1	Scales
1	Food Processor/ Stick Blender
1	Mixing Spoon / Spatula
1	Stainless Steel Mixing Bowl
1	Marker
1	Knife
QUANTITY	MATERIAL DETAILS
24	Large Eggs
300mL	Sunflower Oil
1.75kg	Large Bananas
360g	Unsalted Peanuts
1.26 kg	Primate Meal Powder
300g	Brown Rice
300g	Coconut
300g	Rice Flour
300g	Sultanas
As Required	Filtered Water


- 16.1 Measure all dry ingredients into a container and place aside. This includes unsalted peanuts, primate meal powder, brown rice, coconut, rice flour and sultanas
- 16.2 Using the stick blender, mix all wet ingredients including eggs, sunflower oil and bananas in the stainless-steel mixing bowl until a puree consistency.
- 16.3 Slowly add dry ingredients to the puree and mix with spoon/spatula until combined. It should be like a cake batter consistency, if mixture is too dry add a little water to make mixture the correct consistency.
- 16.4 Place in the microwave and cook on High for 40 minutes.
- 16.5 Once cool enough to handle, cut in small portions and place in large sealable plastic container.
- 16.6 Using a marker, write the date made on the container. See figure 10, and store in the freezer until needed.
- 16.7 Clean all equipment used.

 Refer to PQMS3-MARP-SOP-0297 Washroom Operations Marmosets

17. Making Primate Cake at [REDACTED]

- 17.1 The following equipment and materials are used to make smaller amounts of primate cake at [REDACTED]

QUANTITY	EQUIPMENT NEEDED
1	Food Processor
Number required	Silicone Muffin Trays
QUANTITY	INGREDIENTS
4	Large Eggs
60mls	Sunflower Oil
3	Large Bananas
60g	Unsalted Peanuts
210 kg	Primate Meal Powder
50g	Rice
50g	Desiccated Coconut
50g	Rice Flour
50g	Sultanas

- 17.2 Blend the wet ingredients first, then add the dry ingredients.
- 17.3 Once all mixed together, spoon the mixture into the silicone muffin trays.
- 17.4 Cook for 6 minutes and then flip and cook for 2 minutes on the other side. Once cooked, leave out to cool.
- 17.5 Cut into half and then into 4 segments.
- 17.6 Clean and wash all equipment.
-  Refer to PQMS3-MARP-SOP-0050 Cage Cleaning Marmosets at [REDACTED]



18. ANIMAL MONITORING & WELFARE

- 18.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 18.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 18.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 18.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

19. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref no. 23851	Marmoset AREA Risk Assessment [redacted]
SARAH Ref no. 39409	MARP- Working with Large Animals and Non-Human Primates
PQMS3-MARP-SOP-0050	Cage Cleaning Marmosets at [redacted]
PQMS3-MARP-SOP-0058	Daily Duties - Marmosets
PQMS3-MARP-SOP-0132	Entry and Exit Procedures to Marmoset Facilities - [redacted]
PQMS3-MARP-SOP-0144	Entry and Exit Procedures for Marmoset Facility [redacted]
PQMS3-MARP-SOP-0153	Entry and Exit Procedures for Marmoset Facility [redacted]
PQMS3-MARP-SOP-0297	Washroom Operations Marmosets
EXTERNAL REFERENCES	
NHMRC Codes of Practice	Australian code for the care and use of animals for scientific purposes (8 th Edition – 2013)
NHMRC	Australian code for the care and use non- human primates for scientific purposes. (2016)

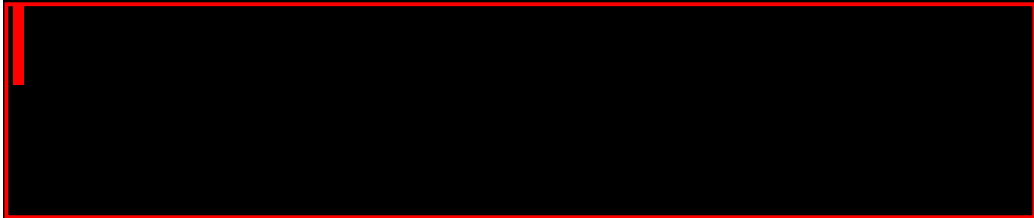


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Version no.	Date of Issue	Reviewed by: Name		Amendments		
1	23/03/2017	<div style="border: 2px solid red; padding: 5px; text-align: center; color: red; font-weight: bold;">Irrelevant Information</div>		Original document		
2	28/10/2019					Update to Animal Monitoring & Welfare statement
3	21/06/2022			Updated [redacted] Feeding and formatting		
						Changed approver from [redacted] [redacted] irrelevant information No changes to content of SOP. Corrected figure and table headings. Added a # subject to availability of the fresh fruit items statement -see table 3. Added OHS column to Document History Updated Document Authorisation and footer formatting Section 4: Updated Risk Assessment reference Added MARP_ working with animals. SaRAH Risk assessment. Updated first Aid information Section 19: Updated references

BREEDING MANAGEMENT IN MARMOSETS (01/06/2020)

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DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
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1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure used by staff for the pedigree maintenance and combining of marmosets for breeding.


1.2. Scope

This SOP is to be applied when setting up marmoset breeding pairs for breeding purposes.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

 PQMS-MARP-SOP-0147 Handling and Restraint in Marmosets,

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

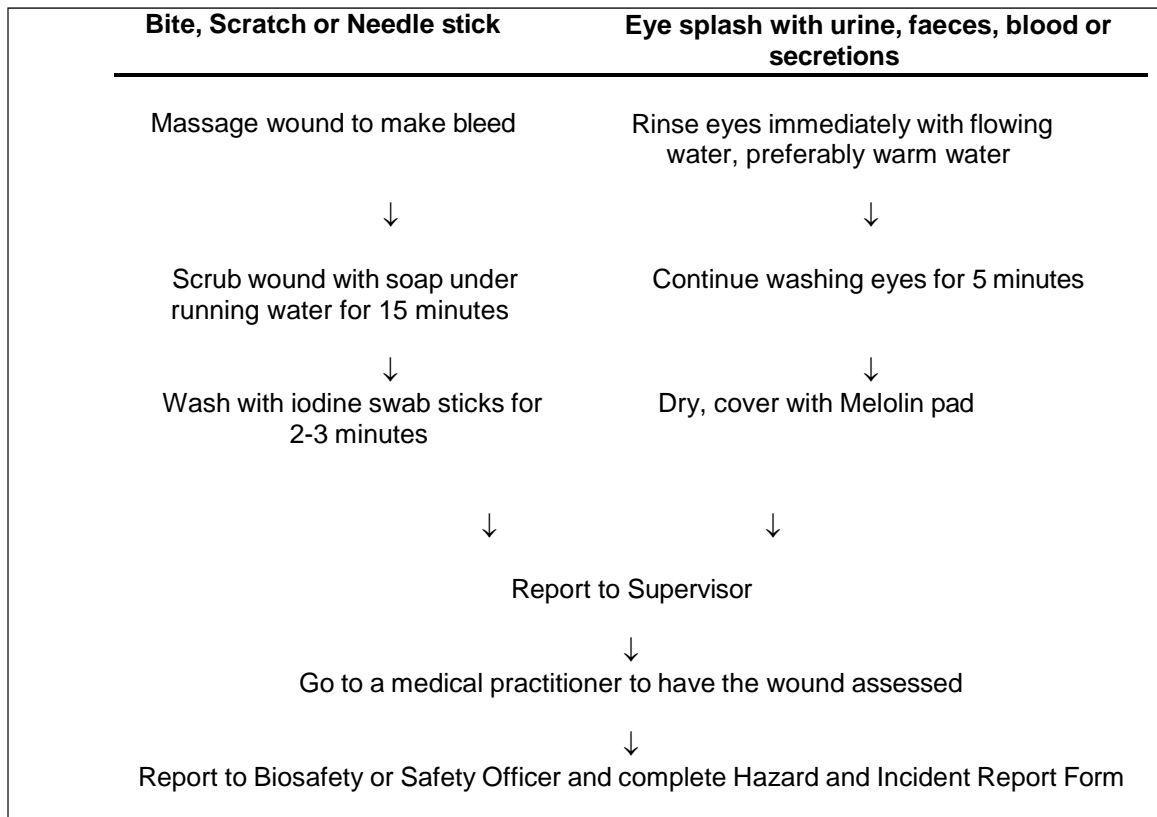
DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol
ED	Estrumtal Day
CRL	Crown to rump measurement
BPD	Biparietal Diameter
PD	Post Natal Day
UD	Uterine Diameter

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Specific health and safety considerations while performing this procedure are:

- PPE should be worn and adhered to at all times, appropriate for the task required.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office of relevant information of relevant information





5. GENERAL BREEDING INFORMATION

- In captive breeding colonies, marmosets are maintained in monogamous pairs. These pairs are usually set up between 18 - 24 months of age.
- Successful breeding pairs will breed on average every 155 days until the age of around 10 years of age +/- 2 years.
- The average gestation length is 145 days.
- Lactation lasts for 60- 90 days and the young start to take up solid food around 30 days of age.
- Breeder female marmosets do not show any delays in ovulation during lactation, with ovulation occurring typically 7 – 10 days post-partum.
- Marmosets are cooperative breeders. Young should be left with their parents until the next set of young is born and reared. The breeding male and older offspring in the family group participate in the raising and care of the younger offspring.
- Older offspring will not reproduce as long as the dominant male and female remain healthy and in control of the social structure. The younger females in the family group have their productivity suppressed by the breeding female, and do not ovulate.
- New pairs should not be set up in the same room as existing family members, as this suppresses ovulation. For example fathers and sons, mothers and daughters or same sex siblings from a family unit, should not be mated in the same breeding room.

6. SELECTING NEW BREEDING PAIRS

The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
NILL	
QUANTITY	MATERIAL DETAILS
As required	Animal records
As required	Genetic history

There are a number of factors which need to be considered when selecting a male or female for use in the breeding program. These may be as follows:

- 6.1 The genetic relationship to the proposed mating pair. All animals selected for pairing should be the most genetically diverse as possible. This is completed by looking into every animal's family tree and visually examining the data. In the case where inbreeding is only possible, the last 3-4 generations are tried to be kept as genetically diverse as possible.
- 6.2 Previous breeding history of the parents is examined. The reserve breeders are likely to be chosen from parents with the following;
- 50/50 sex ratio
 - Low still born rate
 - Low death rate
 - Good neonatal size born,
 - No deformities,
 - Least human intervention with neonatal feeds as possible
- 6.3 Characteristics of the reserve breeders to be kept may include:
- Size of the animals 350-450gms
 - Suitable body condition scoring
 - Temperament, especially for males. No aggressive traits are preferred.
 - No abnormalities or deformities
 - Age: consider when will they be the age at which they can be mated (18-24 months)
 - Veterinary examination of health history, and exclusion from specific disease.

7. DETERMINE THE NUMBER OF BREEDING PAIRS

The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Calculator
QUANTITY	MATERIAL DETAILS
As required	Knowledge of future animal orders

The number of breeding pairs and the number of reserve breeders kept per calendar year is determined by the number of offspring the colony needs to produce for orders each year.

An example:

140 animals are required for orders in one calendar year

140 (number animals required for orders) = 70 litters for the year required
2 (average number of animals born per litter)

70 (number of litters required for the year)
2 (number of litters a pair can produce in one year) = 35 pairs required

Now calculate the reserve breeders required that need to be reserved annually;

35 pairs required for orders
7 years (approx. number of years animals are breeding 6-8) = 5 pairs

Therefore 5 breeding pairs may be required to change over annually.

To do this, 5 pairs or 10 animals are required as reserve breeders per year in addition to the number required for orders.

To achieve this another 2.5-3 pairs would need to be breeding for the year
Making total number of pairs required for orders and reserve breeders = 38 pairs.

8. COMBINING MARMOSETS FOR MATING

The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
2	Combination cages (on dolly trolleys)
QUANTITY	MATERIAL DETAILS
4	Towels
8	Pegs
2	Nest boxes
2	Water bottles
As Required	Task Specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

8.1 Separate the reserve breeder male and female from family unit or social house.

8.1.1 Collect two combination cages from the marmoset store room Irrelevant and take to appropriate marmoset rooms.

8.1.2 Remove nest box from family unit or social house, and place into clean combination cage. This is so there is something familiar for the separated animal in the new cage.
Replace the nest box in the family unit or social cage with a clean nest box.

8.1.3 Put a clean water bottle onto the combination cage.


8.1.4 Don appropriate PPE for handling marmosets and catch reserve breeders required according to SOP. Place animals into combination cages.

 PQMS-MARP-SOP-0147 Handling and Restraint in Marmosets

8.1.5 The cage housing the reserve breeder animal should be placed longways against the larger family or social cage.

8.1.6 Place towels attached with pegs on the shorter sides of the combination cage. This is so the animals in the cages next door are unable to visually see the newly separated animal.

8.1.7 The diet being fed to the reserve breeder should be the same as what is being fed to the family. This can be assessed during the next monthly weigh.

 Update Feeding Routine and labtracks animal records with changes.

 PQMS3-MARP-SOP-0392-Labtracks Basics

8.1.8 Leave Reserve Breeder animals in front of their family or socialisation cage for one week to acclimatise to the new separation.

8.3 After one week, place the male into a large breeding cage.

8.4 Wash used combination cage in wash area following SOP


 PQMS3-MARP-SOP-0297 Animal Washroom Operations Marmosets Irrelevant


8.4 With the female reserve breeder still in her combination cage, Place the cage longways against the male's cage, ensuring the animals cannot reach each other through the wire. See Figure 1 below.



Figure 1: Male being introduced to female

8.5 After a minimum of a week, assess if the new reserve breeders appear to be getting along well through the cage wire.


 The animals should be approaching each other in a calm manner, showing interest in each other's activities, lip smacking and licking towards each other, bright eyed, minimal pilo erection of the fur and tufts flat.

 Observe for any negative behaviours, this would include slit staring, pilo erection of the fur, deliberate jumping towards each other in attempt to over dominate, tuft flicking, and aggressive vocalisations.

8.6 If non-aggressive behaviours are being displayed, the animals are ready for mating. To do so catch female as per SOP, and place her into the male's cage.

 PQMS-MARP-SOP-0147 Handling and Restraint in Marmosets

8.7 Provide two water bottles and two food bowls when feeding the newly mated pair. This will provide the pair or new family a choice of feeding and water stations, minimising and dominance issue over food and water supply.


 Update Feeding Routine and labtracks animal records with changes.


 PQMS3-MARP-SOP-0392-Labtracks Basics


8.8 Wash the female's used combination cage in the wash room according to SOP

 PQMS3-MARP-SOP-0297 Animal Washroom Operations Marmosets 

8.9 Once mated, there are some additional things to consider as per below;

 Do not allow the newly combined mating outside for the first 3 days after combination to ensure that they are getting along well with each other.

 It is can be quiet apparent within the first four hours if the newly combined marmoset pair are compatible with each other by observing their behaviour for aggressive or non-aggressive displays as noted in section 8.5

 The extra food bowl and water bottle can be removed if necessary after 2 weeks.

9. HOW TO INTRODUCE A NEW BREEDER TO AN EXISTING FAMILY UNIT

The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Combination cage (on Dolly trolley)
QUANTITY	MATERIAL DETAILS
2	Towels
4	Pegs
2	Nest boxes
2	Water bottles
As Required	Task Specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

- Occasionally one of the reproductive animals from a breeding pair will die or require removal for other reasons. If the remaining breeder was performing well and is in good health, it is often beneficial finding a new mate and continuing the breeding of the genetic line.

- 9.1 Following criteria in section 6, select a new animal for breeding from the stock pool or reserve breeder list.
- 9.2 Examine what individuals remain in the family unit. If it is a female and young, wean all offspring over the age of 11 months together into same sex groups.
 - If the female has neonates, ensure the neonates are over 3 months of age before introducing a new male.
 - Ensure the female is not pregnant prior to the new male introduction. See section 10 on Palpation.
- 9.3 Follow procedures outlined in section 8 to wean or separate and introduce new breeder to the existing breeder and potential family.
- 9.4 Once mated, there are some additional things to consider as per below;
 - Provide two water bottles and two food bowls. This will provide the pair or new family a choice of feeding and water stations, minimising and dominance issue over food and water supply.
 - Do not allow the newly combined animals outside for the first 5-7 days after combination, to ensure that they are getting along well with each other.
 - The extra food bowls and water bottle can be removed if necessary after 2 weeks.
 - It can be quiet apparent within the first four hours if a newly combined Marmoset's are compatible with each other by observing their behaviour for aggressive or non-aggressive displays as noted in section 8.5

10. HOW TO CONFIRM PREGNANCY IN MARMOSETS FOR GENERAL BREEDING IN THE COLONY

The following equipment and materials are required to perform this procedure:


QUANTITY	EQUIPMENT DETAILS
1	Callipers
QUANTITY	MATERIAL DETAILS
As required	Task Specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask

- Pregnancy in the marmoset can be determined from 35 days after a new pair has been established, or from 45 days post parturition.
- The normal size of the marmoset uterus of a non-pregnant female can be 5-6mm.
- At the gestation age of approx. ED35, the uterus size can be approx. 8-10mm.

10.1 Using the marmoset palpation spreadsheet, determine what females are due for palpation for the week.

 Refer to PQMS3-MARP-FRM-0130 Marmoset Palpations

10.2 One technician catches the female required as per the SOP

 PQMS-MARP-SOP-0147 Handling and Restraint in Marmosets

10.3 Once the marmoset is resting with it's back in the palm of the handlers hand as demonstrated in figure 2, a second technician can use their index finger and thumb to carefully feel the uterus and potential foetus in the abdomen.




Figure 2: Marmoset restraint and digital palpation

10.4 If pregnant, a measurement can now be taken of the uterus size using the callipers. See Figure 3




Figure 3: Measuring uterus size using callipers

- 10.5 References such as the following can be used to determine the approximate gestation or estrumatal day.

 American Journal of Primatology 36:1-13 Detection of Pregnancy and Monitoring Patterns of Uterine and Foetal Growth in the Marmoset Monkey (*Callithrix jacchus*) by Real-Time Ultrasonography. Page 5 Fig 3a


- 10.6 Once the short procedure is completed, return the marmoset to her enclosure, offering some sultanas or mealworms as a reward as per SOP.

 PQMS-MARP-SOP-0147 Handling and Restraint in Marmosets

11. HOW TO CALCULATE THE ESTIMATED DATE OF CONCEPTION AND ESTIMATED DUE DATE FOR MARMOSETS IN THE BREEDING COLONY

The following materials are required to perform this procedure:

QUANTITY	MATERIAL DETAILS
As required	Information obtained from section 10

 Determining the estimated due date of Parturition is helpful for planning purposes in the colony. This includes client neonate usage for orders, and staffing over peak or holiday periods.

- 11.1 Using the estimated uterus size and estrumatal day obtained in section 10.0 as an example, determine the estimated date of conception:

- The Approximate gestation or estrumatal day was : EED35
- Today's date: 08/06/2015 or 159/15 in Julien dates
- Subtract 35 from today's date: $159 - 35 = 124/15$
- 124/15 or 4th May 2015 was the estimated date of conception

- 11.2 Using the estimated date of conception in section 11.1, determine the estimated due date, or estimated date of partition:


- Estimated date of conception: 124/15 or 4th May.
- Add on 145 days of gestation


- c) Estimated due date is 269/15 or 26th September


12. HOW TO CONFIRM GESTATIONAL DAY OR ESTRUMATAL DAY FOR TIMED MATED DISPATCH

The following equipment and materials are required for this procedure:


QUANTITY	EQUIPMENT DETAILS
1	Ultrasound and veterinarian
1	Gaseous anaesthetic machine set up for marmosets
1	Clippers
QUANTITY	MATERIAL DETAILS
1	Bluey or absorbant pad
As required	Ultrasound Jelly
As	Gaseous anasethetic
As required	Swabs
As Required	Task Specific PPE - Examination Gloves, Hexamour Gloves, Hexamour Arm Guard, Safety Glasses, P2 Mask


 Females used for timed mated dispatch can have an ultrasound completed by the Veterinarian. The information obtained may be CRL and BPD measurements. By using these measurements, a more accurate due date, conception date, and date for harvest of C-section may be determined. The number of foetuses present is also of particular importance to the client.


 Ultrasound can be safely completed in the second trimester ED48-96, as there may be less risk of miscarriage or spontaneous abortion.


 In most cases, CRL can be measured until approx. ED90 and BPD only after this date.

 Examples of references for growth data graphs used can be the following;


 American Journal of Primatology 36:259-275 (1995)
Use of Ultrasound to Monitor Prenatal Growth and Development in the Common Marmoset (*Callithrix jacchus*)

 American Journal of Primatology 36:1-13
Detection of Pregnancy and Monitoring Patterns of Uterine and Foetal Growth in the Marmoset Monkey (*Callithrix jacchus*) by Real-Time Ultrasonography


12.1 Obtain the required female marmoset from her enclosure according to SOP
 PQMS-MARP-SOP-0147 Handling and Restraint in Marmosets

12.2 Proceed to location of the gaseous anaesthetic machine, and assist the veterinarian with gaseous anaesthesia procedures and monitoring according to SOP
 PQMS-MARP-SOP-0272 Gas Anaesthesia in Marmosets


12.3 To commence the ultrasound procedure, excess hair from the abdomen is removed as necessary using clippers, and discarded into the biomedical waste bin.

- 12.4 The veterinarian will apply ultrasound jelly to the abdomen as required, and collect the images and measurements.
- 12.5 The technician will now record the following information obtained by the veterinarian:
- Number of fetuses / heartbeats
 - CRL of each foetus (depending on gestation)
 - BPD of each foetus (depending on gestation)
- 12.6 Upon completion of the procedure; the females' abdomen is wiped free of any excess ultrasound jelly using a swab and discarded into the clinical waste pail.
- 12.7 Wearing tasks specific PPE as required the female is held until her reflexes have returned to normal, and she is able to go back to her enclosure as per SOP. Sultanas can be offered to the family unit as a reward.
-  PQMS-MARP-SOP-0147 Handling and Restraint in Marmosets
- 12.8 Using the CRL or BPD measurements obtained during the scan, a more accurate gestation or estrumatal day can be determined for the client.

Some examples of the growth charts that can be used for determining the gestation or estrumatal day of the foetuses can be seen in the following references;


 American Journal of Primatology 36:1-13 Detection of Pregnancy and Monitoring Patterns of Uterine and Foetal Growth in the Marmoset Monkey (*Callithrix jacchus*) by Real-Time Ultrasonography. Page 9 Fig 7a

An example to determine the gestation or ED using BPD:
 Measurement obtained was 14mm
 On the graph: This is equivalent to ED110

 American Journal of Primatology 36:259-275 (1995)
 Use of Ultrasound to Monitor Prenatal Growth and Development in the Common Marmoset (*Callithrix jacchus*) Page 267 Fig 6

An example to determine the gestation or ED using CRL:
 Measurement obtained was 23mm
 On the graph: This is equivalent to ED80 (using the line of best fit)

- 12.9 If the marmoset is being dispatched, a suitable time to relocate her in within her pregnancy should be discussed with the client and veterinarian.

 In most situations the safest time to relocate a pregnant marmoset can be in the second trimester of pregnancy.

13 HOW TO DETERMINE THE HARVEST DATE FOR CLIENTS:

The following materials are required to perform this procedure:

QUANTITY	MATERIAL DETAILS
As required	Information obtained from section 12


- By using the information obtained from the ultrasounds in section 12, the estimated date of conception and date of harvest can be determined for a client.

- 13.1 Using the information obtained in section 12.0 as an example, determine the gestation/estrusmatal day using either CRL or BPD measurements:
- For twins, obtain each CRL (Or BPD) measurement ie: 7.5mm and 8mm
 - Take an average of the two measurements:

$$\frac{7.5 + 8.0}{2} = 7.75\text{mm average CRL}$$
 - Determine 7.75mm on CRL graph = ED85 gestation.
- 13.2 Using the gestation in section 13.1, determine the date of conception:
- Today's date: 08/06/2015 or 159/15 in Julien dates
 - Subtract 85 from today's date: $159 - 85 = 74/15$
 - 74/15 or 15th March 2015 was the date of conception
- 13.3 Using the date of conception in section 13.2, determine the Due date, or date of parturition:
- Date of conception: 74/15 or 15th March
 - Add on 145 days of gestation: $74 + 145 = 219/15$
 Due date is 219/15 or 7th August 2015
- 13.4 Using the date of conception in 12.2, a harvest date for the client can be calculated:
- Date of conception 74/15 or 15th March 2015
 - Date required by client for harvest is ED110
 - Using date of conception 74/15 add on 110 = 184/15
 - Harvest date at ED110 is 184/15 or 3rd July 2015

TROUBLESHOOTING: If there are any discrepancies with the estrusmatal day or date of gestation once the harvest is completed, ask the client to complete measurements of different body parts of the fetuses. This can include trunk, limbs, head and tail. Measurements of organs could also be completed as required.

Using a third reference listed below, this document details the size of body parts and organs at different gestational ages and can be used as another tool to determine gestation at the due harvest date:

-  Journal of Zoology. London (1985 and 2009) V:207, 545-561
 Embryonic, foetal and placental development in the Common Marmoset Monkey (*Callithrix jacchus*)

14 HOW TO PREPARE FOR PARTURITION IN MARMOSETS


The following materials are required to perform this procedure:

QUANTITY	MATERIAL DETAILS
1	Marmoset Palpation form listed below
As required	Heavy Pregnant Signs



It is important to know when marmosets are expected to birth so staff can be more vigilant and complete additional checks on females that are heavy pregnant as required.

- 14.1 Referring to the Marmoset Palpations list, observe females due to birth in the next two to three weeks.

 PQMS3-MARP-FRM-0130 Marmoset Palpations


- 14.2 In the top draw of the marmoset treatment table in AS131, obtain a blue sign that reads "HEAVY PREGNANT"

- 14.3 Place sign onto breeder cage, using blu-tac or double sided tape. See Figure 4 below



Figure 4: Birthing sign on marmoset breeder cage

- 14.4 Once a female has birthed, refer to the following SOP for care of the Neonates

 PQMS3-MARP-SOP056 Specialised Care of Neonates

15 CRITERIA TO REMOVE MARMOSETS FROM THE BREEDING PROGRAM

The following materials are required to perform this procedure:

QUANTITY	MATERIAL DETAILS
As required	Labtracks Records
As required	Stud books

- Marmoset pairs should be routinely assessed by looking at the performance of each pair.
- Every pair as assessed individually.

15.1 Using animal records in labtracks, and stud book on the producing pair, observe the breeding statistics of the pair and growth of their neonates.




15.2 The following list is used as an example to determine when an animal or pair should be removed from the breeding program based on their performance.

- 3 litters of miscarriage
- 3 litters of all still born neonates
- 3 litters of all neonatal deaths
- 3 litters of singletons
- 3 litters of having to assist every day with neonatal feeds for twin or singleton litters (triplets and quadruplets exempt)
- 3 litters of twin neonates, unable to thrive without human intervention after 2 weeks of age
- 3 litters of quadruplets in breeding life (labour intensive)
- > 8 months without producing a litter (especially if newly paired)
- Illness or deformity that affects future genetics
- Overly aggressive behaviour traits that have developed whilst breeding
- Breeders that are 10 years of age or have been breeding for 6-8 years.
- If either of the breeding pair has reached a humane endpoint, such as euthanasia.

16 INFORMATION REGARDING WEANING OF MARMOSETS

The following equipment and materials are required for this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	Labtracks records
QUANTITY	MATERIAL DETAILS
	NILL

- Most marmosets will start trying solid food at 4 weeks of age; however they are still dependant on their mother's milk at this age. Full self-weaning may not take place until they are 3-4 months of age or approximately 60-150gms.
- In a large family unit when a third or fourth litter is born, the oldest litters can be removed into same sex groups. Every family group is considered on an individual basis, and it can be recommended to wean multiple animals of the same sex together at the same time.
- It is not recommended to remove young marmosets from the family group without the opportunity of baby raising experience if their future involves breeding. It is thought that behaviour associated with caring for newborns could be a learned behaviour from their parents, and thus is important for the future of successful breeding in the facility.
- Physical weaning of marmosets can occur at any stage in a colony, as each family unit is individual. An animal may be weaned earlier than expected due to fighting, being issued, or parent removal.
- The procedure to wean marmosets, is the same as removing a reserve breeder in section 8.1 to 8.1.8.
- If weaning is a result of fighting it may not be possible to leave the combination cage directly in front of the family cage for the week, as the stress of being directly in front of each other may be intimidating for those involved in the fighting.
-  It is advised to keep Neonates under the age of 6 months with the mother
-  For neonates between the ages of 6 to 12 months that are unable to be housed with their mother, it is recommended they are housed with an older sibling or their father. If the older sibling or father is the opposite sex to the juvenile, they should be separated from each other once the juvenile is 12 months of age to prevent undesirable pregnancy.
-  Newly separated, moved or weaned individuals should always be observed for separation anxiety. These behaviours include; uncharacteristic individual behaviour, not eating, not drinking, loss of weight, unusual vocalisation, tail flicking and hair loss particularly on the back legs extending to the tail. If any of these behaviours are seen, it may be beneficial leave the animal in front of it's family for another week to acclimatise, or determine if there may be another stressor in the animal room causing the distress.
- Animals that are being dispatched from the facility do not usually have a weaning or separation procedure completed unless requested by the researcher.

17 ANIMAL MONITORING & WELFARE

- 16.1.** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 16.2.** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 16.3.** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 16.4.** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0297	Animal Washroom Operations Marmosets SECRET
PQMS3-MARP-SOP-0147	Handling and Restraint in Marmosets
PQMS3-MARP-FRM-0130	Marmoset Palpations
PQMS3-MARP-SOP056	Specialised Care of Neonates
EXTERNAL REFERENCES	
American Journal of Primatology 36:1-13 Detection of Pregnancy and Monitoring Patterns of Uterine and Foetal Growth in the Marmoset Monkey (<i>Callithrix jacchus</i>) by Real-Time Ultrasonography.	
American Journal of Primatology 36:259-275 (1995) Use of Ultrasound to Monitor Prenatal Growth and Development in the Common Marmoset (<i>Callithrix jacchus</i>)	
Journal of Zoology. London (1985 and 2009) V:207, 545-561 Embryonic, foetal and placental development in the Common Marmoset Monkey (<i>Callithrix jacchus</i>)	

DOCUMENT HISTORY			PQMS3-MARP-SOP-0389-V2.docx
Version no.	Date of Issue	relevant information	Amendments
1		relevant information	Original Document
2	01/06/2020		Update to Animal Monitoring & Welfare statement Revise and edit document

HEALTH MONITORING IN MARMOSETS (17/02/2022)

PQMS3-MARP-SOP-0447-V3.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from Date of Issue
Irrelevant Information	11-Mar-2022 1:15 PM AEDT
	11-Mar-2022 1:27 PM AEDT
	11-Mar-2022 1:35 PM AEDT

1. INTRODUCTION**1.1. Purpose**

The purpose of this Standard Operating Protocol (SOP) is to outline the health monitoring processes within the Marmoset Colony at Monash Animal Research Platform.





1.2. Scope

This SOP is to be applied for all animals within the Marmoset Colony, by all staff working with Marmosets at Monash Animal Research Platform.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and approved competency in the following training prerequisites:

-  PQMS3-MARP-SOP-0147 Handling and Restraint in Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets
-  PQMS3-MARP-SOP-0193 Animal Records Marmosets
-  PQMS3-MARP-SOP-0273 Weighing Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.



Operators are responsible for following instructions covered in this protocol and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
ml	millilitre
NHP	Non Human Primate
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference Document
SOP	Standard Operating Protocol
TB	Tuberculosis
PCR	Polymerase Chain Reaction is a method to analyse a short sequence of DNA or RNA. It is used to amplify selected sections of DNA or RNA within a given sample.

4. HEALTH AND SAFETY CONSIDERATIONS

4.1 A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure. Persons performing this SOP must have read and understood the following documents:

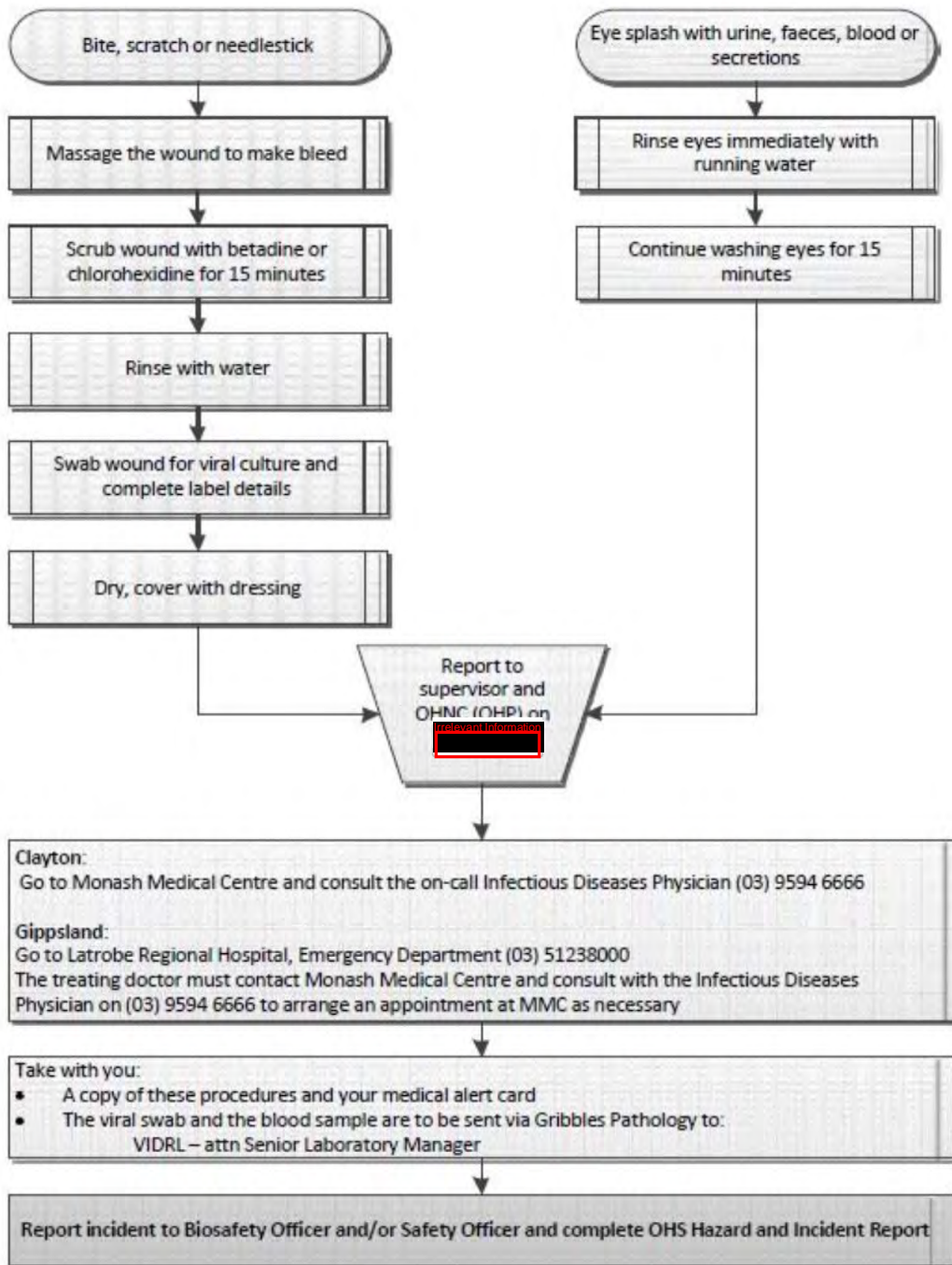
-  PQMS3-MARP-RA-0160 Marmoset Area Risk Assessment relevant information
-  PQMS3 – MARP-SOP-0132 Marmoset Entry and Exit

4.2 Specific health and safety considerations while performing this procedure are:

- Marmosets are unpredictable. Staff should always be cautious in handling these animals as they are very protective of their families.
- Staff should constantly be aware of the animals in the enclosure by monitoring their behavior, without turning their back.
- The ladder and capture nets are stored outside of the animal area. Do not bring nets or ladders into the animal area, unless they are in use, as this will cause adverse behavior in the animals.
- Staff working with NHPs must be up to date with the following vaccination schedules:
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quanterferon Gold Tuberculosis Screening.
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Staff must have completed the Marmoset Training and Induction Program.
- Refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office relevant information of relevant information for Material Safety Data Sheets on any of the chemicals used in the SOP.


- Staff must be aware of first aid precautions following a scratch or bite from a marmoset.

4.3 First Aid Precautions:




5. MONITORING & WELFARE ENDPOINTS OF NEONATES

- 5.1** Neonate singles and twins are examined and weighed on a daily basis from birth to two weeks of age. Neonates are assessed on their weight gain/loss, their ability to grip and suckle and physical abnormalities.

 Refer to PQMS3-MARP-SOP-0056 Specialised Care of Marmoset Neonates

As described in Section 13 of this document, place any neonates showing signs of ill health and that have been assessed to have the ability to be able to recover into the designated humidicrib. These neonates are to be supplementary fed, but if they fail to recover within a period of 4 hours, they have reached a welfare endpoint and should be euthanased.

- 5.2** From two weeks of age, single and twin neonates are individually weighed and examined weekly until two months of age. For further information refer to the following document.

 PQMS2-MARP-SOP-0273 Weighing Marmosets.

- 5.3** Triplets and Quadruplets are examined individually and weighed on a daily basis from birth until up to approximately three months of age.

- 5.5** Specific endpoints for neonates include:


- Inability to grip carrier in cage situation. This may be after 4 hours of treatment in the humidicrib.
- Lack of suckling reflex.
- Hypothermia. This may be after 4 hours of treatment in the humidicrib.
- Comatose or moribund.
- Cannibalisation.
- Weight loss of weight or failure to grow after a period of 3 days of supplementation.
- Physical birth defects.
- Breathing difficulties.
- Orphaned with no family to provide care.
- Major injury eg: fractured limb, head injury.

- 5.6** As detailed in the following sections, routine health monitoring of marmosets over two months of age, includes:

- Weighing and conducting a physical exam approximately once every five weeks.
- TB testing of one animal per cage annually.
- Blood and faecal testing as indicated by weight loss criteria.

6. PHYSICAL EXAMINATION OF MARMOSETS OVER 2 MONTHS OF AGE

- 6.1** Marmosets over two months of age should be weighed and then physically examined once every five weeks.
- 6.2** Catch each marmoset from the cage and then measure and record weight according to the following protocol:

 PQMS2-MARP-SOP-0273 Weighing Marmosets.

- 6.3** Record the weight in Labtracks. The weight is recorded as part of the physical examination record in Labtracks by the following pathway:
>Clinical Manager
>Procedures
>Physical Examination
>Add

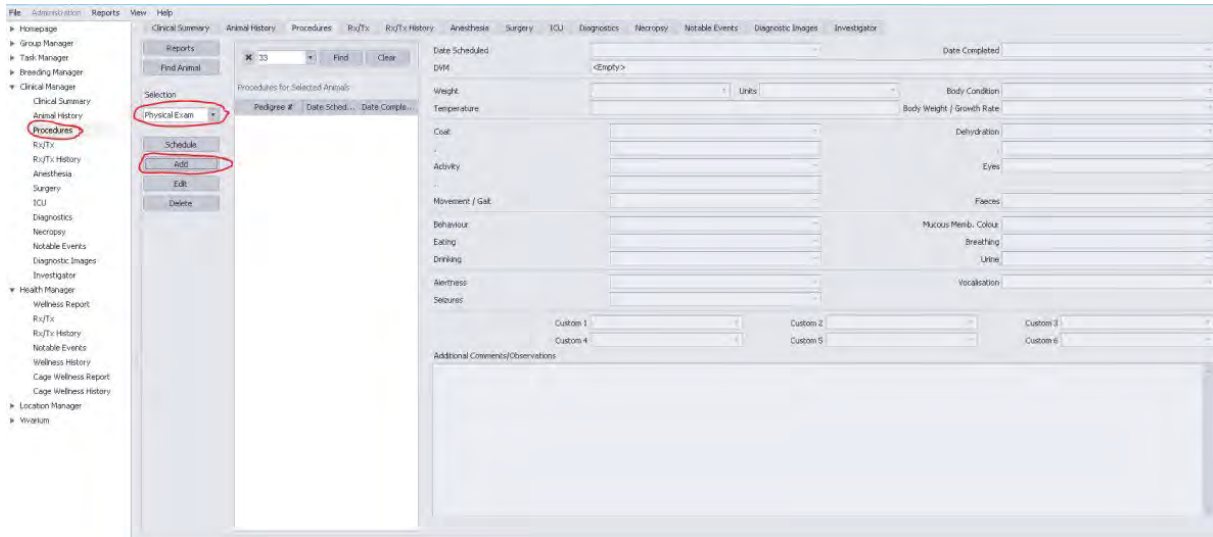




Fig 1: Recording Physical Examination on Labtracks

- 6.4** Calculate any weight change from the previous weigh and record this calculation.

Once the marmoset has been weighed, conduct a physical examination using the following references:

-  PQMS3-MARP-REF-0509 Non-Human Primate Monitoring.
-  PQMS3-MARP-REF-0512 Body Condition Scoring in Non Human Primates

The physical examination should include attention to the following areas:

- Check limbs, tail and extremities.
- Check perineal area for signs of diarrhoea or vulval discharge.
- Palpate abdomen for possible pregnancies, note any masses or other abnormalities.
- Examine the head, in particular, eyes, ears, nose and oral cavity.

- 9.4** Complete the Physical Examination Record in Labtracks, recording observations for body condition, growth rate, activity, movement/gait, behaviour, eating, drinking, alertness, seizures, extremities, surgical wound, tail, nose teeth, dehydration, eyes, faeces, mucous membrane colour, breathing, urine and vocalisation. Report abnormalities to the Supervisor and Veterinarian as required.

New Procedure - Physical Exam

Pedigree # 1891 Species Marmosets Sex Female User irrelevant

Date Scheduled* 1/05/2018 Date Completed 1/05/2018

DVM* <Empty>

Weight [] Units [] Body Condition Normal

Temperature [] Body Weight / Growth Rate Normal

Coat Normal Dehydration Normal

Activity Normal Eyes Normal

Movement / Gait Normal Faeces Not Examined

Behaviour Normal Mucous Memb. Colour Normal

Eating Not Examined Breathing Normal

Drinking Not Examined Urine Not Examined

Aierness Normal Vocalisation Normal

Seizures Normal

Extremities 1 Tail 0 Teeth 1

Surgical Wounds 0 Nose 0 Colitis []

Additional Comments/Observations
 Loose LU incisor tooth. Bite wound to 3rd finger, left hand


Add Event Apply Normal OK Cancel

6.5 In cases where weight loss is recorded the following actions are taken:

- Any % weight loss → provide increased amounts of foods favoured by the individual, for example banana, grapes, eggs, mealworms etc
- 3% body weight loss → Give 5 grams of Recouperation Cake per marmoset in the cage when feeding daily ration.
- 4% body weight loss → Give ½ teaspoon of egg plus 2 mealworms per marmoset as source of protein in the cage in addition to the Recouperation Cake and daily feed ration.
- 5% or greater body weight loss → Give 0.5ml Nutrigel® once daily, provide further supplementation with Vytrate® in addition to previously listed supplements and feed ration and weigh the marmoset weekly.
- 10% or greater bodyweight loss → a Wellness report is completed on Labtracks and the MARP Veterinarian notified. Blood and faecal tests may be requested by the MARP Veterinarian for further health assessment.

6.6 In some instances, food waste monitoring may be requested by the MARP veterinarian and/or Area Supervisor. This may be used to provide information on what the animals in the cage are eating in weekly food cycle, and determine any food preferences or aversions. The diet can then be modified to incorporate these individual preferences and requirements.

Animals on the treatment list are monitored daily by MARP staff and given any medications, as prescribed by the MARP Veterinarian.

 In cage monitoring and supplementation should be recorded daily,

Any animal receiving treatment that requires closer inspection on days other than weighing day, will also have a full assessment completed. Full assessment including weighing is carried out weekly at a minimum and recorded on Labtracks^{6.7}. The following criteria must be following as part of the assessment program:

- An animal that has gained or maintained weight for three consecutive weeks is put onto visual checks for one week. If bodyweight is maintained, after a week of visual checks, they are removed from the treatment list.
- Any animal that relapses on weight loss and returns to the treatment list for supplementation three times within a twelve month period, is reported to the MARP Veterinarian for assessment for having chronic health issues.
- Any animal that continues to lose weight or fails to respond to treatment will need further assessment by the MARP Veterinarian.
- Refer to the following sub section for the identification of humane end points.

9.8 Humane End Points:

Any animal that reaches any of the following end points will be euthanased:

- Moribund/Comatose – little/no response to stimulation/handling.
- No voluntary food intake over 48 hours.
- Seizures lasting > 10 minutes OR recurrent seizures without regaining consciousness for more than 5 minutes.
- Body Condition Score of one.
- Laboured, irregular breathing.
- Paralysis of 1 limb > 48 hours / Paralysis of two limbs.
- Organ failure as determined by blood tests.
- Failure to regain consciousness > 6 hours post anaesthesia.
- Evidence of brain damage > 12 hours e.g. blindness, circling, or severe incoordination preventing movement around cage safely.
- Any acute or chronic condition that impacts upon the welfare of the animal that euthanasia is advised by the MARP Veterinarian or Animal Welfare Officer.
- Major Injury i.e. fractured limb, head injury.
- Hypothermia (this may be after 4 hours of treatment in the humidicrib).

7. ROUTINE HEALTH MONITORING - TB TESTING

7.1. Background:

The Mantoux test or TB skin test, is commonly used to determine exposure to TB bacteria. A small amount of tuberculin is injected intra-dermally. The test is read 48 and 72 hours after the injection.

If there is swelling where the tuberculin was injected, the swelling will be measured, and this will determine if the reaction is positive or negative. A positive reaction may mean that the marmoset has been exposed to TB bacteria.

7.2. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Trolley
1	Clippers
QUANTITY	MATERIAL DETAILS
As required	Tuberculin
As required	0.3ml Insulin Syringes



- 7.3. Prepare Insulin syringes with 0.1ml doses of tuberculin. Tuberculin comes in 1ml vials that are stored in the refrigerator in relevant info relevant info.
- 7.4. Catch marmosets from their home cage and confirm their identity.
- 7.5. Place the tuberculin dose by intradermal injection on the left hand side of the abdomen of the marmoset. If required, clip the hair from the abdomen using the animal clippers located in irrelevant.
- 7.6. Record the details of all marmosets who have been TB tested, including the side and location of the injection site on the abdomen, the date the result was read and outcome. Also record the batch number and expiry date of the tuberculin dose used.
- 7.7. 48 to 72 hours following the injection, catch each marmoset and check the injection site for any reaction.
- 7.8. Record all results and report any positive results to the Veterinarian.
- 7.9. Retest any positive results two weeks later using the side of the abdomen that was not injected the first time.

8. ROUTINE HEALTH MONITORING TESTS [BLOOD COLLECTION AND FAECAL TESTING]

Blood and faecal tests are performed when animals exhibit more than 10% bodyweight loss or other symptoms indicating health issues under veterinary direction.

8.1 Blood Collection:

Collect 1.0ml of blood using the following protocols:


-  PQMS3-MARP-SOP-0195 Blood Collection in Marmosets
-  PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets

Place 0.4ml of blood into an EDTA tube and 0.6ml of blood into a SST or Lithium Heparin tube.

Store samples at 4°C and send samples to Gribbles Veterinary Pathology within 24 hours of collection.

8.2 Faecal Collection

Collect faeces under general anaesthesia, using sevoflurane, by abdominal palpation and manipulation

-  Refer to PQMS3-MARP-SOP-0272 Gas Anaesthesia in Marmosets

Store the faecal sample at 4°C and send samples to Gribbles Veterinary Pathology within 24 hours of collection.

The pathogens to be tested using the Genetic Signatures Human Faecal Pathogen PCR assay at Australian Clinical Laboratories include:

- Enteric Protozoa – *Dientamoeba fragilis*, *Blastocystis hominis*, *Cyrtosporidium spp.*, *Entamoeba histolytica* and *Giardia intestinalis*.
- Enteric Viruses – Norovirus G I & GII, Enterovirus, Adenovirus, Astrovirus, Rotavirus A & B.
- Enteric Bacteria – *Salmonella spp.*, *Campylobacter spp.*, *Shigella spp.*, enteroinvasive *E.coli* (EIEC) and *Yersinia enterocolitica*.



9. ANIMAL MONITORING & WELFARE

- 9.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 9.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 9.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 9.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash Animal Ethics Committee's guidelines. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

10. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0147	Handling and Restraint in Marmosets
PQMS3-MARP-SOP-0193	Animal Records Marmosets
PQMS3-MARP-SOP-0195	Blood Collection in Marmosets
PQMS3-MARP-SOP-0272	Gas Anaesthesia in Marmosets
PQMS3-MARP-SOP-0273	Weighing Marmosets
PQMS3-MARP-REF-0509	Non-Human Primate Monitoring
PQMS3-MARP-REF-0512	Body Scoring in Marmosets
EXTERNAL REFERENCES	
Australian Code of Practice for the Care and Use of Animals for Scientific Purposes	
Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals	
Principles and guidelines for the care and use of non-human primates for scientific purposes 2016	



DOCUMENT HISTORY			PQMS3-MARP-SOP-0447-V3.docx	
Version no.	Date of Issue	Reviewed by: Name		Amendments
		Irrelevant information	OHS	
1	24/04/2017			Original Document
2	11/10/2018			Review
3	17/02/2022			Updated approver Updated footer format

COMBINING MARMOSETS FOR SOCIAL HOUSING (25/07/2022)

PQMS3-MARP-SOP-0585-V1.docx

1. INTRODUCTION

Marmosets are a social species, and often live in large family groupings with a complex social system in their natural environment.
At MARP, we aim to house all marmosets with a companion animal unless otherwise stated for research purposes.

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedures used to combine marmosets for social housing.




1.2. Scope

This SOP is to be applied for all activities of combining marmosets for social housing.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0132- Entry and Exit Procedures to Marmoset Facilities in Person ID
-  PQMS3-MARP-SOP-0147- Handling and Restraint in Marmosets
-  PQMS3-MARP-SOP-0269- Sexing of a Marmoset

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
GFS	irrelevant information
MARP	Monash Animal Research Platform
PPE	Personal Protective Equipment
RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol



4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's;

Tetanus

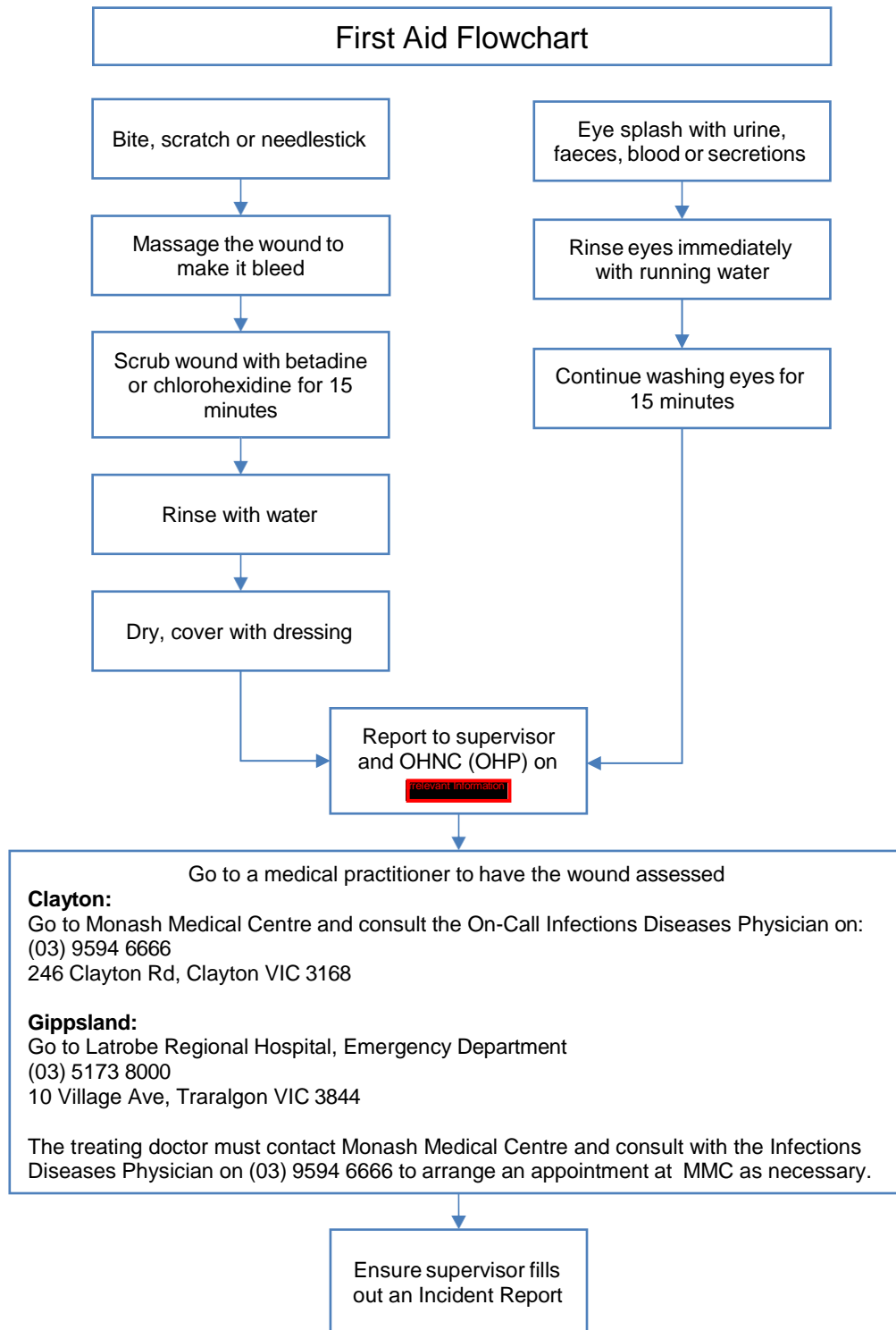
Hepatitis A

Hepatitis B

Polio

QuantiFERON® TB Gold Tuberculosis Screening

- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Be aware of first aid precautions following a scratch or bite from a Marmoset.
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer Chemwatch online.





5. RESEARCH COMBINING HISTORY OF ANIMAL

5.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	Computer
QUANTITY	MATERIAL DETAILS
As Required	LabTracks

5.2 On a weekly basis, using LabTracks observe how many singly housed marmosets there are in the facility. Observe the housing notes in each animal record found at the following location;

- Animals in Group Tab
- Double click on singly housed animal
- Custom Tab
- Housing Details

5.3 Examine the comments in the housing details to determine if an animal can be socially housed



If an animal has had three failed attempts at same sex social housing, do not try to recombine again with the same sex. This animal must be singly housed, or try to combine with the opposite sex where possible.



If the animal does not act submissively or defensively, and is non-reactive (see section 8.6) during one of the failed attempts - it can be recombined.



If an animal has had their companion removed for any other reason than fighting – this is not a failed attempt, it can be recombined.









Once a weaner is removed from a breeding group, or separated from it's siblings or parent – it can be combined with three attempts.

6. PLAN COLONY MOVEMENTS







6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
As Required	Computer
QUANTITY	MATERIAL DETAILS
As Required	Share drive

6.2 Once it is determined which animals can be socially housed, a plan is drafted using the following guidelines;

-  Animals to be combined, are not going into enclosures they have previously lived in, where possible.
-  Animals to be combined, that have previously been together and separated due to fighting - are not to be combined again.
-  Animals to be combined are placed into appropriate rooms according to their sex where possible.
-  Limit placing new animals into a room where another combination is currently taking place where possible.
-  Colony movement and social combinations are best completed at the start of the week, so the animals can be closely observed before the weekend.
-  Social Combinations surrounding a public holiday should be avoided when possible.

6.3 Plan colony movements as technician notes in a general word document. When drafting the plan, the following time frames apply;

-  Marmosets of the same sex to be socially combined, should have an introduction period of approx. 4 weeks
-  Marmosets of the same sex once combined, should be closely observed for approx. 2 weeks, before a larger enclosure is given.
-  Once the newly combined marmosets are moved to a large cage, they should be closely observed for approx. 7 days, before external access is given.
-  Marmosets of the opposite sex to be socially combined, can have an introduction period of approx. 1 to 2 weeks
-  Marmosets of the opposite sex can be combined immediately into a larger cage, without external access.
-  Marmosets of the opposite sex can be provided external access after approx. 3 to 7 days.
- It is important to make changes slowly and carefully when working with marmosets.
- Moving a lot of animals around quickly, increases the chances of a failed social house.

- ☐ Too many cages within a room, disrupts the social hierarchy within the animal room. This may build up stress and tension, potentially leading to fighting and multiple disrupted social houses within the room.
- ☐ Too much space given too soon to newly combined marmosets, can result in one marmoset living in the external caging, and the other living in the internal cage without cohesion.
- 🐒 Marmoset housed in cages without external access, should be provided with external access within the six week period as per the NH&MRC Principles and Guidelines for the Care of Use of Non-Human Primates for Scientific Purposes.

7.0 INTRODUCING MARMOSETS – SAME SEX

7.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
2	Combination cages (on dolly trolleys) with marmosets
QUANTITY	MATERIAL DETAILS
2-4	Towels
4-8	Pegs or clips

- ☐ The combination cages should be placed in close proximity to the future permanent cage the marmosets will be housed in, once successfully combined.












7.2 Place combination cages next to each other, with widest part of the cages facing – in front of or near their permanent cage, if possible. See Fig 1.



Fig 1. Two cages set up for introduction to social housing

7.3 Place towels on the sides of the combination cages that are closest to the neighbours.
 🐒 This creates visual barriers so marmosets can choose to escape the sight of other marmosets in the room



- 7.4** Place marmosets approximately 6 inches apart. This distance can be gradually decreased each week.
-  It is important to have the two cages apart initially, so the marmosets are unable to reach each other's tails, fingers or toes during the initial introduction.
- 7.5** Update movements of animal location in LabTracks,
-  Record relocations in the 'cages tab'
 -  Record details of introduction in both animal records, using the 'housing details' section as described in section 5.2
- 7.6** Update the marmoset feeding routine and place on the animal room door, and feeding board in 
-  PQMS3-MARP-eFRM-0350-Marmoset Feeding Routine
- 7.8** During the introduction phase observe marmoset's behaviours.
-  Observe for amicable behaviours; the animals should be approaching each other in a calm manner, showing interest in each other's activities, bright eyed, minimal pilo erection of the fur and tufts flat. Lip smacking can be seen when combining animals of differential sex.
 -  Observe for any aggressive behaviours; this may include slit staring, pilo erection of the fur, deliberate jumping towards each other in attempt to over dominate, tuft flicking, presentation of the genitals, and aggressive vocalisations.
 -  Observe for submissive behaviours; this may include moving away from the other animal, covering his/her body posture, constant observation of the opposite animal, open mouth grin, and 'nga nga' vocalisations.
 -  If aggressive or submissive behaviours are seen, this should be recorded in LabTracks, in the housing details as described in section 5.2.
 -  Inform your supervisor of the behaviour, and assess if the behaviour continues over the introduction period.
 -  If any aggressive or submissive behaviours are seen towards the conclusion of the introduction period, it is advisable NOT to combine the two animals.
- 7.9** After the introduction period is complete; if the animals have appeared to show interest in each other without aggressive or submissive behaviours, they can be combined. See section 8.0.

8.0 COMBINING MARMOSETS – SAME SEX




The following equipment and materials is used for this procedure:







QUANTITY	EQUIPMENT DETAILS
1	Combination cages (on dolly trolleys)
QUANTITY	MATERIAL DETAILS
1-2	Towels
2-4	Pegs or clips
2	Feeding areas
2	Water bottles
1	Nest box
As Required	Task Appropriate PPE

- 8.1. Collect clean combination cage from storage area and set up with clean water bottles, feeding areas and nest boxes.
- 8.2. Proceed to animal room and place combination cage as close of possible to the permeant cage the successfully socially housed marmosets will live in the near future. See Fig 2.









Fig 2: Combination cage in front of permanent cage

- 8.3. Place towels along the sides of the combination cage, to create a visual barrier from the neighbours.
- 8.4. Using task appropriate PPE, catch both marmosets as per SOP and place into the combination cage.
 -  PQMS3-MARP-SOP-0147- Handling and Restraint in Marmosets
- 8.5. Wash dirty cages that previously housed the marmosets to be combined, in relevant info as per SOP
 -  PQMS3-MARP-SOP-0297- Wash Room Operations at relevant info
- 8.6. Observe newly combined marmosets behaviour, as per section 7.8
 -  If aggressive behaviours are seen it is advisable to separate the marmosets.

-  If submissive behaviours are seen, it is advisable to separate the marmosets if the behaviour fails to improve to more amicable behaviour over the week. See section 7.8
-  If one marmoset is aggressive, and the other animal is neither aggressive nor submissive in return, it is recorded in LabTracks that this marmoset was non-reactive. This non-reactive animal can have another attempt at social housing in the future.
- 8.7.** Update any movements of animals in LabTracks
 -  Record relocation in the 'cage tab'
 -  Record combination details (dates, animal numbers) in the 'housing details' as described in section 5.2
- 8.8.** Update the marmoset feeding routine and place on the animal room door, and feeding board in AS115
 -  PQMS3-MARP-eFRM-0350-Marmoset Feeding Routine
- 8.9.** After 1 week in the combination cage, provided there are no undesirable behaviours described in section 7.8; the additional feeding and watering site can removed as necessary.
- 8.10.** Update marmoset feeding routine and place on the animal room door, and feeding board in AS115.
 -  PQMS3-MARP-eFRM-0350-Marmoset Feeding Routine
- 8.11.** After a period of 2 weeks in the combination cage, provided only amicable behaviours are seen as described in section 7.8; commence moving the newly combined marmosets into the permanent cage.

When possible, place the nest box and water bottle used on their combination cage, into the permanent cage.

 -  Using 'dirty' nest boxes, feeding stations and water bottles provides familiar items in the clean cage for the newly combined animals. This aims to prevent an animal taking dominance over essential items.
- 8.12.** Using task appropriate PPE, catch both marmosets as per SOP and place into the clean permanent cage.
 -  PQMS3-MARP-SOP-0147- Handling and Restraint in Marmosets
- 8.13.** Clean dirty combination cage in irrelevant, as per SOP
 -  PQMS3-MARP-SOP-0297- Wash Room Operations at irrelevant
- 8.14.** Update any movements of animals and cages in LabTracks
 -  Record relocation in the 'cage tab'
- 8.15.** Update marmoset feeding routine and place on the animals room door and feeding board in irrelevant
 -  PQMS3-MARP-eFRM-0350-Marmoset Feeding Routine
- 8.16.** Place a 'DO NOT-LET OUTSIDE' sign on the permanent cage containing newly combined marmosets.
 -  PQMS3-MARP-REF-0697-Alert Cards_Marmosets


- 8.17. After 1 more week, provided only amicable behaviours are seen as described in section 7.8; the 'Do not let out' alert card can be removed and external access can be provided to the newly combined marmosets.

9.0 INTRODUCING AND COMBINING MARMOSETS – OPPOSITE SEX

The following equipment and materials are required:

QUANTITY	EQUIPMENT DETAILS
1	Combination cage (on dolly trolleys)
1	Large permanent cage
QUANTITY	MATERIAL DETAILS
1-2	Towels
2-4	Pegs or clips
Multiple	Feeding areas
Multiple	Water bottles
Multiple	Nest box
As Required	Task Appropriate PPE


- 9.1 Using task appropriate PPE, place marmoset (preferably male) into a large permanent cage with their own nest box, feeding stations and water bottle. Ensure these animals are put into a room containing both male and female marmosets.











 PQMS3-MARP-SOP-0147-Handling and Restraint in Marmosets

- 9.2 Collect clean combination cage from the store room. Place nest box inside cage and water bottle on cage, along with towels on either side to create visual barriers. Once completed, place combination cage with widest part of cage, facing the animal in the permanent cage, at least 6 inches apart. See figure 3.





Figure 3. Combination cage in front of large cage.

-  Cages are placed approx. 6 inches apart initially, so tails fingers or toes are unable to be pulled through to the opposite cage.

- 9.3** Using task appropriate PPE, catch marmoset (preferably female) according to SOP and place into the combination cage.
 PQMS3-MARP-SOP-0147-Handling and Restraint in Marmosets
- 9.4** During the following week, observe marmoset's behaviour towards each other. These behaviours are described in section 7.8. Only amicable behaviours are desired for an opposite sex introduction.
- 9.5** As the week progresses, provided amicable behaviours are seen the combination cage can be gradually moved closer to the permanent cage.
- 9.6** At the conclusion of one week, provided amicable behaviours are seen, with the absence of submissive and aggressive behaviours, the marmosets can be combined.
- 9.10** In permanent cage, ensure multiple water bottles and feeding stations are provided to minimise any dominance behaviour over food and water.
- 9.11** Using task specific PPE, catch marmoset in combination cage according to SOP, and place into permanent cage with opposite sex marmoset.
 PQMS3-MARP-SOP-0147-Handling and Restraint in Marmosets
- 9.12** Update movements of animals in LabTracks
-  Record relocation in the 'cage tab'
 -  Record combination in the 'housing details' as described in section 5.2
- 9.13** Update the marmoset feeding routine and place on the animal room door, and feeding board in irrelevant
 PQMS3-MARP-eFRM-0350-Marmoset Feeding Routine
- 9.14** Observe newly combined marmosets behaviour, as described in section 7.8
-  If aggressive behaviours are seen it is advisable to separate the marmosets.
 -  If submissive behaviours are seen, it is advisable to separate the marmosets if the behaviour fails to improve to more usual behaviour over the week.
 -  If one marmoset is aggressive, and the other animal is neither aggressive nor submissive in return, it is recorded in LabTracks that this marmoset was not reactive. This non-reactive animal can have another attempt at social housing in the future.
- 9.15** Place a 'DO NOT-LET OUTSIDE' sign on the permanent cage containing newly combined marmosets.
 PQMS3-MARP-REF-0697-Alert Cards_Marmosets
- 9.16** Clean dirty combination cage in irrelevant as per SOP
 PQMS3-MARP-SOP-0297- Wash Room Operations at irrelevant
- 9.17** After 3-7 days in the permanent cage, provided only amicable behaviours are seen and there are no aggressive or submissive behaviours as described in section 7.8, the 'DO NOT-LET OUTSIDE' sign can be removed, and the animals given outside access.
- 9.18** After 1-2 weeks in the permanent cage, provided only amicable behaviours as described in section 7.8, the additional feeding and watering site can be removed as necessary.



- 9.19** Update marmoset feeding routine and place on the animal room door, and feeding board in irrelevant
 PQMS3-MARP-eFRM-0350-Marmoset Feeding Routine
- 9.20** Refer to the following SOP regarding further information on pairing opposite sex marmosets for breeding purposes, as necessary.
 PQMS3-MARP-SOP-0389-Breeding Management In Marmosets

10. ANIMAL MONITORING AND WELFARE

- 10.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 10.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 10.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 10.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>



11. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-SOP-0147	Handling and Restraint of Marmosets
PQMS3-MARP-SOP-0297	Wash Room Operations at relevant
PQMS3-MARP-SOP-0389	Breeding Management In Marmosets
PQMS3-MARP-REF-0697	Alert Card_Marmosets
PQMS3-MARP-eFRM-0350	Marmoset Feeding Routine
EXTERNAL REFERENCES	
Australian Code of Practice for the Care and Use of Animals for Scientific Purposes	
Code of Practice for the Housing and Care of Laboratory Mice, Rats, Guinea Pigs and Rabbits	
Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals	
Policy on the Care and Use of Non-Human Primates for Scientific Purposes	

DOCUMENT HISTORY			PQMS3-MARP-SOP-0585-V1.docx
Version no.	Date of Issue	Reviewed by: Name	Amendments
1	Feb 2021	Irrelevant Information	Original Document
1	08.06.2022		Reviewed. Inserted first aid chart. Changed authorisation panel.
1	16.06.2022		Removed reference to PQMS3-MARP-eFRM-0365-V1-Combination and moving schedule as superseded.
1	19/07/2022		Section 11: Removed references at the request of AEC. Code of Accepted Farming Practice for the Welfare of Sheep – Victoria The Victorian Standards & Guidelines for the Welfare of Pigs

CLEANING PRIMATE HOUSING UNITS (18/07/2022)

PQMS3-MARP-SOP-0124-V5.docx

DOCUMENT AUTHORISATION	Date of Next Review: 3 years from date of issue
Irrelevant Information	16- Sep- 2022 8: 43 AM AEST
	19- Sep- 2022 11: 03 AM AEST
	19- Sep- 2022 11: 22 AM AEST
	19- Sep- 2022 1: 55 PM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe the procedure for cleaning Primate Housing Units.

1.2. Scope

This SOP is to be applied to all staff members working in the Macaque Area of irrelevant Information at irrelevant Information.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
Allen Key	Tool used to turn hexagonal sockets
Excreta Trays	Sheet Metal Tray placed on the bottom of Primate Housing Units to collect excreta
Pellet Hopper	Food Container used to hold Old World Non-Human Primate Pellets
PPE	Personal Protective Equipment
Pro Foaming Gun	Tool attached to water hoses that dispenses cleaning chemicals in a foam
SOP	Standard Operating Protocol – A Controlled Document
Scraper	Tool used to remove unwanted matter from a surface
WIN	Work Instructions – A Controlled Document

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

Persons performing this SOP must have read and understood the following documents:

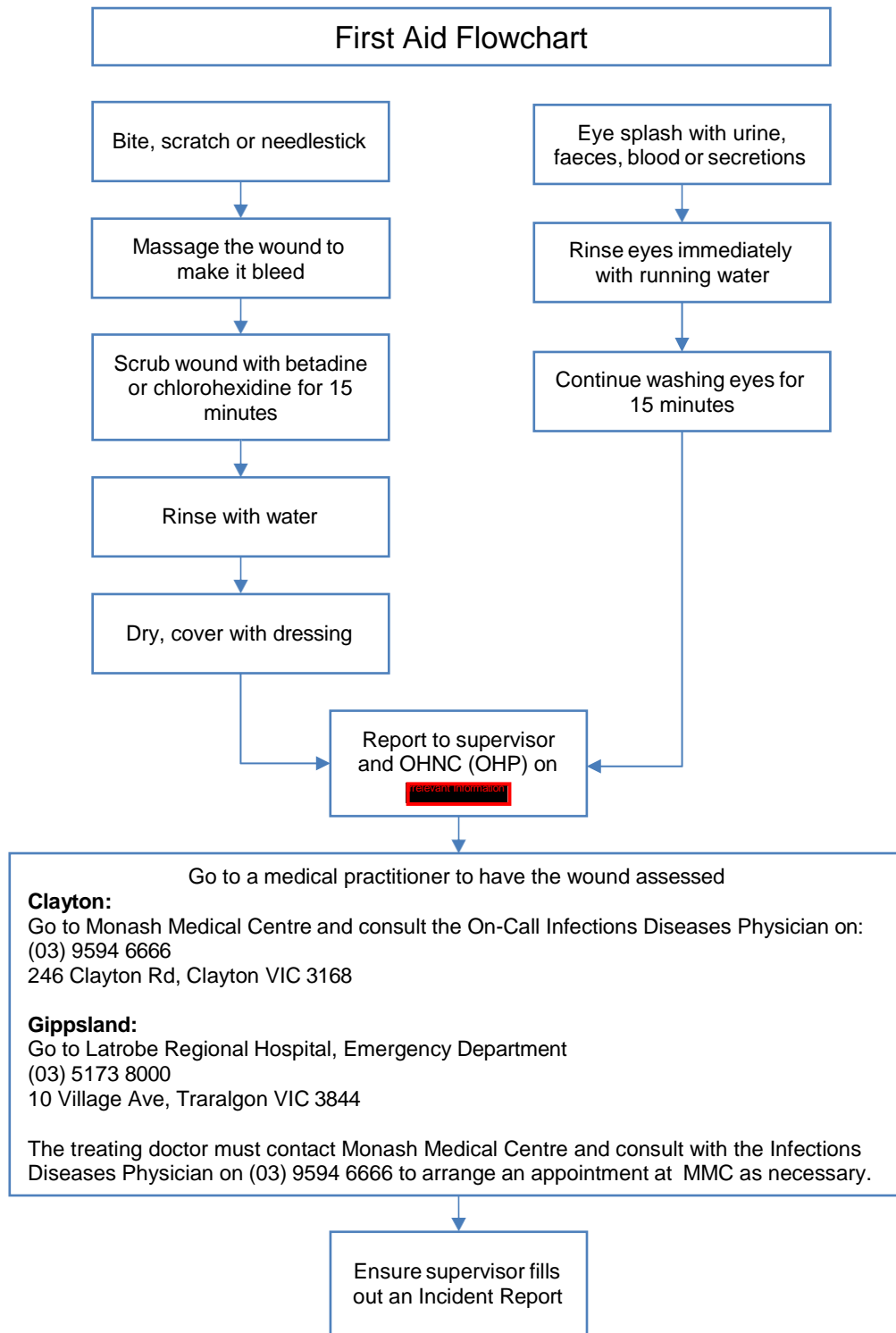
SARAH Ref no. 24354 Macaque Area Risk Assessment - irrelevant information

SARAH Ref no. 34999 MARP Manual Handling

PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities irrelevant information

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - QuantiFERON Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Have completed the Macaque Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a Macaque. [MANAGEMENT OF SUSPECTED Exposure to Macacine Alphaherpes virus 1 \(B virus\)](#)
- For Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Front Office irrelevant information
irrelevant information



5. CLEANING PRIMATE HOUSING UNITS WITH A HOSE

5.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Allen Key
1	Scraper
1	High Pressure Hose
1	120 litre Waste Bin
1	Pro Foaming Gun
QUANTITY	MATERIAL DETAILS
As Required	Sansol

5.2 Move the Primate Housing Unit to a position near where there's a High Pressure Hose. Cleaning with a High Pressure Hose usually co-insides with Cleaning Flexagons (Fig.1).



Fig.1

5.3 Unlock all doors of the Primate Housing Unit with an Allen Key (Fig.2).



Fig.2

5.4 Remove any Pellet Hoppers for Cleaning if applicable (Fig.3).



Fig.3

5.5 Remove Wash Tray for Cleaning if applicable (Fig.4). Use scraper to remove waste into a 120 litre Waste Bin.



Fig.4

5.6 Hose down the Primate Housing Unit with a High Pressure Hose (Fig.5 & 6).



Fig.5



Fig.6

5.7 Disinfect the Primate Housing Unit with a Pro-foaming Gun (Fig.7).



Fig.7

- 5.8** Rinse the Primate Housing Unit after 10 minutes with the High Pressure Hose (Fig.5).
- 5.9** Allow Primate Housing Unit to dry and then move to storage area in [REDACTED] (Fig.8).



Fig.8

6. PROCEDURE FOR CLEANING PRIMATE HOUSING UNITS WITH A PRESSURE CLEANER

6.1 The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Allen Key
1	Scraper
1	Pressure Cleaner
1	120 litre Waste Bin
1	Pro Foaming Gun
QUANTITY	MATERIAL DETAILS
As Required	Sansol

6.2 Move the Primate Housing Unit to the Wash Room Irrelevant (Fig.9).



Fig.9

6.3 Remove any Pellet Hoppers for Cleaning if applicable (Fig.3).

6.4 Remove Waste Tray for Cleaning if applicable (Fig.4). Use scraper to remove waste into a 120 litre Waste Bin.

6.5 Clean the Primate Housing Unit with a Pressure Cleaner (Fig.10).



Fig.10

6.8 Operate Pressure cleaner as per manufacturer's instructions, connect water, power, check water with nozzle and turn on power.

6.9 Turn nozzle to middle setting and start pressure cleaning Primate Housing Unit.

6.10 Once visible waste has been cleaned off, disinfect the Primate Housing Unit with a Pro-foaming gun (Fig.7).

6.11 Rinse the Primate Housing Unit after 10 minutes with a Normal Hose (Fig.11).



Fig.11

6.8 Allow Primate Housing Unit to dry and then move to storage area in irrelevant (Fig.8).

7. ANIMAL MONITORING & WELFARE

N/A

8. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
SARAH Ref no. 34999	MARP- Manual Handling
SARAH Ref no. 24354	Macaque Area Risk Assessment - irrelevant information
PQMS3-MARP-SOP-0117	Entry and Exit Procedures to Macaque Facilities - [redacted]
EXTERNAL REFERENCES	
DOCUMENT REFERENCE	DOCUMENT TITLE
Monash OHSE	Manual Handling
Monash OHSE	Monash OHS topics Immunization
Monash OHSE	Monash OHSE Immunization Grid- Immunisation Grid
Monash OHSE	Monash OHSE MANAGEMENT OF SUSPECTED EXPOSURE TO MACACINE ALPHAHERPES VIRUS 1 (B VIRUS) PROCEDURE



DOCUMENT HISTORY			PQMS3-MARP-SOP-0124-V5.docx
Version no.	Date of Issue	Reviewed by: Name	Amendments
1	23/07/2017	Irrelevant Information	Original document
2	22/06/2018		Update to Animal Monitoring & Welfare Statement
3	05/08/2019		Update to section 4 & first aid flowchart, removed some references Removed external reference link and corrected MSDS to SDS
4	21/06/2022		Changed approver from [redacted] Irrelevant Added OHS column to Document History Updated Document Authorisation and footer formatting Section 4: Updated reference to risk assessment, updated first aid flowchart. Added link to OHS policy document. Section 8: Updated references
5	1/07/2022		Section 11 update Monash OHS links

REPRODUCTIVE TECHNIQUES IN NON HUMAN PRIMATES (23/09/2020)

PQMS3-MARP-SOP-0583-V1.docx

DOCUMENT AUTHORISATION	Date of Next Review: 2 years from Date of Issue
Irrelevant Information	29-Sep-2020 2: 29 PM AEST
	9-Sep-2020 5: 31 PM AEST
	30-Sep-2020 10: 33 AM AEST

1. INTRODUCTION

1.1. Purpose

The purpose of this Standard Operating Protocol (SOP) is to describe procedures used to manage reproduction within the non human primate breeding colonies









1.2. Scope

This SOP is to be applied to all staff members working with non human primates across MARP.

1.3. Competency

All personnel performing this SOP must have significant experience and/or completed suitable training with their supervisor or other training staff and be on an approved operators list before proceeding with this SOP unsupervised. Inexperienced personnel must be supervised by an approved supervisor until they have achieved competency.

Persons performing this SOP must have achieved an acceptable level of understanding and competence in the following training prerequisites:

-  PQMS3-MARP-SOP-0034 Equipment Operations – Macaque Weigh Station
-  PQMS3-MARP-SOP-0104 Macaques – Capture and Restraint
-  PQMS3-MARP-SOP-0118 Health Monitoring of Macaques
-  PQMS3-MARP-SOP-0186 Macaque Anaesthesia
-  Ergonomics and Manual Handling
-  PQMS3-MARP-SOP-147, Handling and Restraint of Marmosets
-  PQMS3-MARP-SOP-0192 Identification in Marmosets
-  PQMS3-MARP-SOP-272 Gas Anaesthesia in Marmosets

2. RESPONSIBILITIES

Supervisors and Chief Investigators are responsible for ensuring that all personnel authorised to use this SOP have achieved an acceptable level of understanding and competence in the procedure. A record of all currently approved operators must be maintained.

Operators are responsible for following instructions covered in this work instruction and for using equipment provided for personal protection and animal welfare purposes.

3. DEFINITIONS

DEFINITION	BRIEF EXPLANATION
PPE	Personal Protective Equipment



MONASH University

Technology Research Platforms

RA	Risk Assessment – A Controlled Document
REF	Reference – A Controlled Document
SOP	Standard Operating Protocol

4. HEALTH AND SAFETY CONSIDERATIONS

A Risk Assessment has been conducted for this SOP. Relevant health and safety points have been written directly into the procedure.

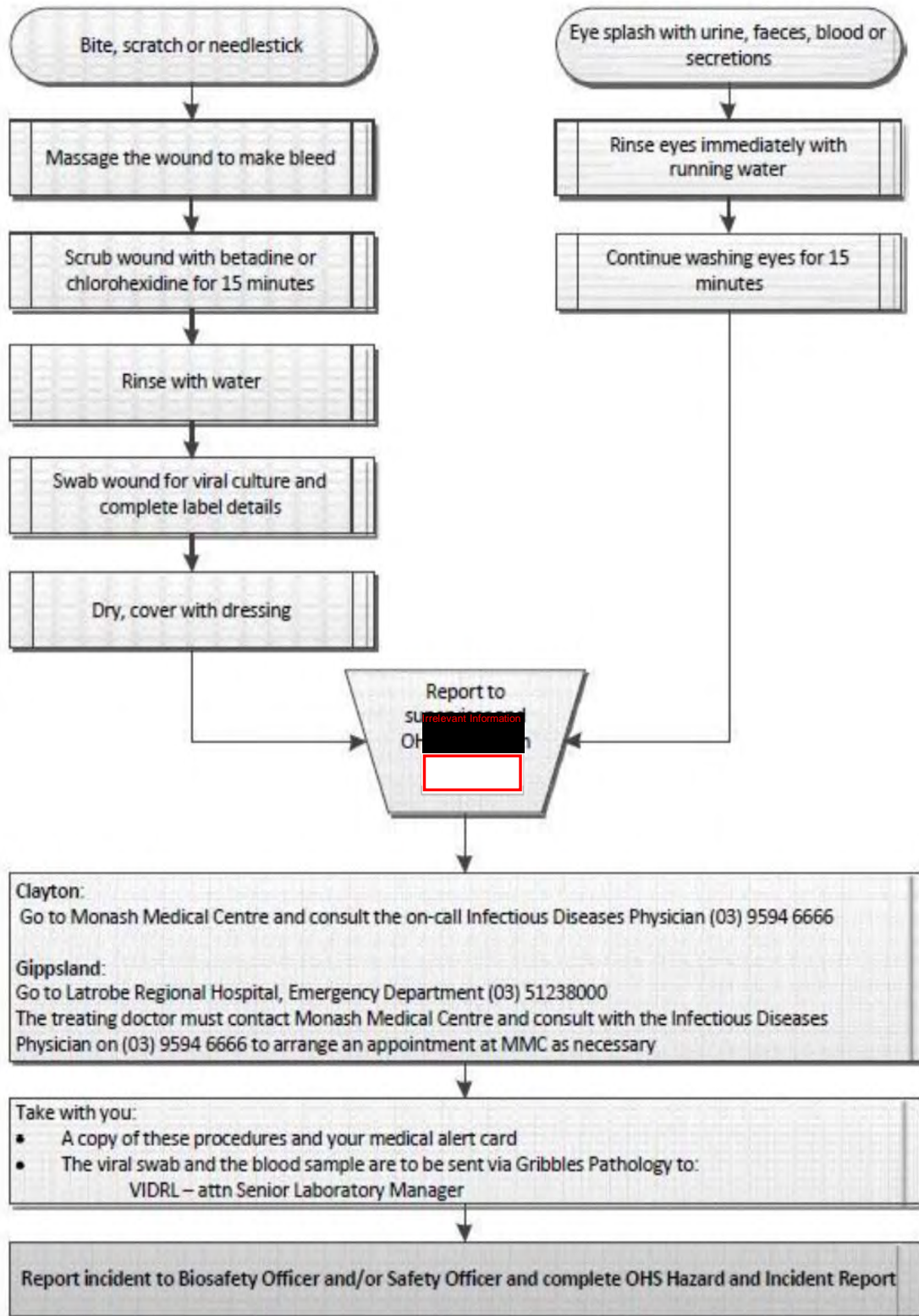
Persons performing this SOP must have read and understood the following documents relevant to the area they will be working in:

- PQMS3-MARP-REF-0350 Personal Protective Equipment required at MARP
- PQMS3-MARP-RA-0160 Macaque Area Risk Assessment irrelevant I
- PQMS3-MARP-SOP-0117 Entry and Exit Procedures for Macaque Facilities relevant R
- PQMS3-MARP-SOP-0143 Entry and Exit Procedures for Macaque Facility relevant R
- PQMS3-MARP-SOP-0154 Entry and Exit Procedures for Macaque Facility relevant R
- PQMS3-MARP-RA-0160 Marmoset Area Risk Assessment relevant R
- PQMS3-MARP-FRM0011 relevant R Conditions of Entry Statement
- PQMS3 – MARP-SOP-0132 Marmoset Entry and Exit

Specific health and safety considerations while performing this procedure are:

- All staff must have the necessary and up to date vaccinations required to work with NHP's
 - Tetanus
 - Hepatitis A
 - Hepatitis B
 - Polio
 - Quantiferon Gold Tuberculosis Screening
- Staff are required to contact the Animal Facility Manager or the OHS Medical Team if they require vaccinations and/ or boosters.
- The task specific PPE must be worn at all times.
- Specific health and safety considerations while performing this procedure are:
- Non-Human Primates (NHPs) are always unpredictable. Staff should always be cautious in handling these animals as marmosets are very protective over their families. Staff should always be aware of the animals in the enclosure by keeping an eye on them and staff should avoid turning their back on the animals inside the enclosure.
- The ladder and capture nets are stored outside of the animal area. Do not bring in nets or ladders into the animal area as this will cause adverse behaviour in the animals.
- All staff must have the necessary and up to date vaccinations required to work with NHP's
- Have completed the Macaque Training and Induction Program or the Marmoset Training and Induction Program.
- Be aware of first aid precautions following a scratch or bite from a macaque or marmoset.
- For Material Safety Data Sheets on any of the chemicals used in the SOP, please refer to the Hazardous Substances/ Dangerous Goods Register kept in the Work Area or the Front Office

irrelevant Information



5. REPRODUCTIVE PROCEDURES

The procedures of vasectomy and Deslorin implant are useful for contraception in the male. Vasectomy allows co-housing of different sexes, without unwanted pregnancies. Nor does it impact normal behaviour and animals are suitable for research protocols. Vasectomy renders the animal infertile for life.

However Deslorin (a form of chemical castration) has a finite length of action, dependent on the dose used. Deslorin implants are available in 2 strengths. The stronger strength may cause infertility for up to 2 years. Deslorin also is effective against aggression. It generally takes 2-4 weeks after implantation for effect against aggression. When used for contraception, 4 weeks is generally allowed for effect. Deslorin can be used in both marmosets and macaques.

Repeated injections of hormones can also be used as methods of contraception. Prostaglandins and progesterone injections every 4 weeks have been used in the colony previously. However these medications have side effects both short and long term, so other alternatives are preferred when possible.

Sperm collection can be used in males that are being humanely killed. Sperm can then be frozen and stored. This will help preserve genetic diversity that might otherwise be lost. The sperm can be utilised at later time points utilising artificial insemination techniques.

6. DESLORIN IMPLANT

6.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
QUANTITY	MATERIAL DETAILS
1	Suprelorin implant 4.7 mg or 9.4mg within supplied needle containing implant 2.3mm x 12.5mm
1	Tissue glue



This procedure is performed on animals in a surgical plane of anaesthesia.

6.2. Prepare the site of implantation

- Clip the hair from the scruff of the neck.
- Clean skin with Chlorhexidine solution
- Apply alcohol and iodine solution alternating

6.3. Tent the loose skin in the area of the neck and shoulder blades

6.4. Insert the needle of the applicator point down, bevel up.

6.5. Depress the plunger to expel the implant.

6.6. Withdraw the needle and dispose of applicator in sharps container.

6.7. Close insertion hole with tissue glue.



7. SPERM COLLECTION

7.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
QUANTITY	MATERIAL DETAILS
1	3-5mL syringe
1	26-22C needle, depending on species and size

This procedure is performed on an anaesthetised macaque or marmoset before it is humanely killed.

7.2. Prepare the site: -

- Clip the hair from the scrotum and pre-scrotal area
- Clean skin with Chlorhexidine solution
- Apply alcohol and iodine solution alternating

7.3. Palpate the scrotal sac to determine the location of the head and tail of the epididymis

7.4. Insert the needle (size as above, 26-22G) point down, bevel up, through the skin of the scrotum into the epididymis.

7.5. Withdraw the plunger to withdraw semen from the epididymis/testicle.

7.6. Repeat steps 7.3 to 7.5 until an adequate sample is obtained.

8. VASECTOMY

8.1. The following equipment and materials are required to perform this procedure:

QUANTITY	EQUIPMENT DETAILS
1	Anaesthetic machine
1	Autoclaved general surgery pack
1	Electrocautery or diathermy unit if available
QUANTITY	MATERIAL DETAILS
1	Injectable anaesthesia as required
1	Suture absorbable multifilament 4/0 (macaque) or 5/0 (marmoset)
1	Scalpel blade
1	Sterile drape
1	Sterile surgical gloves
As required	Analgaesia – Local anaesthesia - Bupivacaine
As required	Analgaesia – NSAID Meloxicam
As required	Antibiotic – long-acting Penicillin
1	Chlorhexidine Solution prepared as per Manufacturer's instructions
1	80% Alcohol solution
1	Iodine 10%
1	Tissue glue

This procedure is performed on animals in a surgical plane of anaesthesia by a veterinarian.

8.2. Inject analgaesia (NSAID) and antibiotic using if not given prior to surgery.

8.3. Prepare the surgical site

- Clip the hair from the pre-scrotal area.
- Clean skin with Chlorhexidine solution
- Apply alcohol and iodine solution alternating
- Place drape

8.4. Inject Bupivacaine along the suture line using 26-27G needle.

8.5. Make incision (1cm for marmoset, 2-3cm for a macaque) using the scalpel on the ventral midline over the pelvic symphysis approximately 1cm cranial to the scrotal margin.

8.6. Blunt dissect to one side of the midline to expose the spermatic sac containing the spermatic cord, vaginal tunic and overlying fascia.

8.7. Exteriorise the spermatic sac.

8.8. Open the spermatic sac by blunt dissection and locate the vas deferens (ivory-coloured cord-like structure) and its associated small artery, and free them from the spermatic vessels.

8.9. Dissect the vas deferens free of the artery.

8.10. Double ligate (5-6mm apart) the vas deferens and resect between the ligatures, or alternatively, resect the section with electrocautery/diathermy unit.

8.11. Repeat steps 8.4 to 8.8 on the other side.

8.12. Suture midline incision with absorbable multifilament suture and/or close with tissue glue.

8.13. Continue NSAID for analgaesia for a further 2 days post-surgery.

9. ANIMAL MONITORING & WELFARE

- 9.1** All animal carers must monitor and assess the wellbeing of animals for which they are responsible at specified intervals.
- 9.2** Where anticipated adverse impacts are observed, the animal carer must notify their supervisor and record the incident through the approved monitoring procedure for that project. Further action must be taken according to the relevant protocol and further veterinary advice must be sought when necessary. The investigator responsible for that project should also be notified if the adverse effects exceed those levels predicted in the approved protocol.
- 9.3** Where any unexpected adverse event is observed, the investigator/teacher or their delegate, animal technician or the facility manager must report the event to their supervisor and initiate corrective actions immediately. The investigator responsible for the project must be notified of the event as soon as possible and veterinary advice must be sought where necessary.
- 9.4** All unexpected adverse events must be reported in writing to the animal ethics committee by the investigator responsible or their delegate according to timelines specified in the Monash University Guidelines for reporting Incidents, Adverse Events and Emergencies Affecting Animal Welfare. An incident / non-compliance report form is available on following link:
<http://www.intranet.monash/researchadmin/start/ethics/animal/approval/incident>

10. REFERENCES

INTERNAL REFERENCES	
DOCUMENT NUMBER	DOCUMENT TITLE
PQMS3-MARP-XXX-XXXX	Document Title
EXTERNAL REFERENCES	
Australian Code of Practice for the Care and Use of Animals for Scientific Purposes	
Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes, The Assessment and Alleviation of Pain and Distress in Research Animals	
Policy on the Care and Use of Non-Human Primates for Scientific Purposes	



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Version no.	Date of Issue	Reviewed by: Name		Amendments
		Procedure	OHS	
1	23/09/2020	XXXXXXXXXX		Original Document