AAHR
Australian Association for Humane Research Inc.

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Patron: Professor John Coetzee

AIMS OF THE AUSTRALIAN ASSOCIATION FOR HUMANE RESEARCH INC.

- *To promote all viable methods of healing which do not at any stage involve the use of animals.*
- *To promote the use of scientific alternatives in all forms of medical, scientific and commercial research.*
- *To help disseminate evidence, as it becomes available, that the use of alternatives is less costly, more accurate and more humane than the use of animals in experiments.*
- *To work for the abolition of all experiments using animals.*

Welcome

The year has begun with a flurry of activity at the AAHR office (no time for breaks here!) and we are of course, loving being this busy as it means there is so much happening.

First and foremost, we are excited by the upcoming visit of two medical researchers from the UK (see right). Very few qualified people speak out against animal research on scientific grounds and so we are grateful to have such people work with AAHR. Please try to attend one of our public lectures in either Melbourne or Sydney. We're sure you'll find them very informative and inspirational. Special notices are enclosed for Melbourne and Sydney members.

We also have a number of expos that we are attending; the Sustainable Living Festival and the MindBodySpirit Festival, both in Melbourne. We find these exhausting, but also so very worthwhile as a means to disseminate information about the dangers of relying on animal tests.

Until next time, I hope to see as many of you as possible at the expos and/or at one of our public seminars.

Helen Rosser

MindBodySpirit festival
TODAY'S LIFESTYLE EXPO

Melbourne volunteers needed for expo

AAHR has been invited to participate in the **MindBodySpirit Festival** at the Melbourne Exhibition Centre, on 9-12 June. We will require volunteers to assist over the four days, so if you enjoy answering queries about animal research and are able to help out please contact the AAHR office and let us know when you will be available.

For more information visit: www.mbsfestival.com.au

Visit by UK scientists

AAHR is proudly hosting a visit to Australia by Dr Andre Menache, veterinary surgeon and public health officer, and Ms Colleen McDuling, veterinary laboratory scientist, both from the UK, who are strong advocates for animals, and qualified to speak out against animal-based research from a scientific perspective.

Dr Menache was previously the president of Doctors and Lawyers for Responsible Medicine (UK), and is currently the Scientific Consultant to Animal Aid UK. He has published several papers opposing animal research.

Ms McDuling holds a Masters degree in molecular and cellular biochemistry and has also studied ethology and biology, specialising in small mammals – particularly rodents.

With so few qualified people willing to speak out against animal experiments, the open discussion and sharing of information at our seminars will be crucial if we are to attain a greater understanding of the dangers of extrapolating animal data to human conditions.

During April, Dr Menache and Ms McDuling will be meeting a number of key players from within the research industry, engaging in media events, addressing public seminars and conducting a "speaker's workshop."

If you are interested in attending a public seminar (Melbourne and Sydney) or workshop (Melbourne) please register your interest with the AAHR office so that we can inform you of the schedule once finalised.

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Rodents in Scientific Research - Hindrance or Help?

Colleen McDuling BSc (Med)(Hons)(Pharmacology), MSc (Med. Sci.)(Molecular and Cellular Biochemistry)

It is a well-known fact that rodents are the most widely used of any species of animal in scientific and medical research. This research ranges from drug testing to vaccine production, from surgical procedures to cosmetic product testing and from genetic investigations to the study of pathological conditions. Many of these animals are genetically modified in order to produce the desired result, for example, genetically engineered diabetic rats. In fact, the 2003 statistics issued by the Home Office in the United Kingdom revealed that 87% of animals used in research are rodents. Of this, 67% are mice, 18% are rats, and the remaining 2% are represented by hamsters, guinea pigs, gerbils and others. This translates into a staggering 2.5 million rodents alone. And this is just in the United Kingdom. What about the rest of the world? It was reported that in 2002, 76% of the total animals used in Europe were rodents; over 8,000,000.[1]

If we consider that the law states that pharmaceutical drugs and chemical substances must be tested on a rodent and a non-rodent species, we must also consider that these drugs or chemicals are later to be issued for use in human beings. And yet, in the western world we find that the fourth leading cause of death in humans after heart disease, cancer and stroke is adverse drug reactions. Clearly, there is something wrong. We need to consider species differences within the rodents themselves and species differences between them and humans. Let us focus on drugs and chemical substances.

Most of the common antibiotics are lethal in guinea pigs and hamsters, whilst they may be tolerated by rats, mice and gerbils. Two antibiotics of note are penicillin and erythromycin, used to treat common bacterial infections.[2] Had Flemming used guinea pigs or hamsters in his research into penicillin, the drug would never have been marketed. He used rats. And although the drug was passed for human use, nothing could have predicted that even humans would show variability manifested by allergic reactions to this new wonder drug. If within the rodents themselves, there are differences, how many more differences can there be between them and humans? And this does not apply to antibiotics only - other drugs such as aspirin, cortisone and thalidomide may be considered. Aspirin causes birth defects in most rodents, but not in humans. Cortisone causes birth defects in mice, but not in rats and in humans it caused an increased risk of cleft palate if taken in the first trimester of pregnancy. And the classic example, thalidomide, was tested in the 1960's on rats, mice and hamsters without any ill effect, and yet when given to humans caused gross limb malformations known as phocomelia.[3] Drugs that cause cancer may differ between the rodents themselves and between these animals and humans. Animal screening may reveal tumour development in certain species that would not occur in humans. Conversely, certain tumours may occur in humans which would not be detected in rodents. Aspartame, an artificial sweetener, has been shown to cause lymphoid cancers in rats, whereas there is no clear evidence that it is unsafe in humans and has been used for many years in over 6,000 marketed foodstuffs. With regards to general carcinogenesis, the animals are fed with huge amounts of the chemical during their short life spans. This represents amounts far in excess of that which a human would ever consume even if they lived to be over 100 years of age.

Photo: Courtesy of PETA

The way in which a drug or substance is dealt with by the body is important. And even here there are species differences. This is the branch of pharmacology called pharmacokinetics. The rates at which drugs are absorbed, distributed, metabolically detoxified and then eliminated from the body, are the major factors determining the extent and activity of a drug.[4] The liver is the major detoxifying organ of the body. A human liver is not the same as a mouse liver which is not the same as a guinea pig liver. It was not until recent years that rodents, most notably rats and mice, have been shown to exhibit major differences from humans in the function of a major detoxifying substance called glutathione contained in the liver. This glutathione, a protein, protects against drug and chemical toxicity. Rodents use their glutathione for a wide variety of purposes, whilst humans conserve this vital commodity for the most critical, life saving processes such as detoxifying overdoses of paracetamol in suicide attempts.[5] Under normal circumstances, humans use another enzyme system, the cytochrome P-450 microsomal enzyme series, also present in rodents. This system is water based.[5] And, even in rodents, there are differences in the metabolism of paracetamol. In mice and hamsters, it is much more readily activated and thus more toxic than in guinea pigs and rats. The amounts of enzymes active in the liver differ from species to species. It has been shown that in mouse liver, the major cytochrome is P-448, while in the rat, like man, the major cytochrome is P-450.[4]

These stark differences between the rodents themselves, and between them and humans begs a question: are rodents the ideal models for research into the human condition? Research should be species-specific and directed at the species for which it is designed. One cannot safely apply data from one species to another, and especially not from rodents to humans. It would be advisable to use human cell lines, progressing onto human organ slices, then human whole organs, and finally onto humans themselves. Here, one would use humans who had limited life expectancies, offering them the option of taking a trial drug

which may or may not prolong their life and enhance its quality. Another powerful technique in use these days is toxicogenomics. This is a new approach to understanding the genetic mechanisms and biochemical pathways to disease by environmental toxins via the simultaneous analysis of gene and protein expression, using human genes.[6] It is highly specific, sensitive, reproducible and reliable. More importantly, it is applicable for the species in question - humans!

There is no question, then, that alternatives to animal testing do exist. It is not only unethical to use rodents in research, it is not safe, cannot give the appropriate data and represents bad science. In this 21st century, we should be using only that technology available such that research can make this a better world for all concerned.

References:

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Focus on...

Stem cell research

Stem cell research has often been touted as revolutionary with the potential of curing major illnesses, but what exactly is a stem cell, and how does it relate to animal-based research? Kier Bult visited the Australian Stem Cell Centre (ASCC) at Monash University and spoke to Professor Stephen Livesey, Chief Scientific Officer, to find out more.

The basic definition of a stem cell is a cell that can self renew; that is, it can reproduce itself. From this point the cell can go on to produce differentiated cells, or cells that are specific to a particular tissue. There are two basic types of stem cells; embryonic stem cells, and adult stem cells. The distinction of an embryonic stem cell is that it can go on to produce any type of tissue in the body, where as an adult stem cell is restricted to reproducing the tissue from which it is sourced.

The main focus of the study of stem cells is that of regenerative medicine. By studying the stages of progression from embryonic stem cells, scientists hope to discover proteins and growth factors that stimulate stem cells to regenerate or repair various organs, such as the heart. From studying the oval cell, which is a stem cell from the liver, it is known that the liver has a high regenerative capacity.

It has long been considered that organs such as the heart and the central nervous system, brain and spinal cord, had no regenerative capacity. This, however, is not the case. With the spinal cord, for example, there are central nervous system stem cells. Those stem cells, given the right stimulus and the right environment, have the ability to regenerate. This holds some promise for people suffering problems such as spinal injuries, Alzheimer's disease and Parkinson's disease.

Contrary to general belief, stem cell research is not a new technology; it has been around for more than 40 years. In that time it has proven to have quite dramatic results. Our understanding of the various types and levels of stem cells creates a whole platform for regenerative medicine.

The ASCC supports both adult and embryonic stem cell research and has scientists from the various disciplines at work. What is learned from one area of research can be applied to others. The benefit of embryonic stem cells is that you can track the progression of the cells through their various stages in a culture in a petri dish.

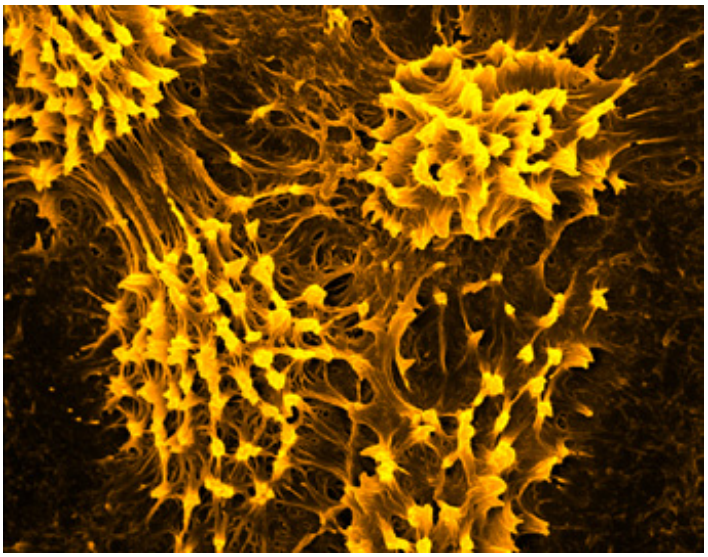

Photo of stem cell at very high magnification: courtesy ASCC

Our members will probably be wondering what impact stem cell research will have on the use of animals. Professor Livesey explained that: "Stem cell research has the potential to reduce the number of animals used in research as better diagnostic tools are developed," and: "It doesn't totally replace animal work, but it certainly, from a cell based model, gives an ability to investigate questions that were previously very difficult to address." A lot of the work done on organ regeneration is done purely on cells with no animal involvement at all.

For further information visit: www.stemcellcentre.edu.au

Thank you...

We'd like to thank our members, Liz Dealy, Doug Leith, Catherine Marston and Nicole McKillop, for volunteering their time for the recent Sustainable Living Festival in Melbourne. It would have been very difficult without your help!

News from Overseas

Xenotransplantation permitted in New Zealand

Following its public consultation in 2005, the New Zealand Bioethics Council has recommended that xenotransplantation (animal to human organ, cell and tissue transfer) be allowed to develop in New Zealand.
Previously, restrictions on xenotransplantation were imposed in 2002 with a three year "sunset clause."

Source: "The Cultural, Ethical and Spiritual Aspects of Animal-to-Human Transplantation". Toi te Taiao: the Bioethics Council.

Korean scientist quits in disgrace

A South Korean investigation panel has found that a landmark 2005 study on producing tailored embryonic stem cells was faked. The researcher, Prof. Hwang Woo-Suk, renowned for cloning an Afghan hound, Snuppy, and a 2004 paper on cloning the first human embryos for research, has apologised to the nation and resigned as head of the World Stem Cell Hub.

Source: Herald Sun, 24 December 2005.

New FDA rules on drug testing

The US Food and Drug Administration has issued new guidelines for the development of medical treatments. They will allow investigators to conduct micro-dosing - the testing of tiny doses of new drugs on humans. The tests will replace some of the early experiments now carried out on animals.

Source: NAVS email, 26 January 2006.

Microdosing

Microdosing is a sophisticated new method of predicting human reactions to new drugs. It involves giving research participants miniscule doses of an experimental drug – doses far too small to have any health effects – then tracking the drug's movement through the body by radio labelling. Its distribution and metabolism in bodily fluids is measured and enables researchers to quantify its concentrations in blood, urine, saliva and white blood cells.

This method is likely to reduce animal use and speed drug development as it is a direct prediction of human reactions. Microdosing tests have recently been conducted by Seattle-based Radiant Research to re-evaluate an anti-viral drug used by HIV patients.

Source: Good Medicine, PCRM. Winter 2006/Vol.XV, No.1

The Hurel cell

The Hurel cell is a new microchip system consisting of a network of interconnected reservoirs mimicking the organ systems of a living being. Researchers can place lung, liver, fat, gastric or heart cells inside the reservoirs, add a particular drug and quickly evaluate how the chemical is absorbed, distributed, metabolised and excreted. It also enables scientists to see how a specific drug may affect multiple organs simultaneously in a human.

The Hurel (human-relevant) cell was developed by scientists at Hurel Corporation, California and Cornell University, Ithica, New York. Further information can be obtained at www.hurelcorp.com.

Source: Good Medicine, PCRM. Winter 2006/Vol.XV, No.1

Australian News

Animal experiments soar in Australia

National statistics on animal experiments recently collated by AAHR show a massive increase (67.2%) in animal usage – suggesting that the 3R's Principle (Reduce, Refine and Replace) are clearly not effective.

The increase is due mainly to Victoria where 2,177,247 poultry were used in a single project. However other states also show substantial increases, with the exception of Western Australia and Queensland which have both reported a decrease in the numbers of animals used.

The total figure of animals used in 2004 was 6,489,005 (the 2003 figure was 3,880,932).

A breakdown of figures is available on our website at **www.aahr.asn.au/statistics.html** or by contacting our office to obtain a copy.

Thank you...

AAHR would like to thank Phil and Trixie Wollen of the Winsome Constance Kindness Trust (Melbourne), and Mrs Elsie Quinn (Sydney) for kindly providing accommodation for Dr Andre Menache and Ms Colleen McDuling during their visit to Australia.

Thalidomide treatment for cancer

From February 2006, thalidomide will be listed on the Pharmaceutical Benefits Scheme for use as a cancer treatment. Clinical trials in treating multiple myeloma, a cancer of the bone marrow, have proved highly successful in managing the disease.

The drug was actually registered by the Therapeutic Goods Administration in 2003 but few patients had access to it due its cost of about $3,000 per month.

Thalidomide was withdrawn from use in November 1961 (despite proven "safe" through animal tests) as it resulted in 12,000 babies being born with birth defects such as missing limbs.

Source: The Age, 18 January 2006.

voiceless
the fund for animals

AAHR would like to congratulate one of our members, Dr Barry Spurr, who is the recipient of a grant from Voiceless – the fund for animals. The award is to assist his campaign to achieve local government legislation to eradicate performing animal circuses from New South Wales.

Any fellow-members of AAHR who are interested in his project are invited to contact Barry via email at **barry.spurr@arts.usyd.edu.au**, or contact our office if you do not have email access and we will forward your details.