anzccart
HUMANE SCIENCE

Animal Ethics: New Frontiers, New Opportunities

26–28 September 2004
Novotel
Brighton Beach
Sydney

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Conference Planning Team

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Margaret Rose	Area Director of Animal Care, Prince of Wales Hospital, Sydney. Chair, Animal Research Review Panel, NSW Agriculture, Australia
Gill Sutherland	Executive Officer, ANZCCART (New Zealand), New Zealand
Selina Watson	Conference Administrator, ANZCCART, University of Adelaide, South Australia

Conference Sponsors

ANZCCART wishes to thank the following sponsors for their generous support of this conference:

- **Ministry for Science and Medical Research (New South Wales)**
- **University of Sydney**
- **National Health and Medical Research Council**
- **University of New South Wales**
- **Bureau of Animal Welfare, Victoria**
- **RSPCA (New South Wales)**

Welcome to the Conference

Welcome to this year's ANZCCART Conference "Animal Ethics: New Frontiers, New Opportunities".

As its title implies, the conference will focus on the ethical challenges that surround the emerging areas of bioscience and biotechnology.

The community has interests in and concerns about both the way in which animals are used and the risks in the application of new technologies for clinical benefit. Australia and New Zealand have been world leaders in promoting the involvement of the community, particularly through membership of Animal Ethics Committees, in decisions about the use of animals in science.

During the conference, emphasis will be placed on exploring ways in which the scientific and the wider communities can work together, with the aim of fostering discussion and debate amongst people with a wide spectrum of skills, interests and opinions.

A notable feature of this conference, and indeed of all ANZCCART conferences, is the wide audiences they attract. Amongst those attending this conference are individuals from Australia, Canada, England, Taiwan, Thailand, USA and New Zealand. Conference delegates include research scientists, students, animal care staff, members of Animal Ethics Committees (AECs), administrators and government officials, representatives of animal welfare organisations, and members of the public.

We encourage students to attend ANZCCART conferences by setting generously reduced student registration fees, and by providing for the ANZCCART *Student Award* which is given on the basis of the best conference paper submitted by a student. We also make available a number of conference scholarships for students and lay members of AECs.

The diverse meeting ground provided by our conferences fosters open and respectful discussion between delegates who may hold differing viewpoints on a wide range of animal use-related topics. This dialogue contributes to an environment where these differing views and opinions are understood and respected, and provides an excellent learning opportunity for delegates at both the lay and scientific level.

There are two fundamental components to any scientific conference: i) the formal contributions by way of papers and posters, and ii) the less formal discussions and debates that occur during question times, workshops, panel sessions; and over a cup of coffee. In planning this conference, the interaction amongst delegates has been given a high priority. We trust you will enter into the spirit of the occasion.

Members of the Conference Planning Team, listed elsewhere, have proved to be an efficient, enthusiastic and dedicated group; on behalf of ANZCCART, I thank them for all their hard work over the months leading up to the conference. Without their untiring efforts, the conference would not have come to fruition. Special mention should be made of Selina Watson whose work in the ANZCCART office preparing for the conference can only be described as excellent.

Thanks are due to the individuals who are speaking or presenting posters at the conference, or are chairing sessions.

Our sponsors have been very generous in their support and I sincerely thank them.

Finally, I wish you all a thought-provoking and enjoyable conference.

Rory Hope
Director

General Information

Hotel check in:
Delegates arriving on Sunday morning may not have immediate access to their rooms. Baggage can be securely stored in the hotel cloakroom until rooms become available.

Registration Desk and Enquires:
The registration desk will be open from 10.30 am to 1.30 pm on the first morning of the conference, and periodically thereafter. Please direct any questions to Selina Watson or Liz Romer.

Name Badges:
Please wear your name badges at all times. For ease of recognition, members of the conference planning team will be identified by yellow name badges — consult them if you have any problems.

Workshops:
For the workshop on Sunday afternoon you will be assigned to one of five groups. The group to which you belong will be indicated on your name badge. Further details about the workshops will be announced during the conference.

Novotel:
General information about the Novotel can be obtained from the reception desk (24 hour service) or the concierge in the hotel lobby. The Novotel has a range of facilities including indoor and outdoor swimming pools, tennis court, steam room, spa centre, and a state of the art gymnasium. A computing centre is also available.

Dining:
The ***Bay Garden Restaurant*** is open for buffet breakfast (6.00 am - 10.30 am), lunch (12 pm - 2.30 pm) and dinner (6.00 pm - 10.30 pm) daily. Located on level 3, the Italian Restaurant, ***Vela 3*** (and associated Bar) offers a selection of wood-fired pizzas, fine Italian pastas and gourmet salads. Booking is recommended. The restaurant is open for dinner from 5pm to 10.30pm. The Bar is open from 10am until late. ***TC's Lounge*** is open Monday to Saturday from 10 am to 2 am and Sunday from 10 am to midnight.

Car parking:
Car parking is available at the hotel and is priced at the special rate of $6.00 per day for delegates.

Social events:
ANZCCART invites you to welcome cocktails and nibbles on Sunday evening at 6.30 pm. The conference dinner will be held on Monday evening at 7.00 pm. Both these events take place at the Novotel. Further details about the dinner will be announced during the conference.

The local environment:
There are some excellent walks in the vicinity, particularly along Brighton Beach. Close by, there are numerous cafes and restaurants as well as a shopping arcade. The hotel can also arrange tours in the Sydney area, and advise on transport to the CBD and the nearby airport. Contact the hotel concierge for details.

Contact information:
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Programme

Day 1: Sunday, 26 September		
10.30 – 1.30	REGISTRATION	
12.30 – 1.30	LUNCH (A light lunch will be served)	
1.00 – 1.30	Session convenors meet to discuss facilities and guidelines for plenary and workshop sessions (*Endeavour Ballroom*)	
1.30	**CONFERENCE COMMENCES** **Welcome from ANZCCART** (Rory Hope)	
1.40 – 2.00	**Welcome to Sydney** (Speaker to be announced)	
	SESSION 1 ***Scientific progress and social attitudes – are they compatible?*** (Introduces general issues and themes, providing a framework for the conference and the workshop that follows)	**Chair** **Roger Dean**
2.00 – 2.40	***Overview of issues and expectations within a social context*** Bob Beale	
2.40 – 3.05	***The interface of bioethics and science policy*** Barbara Nicholas	
3.05 – 3.30	***Science responding to community needs and expectations*** Elspeth McLachlan	
3.30 – 4.00	AFTERNOON TEA	
	SESSION 2 ***WORKSHOP*** (Implications of the issues raised in Session 1 for the use of animals in science. What could we do differently and what has been learnt from processes presently in place that may serve as a model for dealing with emerging issues?)	**Convenor** **Margaret Rose**
4.00 – 4.15	**Setting the scene, assigning delegates to 5 groups, assigning topics**	
4.15 – 5.30	**Workshop group deliberations**	
5.30 – 6.20	**Reports by group leaders, and summing up by Convenor**	
6.30	WELCOME COCKTAILS (*Novotel*)	

Day 2: Monday, 27 September		
	SESSION 3 ***New sciences / New philosophies***	**Chair**
9.00 – 9.30	**Emerging technologies in the biomedical and agricultural sciences** Jack Malecki	**Julie Owens**
9.30 – 10.00	***An evolutionary dimension to animal ethics*** Rory Hope	
10.00 – 11.00	***New frontiers but no boundaries*** Simon Longstaff	
11.00 – 11.30	**Poster Session 1** **(Judging of RSPCA Poster Prize)** MORNING TEA	
	SESSION 4 ***Animal welfare: changing community expectations*** SPONSORED BY THE NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL	**Chair** **Elizabeth Grant**
11.30 – 12.00	***Animal welfare: what does the community expect?*** Ian Duncan	
12.00 – 12.30	***The changing face of animal welfare organisations*** Bidda Jones	
12.30 – 1.00	***Evolution of the Australian Code of Practice — approaches to enhancing community confidence*** Warwick Anderson and Alan Tilbrook	
1.00 – 2.00	LUNCH	
	SESSION 5 ***Animal welfare in practice: can we know what an animal is feeling?***	**Chair** **Mary Bate**
2:00 – 2.30	***Ethology: providing a window*** Ian Duncan	
2.30 – 3.00	***What is happening in the animal brain?*** Kevin Keay	
3.00 – 3.20	***Evaluation of pain in rodents and the challenge of pain management*** Johnny Roughan	
3.20 – 3.40	***Is animal welfare good science?*** Margaret Rose	
3.40 – 4.15	AFTERNOON TEA	

Day 2: Monday, 27 September (continued)		
4.15 – 5.15	**SESSION 6** ***Panel Discussion*** (Opportunity to further explore issues that arise during sessions 3,4 & 5) **Panel members** Warwick Anderson Ian Duncan Kevin Keay Johnny Roughan	**Chair** **Mike Rickard**
7.00 – 11.00	**CONFERENCE DINNER** *Novotel Hotel* ***Guest Speaker – Professor Anthony Basten, AO, Executive Director Centenary Institute of Cancer Medicine and Cell Biology, Royal Prince Alfred Hospital, Sydney*** **Presentation of ANZCCART Student Award and RSPCA (Australia) Poster Prize**	

[See next page for Tuesday sessions]

Day 3: Tuesday, 28 September		
	SESSION 7 ***Short presentations of volunteered papers*** ***ANZCCART Student Award Paper***	**Chair** **Malcolm France**
9.00 - 9.15	***Maintaining a delicate balance — ethical review of wildlife conservation research*** Susan Dyson and Michael Calver	
9.15 - 9.30	***The Bullwinkle factor*** Peter Johnson and Amanda Paul	
9.30 - 9.45	***Is "out-of-sight" also "out-of-mind" in captive animals?*** Raf Freire	
9.45 - 10.00	***People, fish and fisheries*** R. Keller Kopf	
10.00 - 10.30	ANZCCART STUDENT AWARD PRESENTATION ***A review of enrichment techniques for laboratory rodents*** Darek Figa	
10.30 – 11.00	**Poster Session 2** MORNING TEA	
	SESSION 8 ***Responsibility and accountability - are bureaucratic demands undermining the responsibility of scientists?*** SPONSORED BY THE BUREAU OF ANIMAL WELFARE (VIC)	**Chair** **Pat Cragg**
11.00 – 11.20	***Law, science and ethics — the needs of science and the expectations of the community*** Michael Gorton	
11.20 – 11.40	***Responsibility and accountability for the use of animals in research and teaching: a scientist's perspective*** Margaret Dunkley	
11.40 – 12.00	***Responsibility and accountability for the use of animals in research and teaching: a regulator's perspective*** Lynette Chave	
12.00 – 12.20	***Do we risk taking "ethics" out of the Animal Ethics Committee process?*** Sue Dodds	
12.20 – 1.00	***Panel discussion*** Panel members: Session 8 speakers.	
1.00 – 2.15	LUNCH	

Tuesday, 28 September (continued)		
2.15 –5.00	**SESSION 9** **WORKSHOP** ***Pain assessment in laboratory animals: problems and solutions*** Presented by Johnny Roughan (See over page for workshop details)	
5.00	**CONFERENCE SUMMING UP AND CLOSURE**	

[SEE NEXT PAGE FOR WORKSHOP DETAILS]

ANZCCART WORKSHOP
Tuesday, 28 September 2004
2.15 – 4.30 pm

Pain assessment in laboratory animals: problems and solutions

Presented by Johnny Roughan
University of Newcastle upon Tyne, UK

Chairperson: Kate Blaszak

The following topics will be addressed in the order shown. There will be a short break at approximately 3.30 pm for afternoon tea/coffee

An abstract of the workshop is included in the ABSTRACTS section.

TOPIC
Pain assessment in animals: historical perspectives
Current techniques and problems in assessing pain in laboratory animals
Development of behaviour-based pain scoring in rats: subjective versus objective approaches
Analgesic recommendations for post-operative pain in rodents
Tea/Coffee break (20 min)
Pain scoring in rats and mice: practical exercises using video material
Development of pain scoring techniques for other rodents
Pain scoring in rabbits
Pain scoring in laboratory animals: where next?

Invited speakers, session chairpersons, and members of the conference planning team	
Professor Warwick Anderson	Head, School of Biomedical Sciences, Monash University, Australia
Professor Anthony Basten AO	Executive Director, Centenary Institute of Cancer Medicine and Cell Biology, Royal Prince Alfred Hospital, Sydney, Australia
Dr Mary Bate	Animal Welfare Officer, University of Newcastle, Australia
Dr Kate Blaszak	Principal Veterinary Officer, Bureau of Animal Welfare, Department Primary Industries, Victoria, Australia
Mr Bob Beale	Public Affairs Advisor, University of New South Wales, Sydney, Australia
Dr Lynette Chave	Senior Veterinary Officer, Animal Welfare Unit, and Executive Officer of the Animal Research Review Panel, NSW Agriculture, Australia
Dr Pat Cragg	Department of Physiology, School of Medical Science, University of Otago, Dunedin, New Zealand
Professor Roger Dean	Vice Chancellor and President, University of Canberra, Australia. Australian Vice-Chancellors Committee representative on the ANZCCART Board
Associate Professor Susan Dodds	Faculty of Arts; Chair, University Research Ethics Policy Committee; University of Wollongong, Australia
Professor Ian Duncan	Director, Centre for the Study of Animal Welfare (CSAW), University of Guelph, Ontario, Canada
Associate Professor Margaret Dunkley	VRI Biomedical Ltd Newcastle R&D Unit, Newcastle, NSW, Australia
Dr. Malcolm France	Director, Laboratory Animal Services, University of Sydney, Australia
Mr Michael Gorton AM	Partner with Russell Kennedy, Solicitors; Chairman of the Victorian Biotechnological Ethics Advisory Committee; President of the Health Services Review Council of Victoria, Australia
Mrs Elizabeth Grant AM	Chairman, Animal Welfare Committee, NHMRC, Canberra, Australia NHMRC representative on the ANZCCART Board
Dr. Rory Hope	Director, ANZCCART. Visiting Research Fellow (Associate Professor), School of Molecular and Biomedical Science, University of Adelaide, Australia
Dr Bidda Jones	Scientific Officer, RSPCA Australia, Canberra, Australia
Dr Kevin Keay	Pain Management and Research Centre, Department of Anatomy and Histology, University of Sydney, Australia
Dr Simon Longstaff	Executive Director, St James Ethics Centre, Sydney, Australia
Dr Jack Malecki	Director, Business Development, CSIRO Livestock Industries, Australian Animal Health Laboratory, Geelong, Australia
Professor Elspeth McLachlan	Pro-Vice-Chancellor (Research), University of New South Wales. Co-Director, Spinal Injuries Research Centre, Prince of Wales Medical Research Institute, Sydney, Australia
Dr Barbara Nicholas	Senior Advisor, Bioethics Council of New Zealand
Professor Julie Owens	Department of Obstetrics and Gynaecology, Faculty of Health Sciences, University of Adelaide Australian Research Council (ARC) representative on the ANZCCART Board
Professor Michael Rickard	CSIRO Animal Welfare Advisor, Australian Animal Health Laboratory, Geelong, Australia CSIRO representative on the ANZCCART Board (Acting Chairman)
Ms Liz Romer	Executive Officer, National Parks and Wildlife Service, Department of Environment and Conservation, NSW, Australia
Associate Professor Margaret Rose	Area Director of Animal Care, Prince of Wales Hospital, Sydney. Chair, Animal Research review Panel, NSW Agriculture, Australia
Dr Johnny Roughan	Senior Research Associate, Comparative Biology Centre, The Medical School, University of Newcastle upon Tyne, Newcastle, UK
Gill Sutherland	Executive Officer, ANZCCART (New Zealand), New Zealand

The interface of bioethics and science policy

Barbara Nicholas

Senior Advisor, New Zealand Bioethics Council
Barbara.nicholas@mfe.govt.nz

Bioethics and Science Policy are shaped by different drivers, and have related but different agendas. This paper will look at some of those drivers and agenda, and explore why science policy might need ethics, and what role ethics might play. It also looks at the opportunities to widen the welfare approach to animal ethics in response to ethical and policy concerns associated with emerging biotechnologies.

Barbara is currently Senior Advisor for the New Zealand Bioethics Council. She comes to that work from a background in science and theology, and experience as both an academic (at Otago University, Dunedin), and a public servant working in Health Policy and with the Royal Commission on Genetic Modification. Barbara's particular interest is in ethical implications of emerging biotechnologies.

Science responding to community needs and expectations

ELSPETH MCLACHLAN

Prince of Wales Medical Research Institute and the University of New South Wales
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Science is an endeavour that depends on the integrity of the participants and the trust of the community. The progress of science impacts on the community so that researchers have a major responsibility to communicate their work and its implications. Poor quality research is unethical and risks direct or indirect harm to the community. Scientists and the community have developed codes of practice that direct the world they work in. The media and the public have enjoyed speculating about the extent of misdemeanours against these codes, which erodes trust. Bilateral discussion of research is essential to enable science to progress society but not direct it. Can we ensure that research is conducted with the highest standards and how high do they have to be?

Elspeth McLachlan is an autonomic neurobiologist who currently works in the area of injury to the nervous system. She has published widely on the cellular aspects of the sympathetic nervous system and peripheral sensory pathways. Half her career has been spent in academic positions at the Universities of Sydney, Monash, Queensland and New South Wales, and the rest as an NHMRC Research Fellow in medical research institutes. She has spent the last five years in research administration, most recently as Pro-Vice-Chancellor (Research) at UNSW. She recently returned to the Prince of Wales Medical Research Institute where she is Co-Director of the Spinal Injuries Research Centre. She is a Fellow of the Australian Academy of Science and has been awarded a Max-Planck Research Prize for International Collaboration and a Ramaciotti Medal for Excellence in Biomedical Research.

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Emerging technologies in the biomedical and agricultural sciences

Jack C Malecki

CSIRO Livestock Industries
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Recent technological advances in several fields of science are predicted to revolutionize production and management of livestock. The potential for impact of three technologies will be discussed: gene silencing; stem cell transplantation; and automated, remote control of animal interactions.

A recently discovered biological process known as RNA interference (RNAi) allows us to propose completely new ways of developing a wide range of applications for treatment and prevention of diseases and parasites, manipulation of productivity and adaptation, sex determination, xenotransplantation, biopharmaceuticals and control of pest animals. The cellular machinery needed for RNAi is a natural component of all eukaryotic cells, from the simplest single cell organisms to humans. One natural role of RNAi is to combat viral infections and to protect cells from inappropriate gene expression via the recognition of double-stranded RNA. The introduction of double-stranded RNA into cells results in a process whereby an homologous cellular or viral messenger RNA is specifically degraded thereby silencing that gene. This process of post-transcriptional gene silencing is exquisitely specific and not dose-dependent. RNAi can be applied to switch off endogenous as well as exogenous genes and the effect can be made heritable through production of transgenic animals. Other methods of gene silencing at the nuclear transcriptional level are also being developed.

The FAO has predicted the a major challenge for many of the livestock industries in future years will be to meet the burgeoning international demand for animal products. Current limitations to productivity and genetic gain could be overcome by transferring male germ line stem cells between breeds. *Bos indicus* bulls, that are adapted to tropical conditions, could be used to deliver semen from elite *Bos taurus* or composite bulls, thereby significantly increasing the growth rate, yield and meat quality of beef herds in tropical areas. Furthermore, the beef industry could control the sex of progeny generated, on a large scale. Thus beef herds could quickly respond to market needs and environmental influences *via* the dissemination of selected genetics through a low-cost, low-labor delivery system.

Electronic devices, fitted to animals and monitored remotely, can be configured such that interactions between identified individual animals can be recorded and controlled. This technology would have useful applications in extensive animal industries for recording parentage and controlling pedigree, preventing fighting and injuries amongst breeding males and controlling access to protected areas. Algorithms can be developed to determine relationships between animals and control spatial location.

Jack C Malecki, BSc (Hons), PhD (Monash), FAICD, is currently Director, Business Development, CSIRO Livestock Industries; and Director and Chairman of Betabiotics Pty Ltd (a CSIRO/University of Queensland spin off company). His previous positions have been: Chief Executive Officer, Technology & Innovation Management Pty Ltd and TechStart Australia Pty; Principal Research Scientist & Regional Research Manager, Department of Agriculture Vic; East Gippsland Agricultural and Veterinary Centre, Bairnsdale, Victoria; Head, Endocrinology Laboratory, Department of Pathology, Royal Children's Hospital, Melbourne.

An evolutionary dimension to animal ethics

Rory Hope

Director, ANZCCART
Visiting Research Fellow, School of Molecular and Biomedical Science, University of Adelaide, South Australia.

In examining the extremely complex and challenging issues associated with the attitudes and behaviours of humans towards other animals, and plants, a number of components must be taken into account. One of these components, and I will argue that it is a crucial one, is the nature of the evolutionary relationships that link together all living organisms. These relationships, their history and the ways in which they have been brought about, are often either disregarded or misunderstood. Part of the problem lies in the fact that the human brain finds it difficult to conceive of the multidimensional features of the evolutionary process. The "simple" sequential evolutionary hierarchy depicted by the historic notion of a "Great Chain of Being" still permeates much discussion on evolution, as illustrated by frequent and inappropriate (because they perpetuate a misunderstanding) use of terms such as "primitive", "higher" and "advanced" to describe species. In addition, the morphology and behaviours of organisms are given undue weight, to the detriment of considerations about overall genetic composition and evolutionary relatedness. Indeed, it could be argued that the "soul" of an organism lies in its evolutionary history, and is encoded in a DNA sequence that has been moulded by chance and natural selection over hundreds of millions of years. (Thinking of a "soul" in this way helps dispel Rene Descartes' contention that only humans have a mind that enables them to feel pain).

As humans seeking to objectively assess our relationships with other species, we are inevitably constrained by a conflict of interest. However, by applying the scientific method of hypothesis testing through the collection and analysis of data, we are able to approach ethical problems from a background of knowledge and understanding, rather than ignorance and supposition.

The developing science of molecular evolution, based largely of DNA sequence comparisons, has contributed to our understanding of the evolutionary processes and the degree of relatedness between species. In this paper, I will describe some selected evolutionary findings, based largely on molecular data, and comment on the relationship of these findings to animal ethics.

Rory Hope is a geneticist with special interests in molecular evolution. On retiring in 2002 from his position as Associate Professor in the School of Molecular and Biomedical Science, University of Adelaide, where he headed the Laboratory of Molecular Evolution, he took up the position of Director, ANZCCART.

Animal welfare: what does the community expect?

Ian Duncan

Professor of Applied Ethology
Chair in Animal Welfare
Department of Animal and Poultry Science
University of Guelph, Ontario
Canada N1G 2W1

In Western culture, a community concern for the welfare of animals is a comparatively recent phenomenon. Although there have always been individuals within our society who have cared deeply about the welfare of animals, a general societal concern has only emerged within the last 150 years. The development of science and ethical theory to help us understand and deal with animal welfare is, therefore, still in its infancy. The situation has been exacerbated by the fact that through much of the 20th century, behavioural scientists avoided any consideration of animal consciousness. Thus, the late 19th century, scientific and common-sense view of animals as sentient beings, received little support from science until the 1970s. Animal welfare science and moral philosophy are now frantically trying to catch up. The inevitable conflicts between a utilitarian and a rights approach to protecting animal welfare will be discussed. The problems associated with a complete rights approach and the idea of 'killing as the worst harm' will be explored. In fact, a complete rights approach does little to protect animals from the indirect effects of many human activities and it does not seem to correspond with the community's view of how animals should be treated. The possibility of developing a 'limited rights' approach will be discussed.

Finally, personal experience suggests that the community's expectations are often not as rigid as we might think. There seems to be a broad acceptance of animal use within the community – as long as it is humane and responsible. We, the users of animals, must ensure our use of animals is indeed humane and responsible, and then adopt a more 'open-door' approach to animal research and animal production to demonstrate to the community that this is indeed the case.

Ian Duncan was born and educated in Edinburgh, Scotland. He obtained a B.Sc. (Hons) in Agriculture from Edinburgh University and went on to study for his Ph.D. at the Poultry Research Centre (PRC), Edinburgh (now the Roslin Institute, home of Dolly the sheep) with a topic of frustration and conflict in the domestic fowl. He was thus one of the first people to bring a scientific approach to solving animal welfare problems. He continued to work at the PRC on welfare topics in poultry for 20 years until he emigrated to Canada in 1989. He is Professor of Applied Ethology at the University of Guelph and also holds the oldest University Chair in Animal Welfare in North America. In his research, he is developing methods of asking farm animals what they feel about the conditions in which they are kept and the procedures to which they are subjected. He has published more than 150 scientific papers most of which are connected to animal welfare. Ian is also heavily involved in teaching, and his third-year undergraduate course on farm animal welfare has more than 150 students currently registered.

The changing face of animal welfare organisations

Bidda Jones

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The animal welfare movement as we now know it arose from the humanist movement in the early 1800s, which advocated the protection of basic rights for the most vulnerable in our society. The extension of this argument from humans to animals was a natural progression, and so it all began. As legislation to protect animals was developed, the role of animal welfare organisations in extending, improving and enforcing that legislation became increasingly important. The main objectives of the animal welfare movement today are fundamentally the same as those of its founders: to prevent cruelty to animals by enforcing existing legislation; to work towards improving such legislation for the protection of animals; to educate the community about the humane treatment of animals; and to encourage and sustain public debate on animal welfare. Yet there are many differences between then and now in the breadth of animal issues that these objectives are applied to and in the relative emphasis placed on each of them. The work of animal welfare organisations now covers all aspects of human intervention in animals' lives, from wildlife management, through the traditional areas of cats, dogs and unwanted animals, to animals in agriculture and the care and use of animals for scientific purposes. And while the movement is still clearly rooted in the hands-on care and protection of animals, the emphasis of many organisations has shifted to lobbying and campaigning for change.

At the same time, the role of members and supporters has changed considerably. Official membership of animal welfare organisations, as with NGOs in general, is no longer an aspiration – what seems to matter more is the opportunity to demonstrate support. The internet has provided a fast and simple way to do this and has become probably the most important campaigning tool available to NGOs. It also serves to disseminate animal welfare issues internationally and provides a networking base for supporters.

Recent decades have also seen the gradual development and separation of the animal rights movement from animal welfare. While the immediate aims of both groups often coincide, their underlying philosophies differ on one important principle: whether any animal use by humans is acceptable. An animal welfare position generally accepts the use of animals by humans provided it is justified and humane, while an animal rights position advocates a move away from animal use altogether. This distinction is not always clear to outside observers. The perspective of many directly involved in animal use is that the animal welfare movement is increasingly threatening and overstepping the boundaries of appropriate action. But those at the other extreme argue that they are not doing enough to take up the fight against the exploitation of animals. It seems that many people are now prepared to take more extreme and sometimes illegal action to promote the cause of animals. The challenge for the animal welfare movement now is how to deal with these changes and face the expectations of the community in the future.

Dr Bidda Jones is a zoologist with a background in animal behaviour and animal welfare. She has worked for the RSPCA for the past 11 years in both the UK and Australia. During her time with the UK RSPCA she dealt specifically with the issue of animals in research, and particularly with the use of nonhuman primates. Since coming to Australia her work has broadened to cover a diverse range of animal welfare issues, from the humane control of vertebrate pests to the welfare implications of gene technology. Her current role with RSPCA Australia is to provide scientific and technical advice on policy issues to a range of audiences, as well as representing the organisation at a national level.

Ethology: providing a window

Ian Duncan

Professor of Applied Ethology
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Welfare is reduced when animals experience states of suffering. Since states of suffering are subjective states or feelings, they are not directly accessible to scientific investigation. However, careful observation of an animal's behaviour can often give a good indication of whether or not it is suffering. In addition, techniques are currently being developed whereby states of suffering can be investigated indirectly; the animal can be 'asked' what it feels about the conditions under which it is kept and the procedures to which it is subjected. With some ingenuity it might be possible to find out how negative particular states of suffering are to the animal. The major states of suffering that have been investigated in animals are pain and discomfort, fear, deprivation, frustration and conflict. We should also be open to the possibility that some species may experience states of suffering not experienced by human beings. There is also a growing opinion that good welfare is more than just the absence of suffering and that at least the mammals and birds of the vertebrates are able to experience pleasure. Some examples of different states of suffering that are commonly experienced by animals will be discussed and the techniques being developed to investigate them will be described.

Evaluation of pain in rodents and the challenge of pain management

JOHNNY ROUGHAN

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With growing public concern for the welfare of research animals, there is now more pressure than ever for animal carers to minimise any pain or suffering their animals experience. Despite this, recent surveys indicate that use of analgesics to alleviate pain is far from uniform, sometimes even after major surgery. The most likely reason for this is a general inability of animal carers to recognise pain or reliably assess its severity. Most attempts to assess pain involve highly subjective methods and naturally lead to highly varied opinions as to which characteristics of an animal's behaviour or appearance are the most useful for assessing pain. These uncertainties have led to equally varied opinions on necessary levels of pain relief. These are difficult problems, compounded by the possibility that even after a standardised surgical procedure, individual animals, like humans, have differing analgesic requirements aside from species, strain and age-specific differences.

Analgesics are also 'under used' because researchers have concerns that side-effects may invalidate experimental results. However, an often neglected issue is the unknown extent to which unalleviated pain, or poor post-operative care in general may confound results. Better experimental designs with carefully planned pilot studies can provide essential knowledge on potential side-effects, often without compromising primary outcomes. Dosing strategies that utilise lower or more frequent dosing regimens are other alternatives. Side-effects upon behaviour and physiology are prevalent with use of opioids for pain relief, so consideration could be given to use of supposedly weaker non-steroidal anti-inflammatory analgesics (NSAIDs, e.g., ibuprofen, acetaminophen) or to implementing multi-modal analgesic therapies. There is also a new generation of partially or highly selective COX-2 NSAIDs (e.g., meloxicam or carprofen, and the so-called coxibs, e.g., paracoxib, deracoxib) offering the potential of limiting the complications seen with more 'traditional' COX-1 inhibitors (e.g., flunixin or ketoprofen) such as gastrointestinal toxicity.

To provide effective pain alleviation, objective pain assessments techniques need to be developed that can be applied rapidly, and that are robust to procedural differences yet sensitive in highlighting problem cases. This is a daunting task, particularly in rodents, where the important signs are often very subtle. Nevertheless, recent studies of the post-operative behaviour of rats and mice, crucially employing the necessary controls, have shown it is possible. An example of this will be presented.

Johnny Roughan joined the Comparative Biology Centre at the University of Newcastle as a Research Assistant in 1994. He obtained his PhD degree from the Queen's University of Belfast the same year on 'Relationships between behaviour and slow potential shift, EEG and evoked potential responses in the brain of the seizure-prone Mongolian gerbil'. Since then he has been researching novel anaesthetic regimens for rodents and rabbits, but the major emphasis of his research has been on developing new techniques using behaviour to assess pain in rodents, and using these to evaluate the efficacy of a range of different commonly used analgesics. He is now the research group's Senior Research Associate.

Is animal welfare good science?

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The notion that strategies which promote animal welfare benefit scientific outcomes would seem to be self-evident. Even so, for this hypothesis to be valid, it should be supported by a critical examination of evidence.

When animals are used for scientific purposes, the key strategies to promote their welfare are broadly set out under the principles of Replacement, Reduction and Refinement. There is a demonstrable relationship between the approaches used to achieve the goals of Replacement and Reduction and scientific outcomes. Thus, this paper will focus on the evidence that strategies which promote Refinement, be they to minimise pain and distress or to promote an animal's well-being, enhance scientific outcomes: the underlying assumption being that such strategies will minimise the confounding influences of unwanted stressors.

When animals are used in a research project they are potentially exposed to a diverse range of stressors. These may be associated with a specific research protocol or procedure or, in a more general sense, be associated with changes in the animal's social environment, or its living conditions or its experience of novel environments or conditions. Due to the diversity of situations which are presented in the research setting, specific issues need to be identified and addressed on a case-by-case basis. Never the less, strategies which are most often used to minimise the negative impact of various experiences fall into three broad categories: (1) the management of pain or distress through pharmacological interventions; (2) the refinement of techniques or protocols to minimise or limit the impact of a particular procedure, process or condition; and (3) the provision of living conditions (physical and social) which promote an animal's comfort and well-being.

This paper will examine the implications and challenges for scientific outcomes in seeking to achieve the goal of Refinement. Further, the opportunities to develop strategies which may enable an animal to better cope with stressors and, possibly, modulate its experiences of pain or distress will be discussed.

Margaret Rose is Director of Animal Care for the South Eastern Sydney Area Health Service, and an Associate Professor of the Clinical School of the University of NSW. She is a veterinarian with over 30 years' experience in biomedical research. For most of that time, she has been involved in issues relating to science and public policy, particularly with regard to the use of animals in research and teaching. She is Chair of the NSW Animal Research Review Panel and also serves as a member of the NSW Government Animal Welfare Advisory Council.

Opportunity to further explore issues that arise during Sessions 3, 4 & 5

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Maintaining a delicate balance - ethical review of wildlife conservation research

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Animal Ethics Committees (AECs) are responsible for ensuring that animal use for scientific purposes adheres to humane principles and that welfare of individual animals is paramount. Beyond these functions that are enshrined in the national animal care code, AECs also indirectly serve to protect the reputations of researchers and the research establishment. The process of review and accreditation that precedes conduct of an animal research project, serves to validate the research and attest to its credibility. In effect the researcher's claims of the importance, feasibility and originality of the proposed research are endorsed.

In wild life conservation studies, the AEC is called upon to perform an exquisitely delicate balancing act as it follows the process required for accreditation (Dyson and Calver, 2003). The unique position of an animal within its own habitat and the impact of even minimally invasive research on the individual and species welfare must be considered. Furthermore, the perspectives of many parties must be assessed and integrated. These include the individual animals being studied, the species under investigation, conservation scientists, conservation and animal welfare activists, wildlife regulatory authorities, the research institution and government.

The code of practice does not place different values on different species. Endangered species and feral introduced species are equally entitled to humane treatment – a value set that is not necessarily consistent with the stance of conservationists who hold the well being of populations above that of individuals. Criticism against AECs includes this failure to recognise any difference in species values, the delays that are inherent in the review process and difficulties with conditions placed upon the conduct of the research. Nonetheless, it is not uncommon for the extensive combined experience of AEC Committee members to result in identification of issues that may have provoked public criticism. This adds value by enabling the researcher to address these before the project commences. Researchers presenting their proposals to an AEC are initiating a valuable public communication process as they present the values and perspectives of the research community to the lay members of the committee. While the ultimate responsibility for appropriate treatment of animals during research conduct will rest with the research scientist, an AEC can be called on to defend procedures it has approved and act as a defensive shield for the researcher. It is imperative that the responsibilities borne by the AEC and the significance of the Committee's multiple roles are understood by researchers. Ultimately it is the welfare of any animal, sentient yet unable to enter any debate on value judgements, that must be protected.

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Dyson SE and Calver MC. The value of Animal Ethics Committees for wildlife research in conservation biology – an Australian perspective. Pacific Conservation Biology (2003) 9, 86-94.

Dr Sue Dyson B.Med.Sci (Melb), TSTC (Monash TC) PhD (UWA) is the Research Services Manager at Murdoch University. Her role includes responsibility for both Human and Animal Ethics Committees. Formerly a neuroscience researcher and academic at the University of WA, Sue has been at Murdoch University since 1999.

The Bullwinkle factor

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This paper examines some of the current legislation regulating animal research in Australia. The purpose of the legislation, its perceived strengths and weaknesses and the role in informing public confidence and meeting community expectations are explored. The responsibilities of the regulators are described and thoughts are proffered on some principles for effective regulation and measures of success. The question of whether regulation should be relied upon to uphold ethics is discussed.

Is “out-of-sight” also “out-of-mind” in captive animals?

Raf Freire

University of New England

Captivity almost always prevents animals from experiencing some resources such as mates, prey or large expanses. The issue of whether animals have the ability to perceive the absence of resources (i.e. to “miss” them), and therefore potentially suffer from this perceived absence of a resource has been difficult to address. To be able to “miss” a resource, an animal must first be able to establish a mental representation of the resource. We investigated the ability of chickens to form mental representations of a hidden object. Chickens are able to spontaneously and accurately locate a hidden object, even after a short delay, suggesting that they are indeed able to form mental representation. Interestingly, rearing in complex environments improved relocation and the degree of branching in the hippocampus relative to barren reared chickens, suggesting that spatial cognition may be influenced by early experience. Although it is unlikely that the ability to form mental representations is dependent on early experience, it is possible that the known crowding of chickens near the walls (and avoidance of the centre) in large groups is a product of inappropriate development in large group poultry commercial systems.

People, fish and fisheries

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The aquatic environment is foreign to most terrestrial organisms and despite recent advances in science many of the inhabitants of this aquatic domain are unfamiliar to humans. Most people regard fish lower than air-breathing birds and mammals. These societal values dictate in large measure our behaviour in interactions with fish and the level of legislative welfare protection that they receive. The legislative welfare protection that fish do receive encompasses only a minute fraction of our total interactions. Today, humans interact with fish in a variety of ways including research, teaching, wild fisheries, farms and as companions. The scope of fish welfare is considerably larger than all other vertebrate groups and in 2001 ≈101 million tonnes of fish were harvested for human use (perhaps 101 billion fish). However, without a clear understanding of biological, physiological, and neurological processes, including consciousness and pain perception, the broad scope of our interaction with fish is considered by most a trivial animal welfare issue. The body of scientific knowledge concerning fish welfare is small compared to our understanding of mammals and birds as well as production in commercial and recreational fisheries. This ignorance has caused fish to endure much of the burden of replacement from using “higher” level organisms particularly in teaching and research.

Continual review of our conduct with respect to animals in food production, research, recreation, and teaching demands an evaluation of our interactions with fish. Consideration for fish welfare must account for the diversity of the ≈ 25,500 species that exist and must be evaluated independently from the welfare needs of terrestrial organisms. Pain as humans perceive it may not be a feature of fish neurobiology and is the subject of intense debate. A true understanding of pain perception in fish has major implications for the regulation of all types of fish use. Illuminated by recent research we now have a basic level of understanding about fish that allows us to begin addressing their welfare in interactions with people (fisheries).

ANZCCART Student Award presentation

Accommodating behavioural needs in laboratory rodents — a review of enrichment techniques

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All animal species have an inherent capacity to address their behavioural needs in a way that enables them to maintain a healthy state. In the wild, this is possible through interactions with rich environments, which provide elements of choice and problem-solving complexity. In captivity however, these important behavioural factors are in many cases missing. Instead our traditional husbandry techniques typically control the captive animal environment, limiting an animal's choice and in so doing, credit them with an abundance of captive time. Animals chronically housed under such conditions develop inactive or overactive abnormal behaviours and display distorted activity budgets.

Accordingly, during the past 10 years many laboratories have slowly begun to recognise the importance of addressing behavioural needs in captive rodents. This has resulted in the introduction of various enrichment items that are used to stimulate activity within, what would otherwise be, a typically bleak home-cage environment. Plastic or cardboard rolls, tissue boxes, metal rings, seed, and even empty coffee tins are amongst many items now considered as acceptable forms of enrichment. Yet do we really know if these items are behaviourally effective? Have the right behaviours been stimulated? And what effect do they have on the overall captive activity budget?

To answer these important questions requires careful evaluation of each enrichment item. This can be achieved by: 1) comparing activity budgets before and after the introduction of the enrichment stimuli; and 2) using knowledge of wild activity budgets and behaviour for the species as appropriate baseline data, where possible. Effective enrichment items would be identified as those that increase natural behaviours, suppress abnormal behaviours, whilst also balancing altered activity budgets. Collectively, such information can be used to develop successful enrichment programs and to establish a valuable behavioural database specific to laboratory species and strains. However, such enrichment evaluation is still in its infancy and to date no laboratory-specific behavioural database exists. Addressing this deficit seems a critical step needed to significantly advance laboratory animal welfare. Given the limited information in this area, this paper attempts to (briefly) review common enrichment techniques and their effect on rodents' behavioural needs in captivity. The process of an enrichment program is outlined, and the importance of implementing a behavioural database is also discussed..

For the past 15 years Darek has worked as an Animal Technician and Animal House Manager at the School of Psychology, University of Sydney. During this time he has also been employed as a teacher in the Animal Care section at Bankstown College of TAFE. His qualifications include various TAFE certificates in Animal Care, an Associate Diploma in Animal Technology, and a Science Degree majoring in Psychology. He is currently completing a Masters Research Degree investigating behavioural ecology of Green Turtles. Darek is also a member of the Institute of Animal Technology in the UK. His diverse interests include the areas of herpetology, animal behaviour and behavioural enrichment in captive animals.

Law, science and ethics — the needs of science and the expectations of the community

Michael Gorton

Chair, Victorian Biotechnology Ethics Advisory Committee

It is important to ensure that new biotechnology is fully assessed by having regard to an ethical framework. We often ask the question "Can we do it? ", but we often do not stop to ask the additional question "Should we do it?".

The Victorian Biotechnology Ethics Advisory Committee (VBEAC) advises the Victorian Government, through the Minister for Health, on ethical issues arising out of biotechnology and its impact on Victoria and Victorians. VBEAC has recommended that governments have responsibility to develop a coordinated range of strategies to inform the public about existing and proposed biotechnology activities. Information which is reliable and up to date should be available to guide debate. Decision-making processes in relation to biotechnology approvals should be clear and transparent, so as to encourage confidence and acceptance.

These issues are becoming more important to the community because of:

- rapidly changing science and technology;
- ever expanding applications of biotechnology;
- the "unthinkable" becomes common place;
- a diversity of interests and stakeholders; and
- a public perception swayed by media and interest groups (for good or for bad).

Although Australia has national gene technology legislation providing a framework for future progress, a moratorium has now been imposed by most states and territories.

There are two elements missing from the debate on gene technology in Australia at present:-

1. A clear and transparent ethics-based framework for assessment of biotechnology;
2. More community engagement, with appropriate information.

The GM moratoria places us in a "holding pattern", but also presents a unique opportunity for greater community engagement, information dissemination and an informed debate. The moratorium provides an opportunity for any myths to be exposed and for the issues involved to be discussed in a calm, careful way so we may move beyond the merely sensational.

It is appropriate and necessary that processes for approval of biotechnology be accountable and transparent. For this reason it is clearly an ethical issue that the community be well informed and engaged in consideration of the issues and their implications.

Some of the debate in the community has centred on the elimination of all risks from the introduction of gene technology.

As we have seen in medical science and human research, the consideration of ethical issues requires a balancing of the risks. New drugs and new medical procedures will usually involve some side-effects. It is a question of balancing the competing risks of proceeding with the drug or treatment, compared with the "evil" or illness which is sought to be prevented or treated. Similarly, ethical assessment of the particular gene technology would weigh up the potential benefits arising from further exploration, the development of cures etc, with the potential risks to the health and safety of the community. We would build confidence in our decision-making processes if the ethical framework for consideration of new biotechnology were accountable and transparent.

A clear ethical framework would:

- provide certainty for industry and stakeholders;
- reassure the community;
- provide a basis for education and engagement; and
- provide some parameters for debate and discussion.

Michael Gorton AM LLB, B.Comm, FRACS (Hon), FANZCA (Hon) is a partner with Russell Kennedy, Solicitors, with experience in corporate and commercial law, and a special interest in Health Law. He has qualifications in law and commerce, and has an extensive background in the community sector. Michael was awarded Honorary Fellowships by the Royal Australasian College of Surgeons and the Australian and New Zealand College of Anaesthetists. He was made a Member in the Order of Australia in January 2004. He was, until 1999, Victoria's first permanent male Commissioner with the Victorian Equal Opportunity Commission and has been appointed by the Victorian Government as President of the Health Services Review Council, Deputy Chair of the Infertility Treatment Authority and Chair of Victorian Biotechnological Ethics Advisory Committee. Michael is a former National President of Greening Australia; former Victorian President of the United Nations Association of Australia; and was the inaugural Co-Chair of Reconciliation Victoria Inc.

Session EIGHT: Responsibility and accountability are bureaucratic demands undermining the responsibility of scientists?

Responsibility and accountability for the use of animals in research and teaching: a scientist's perspective

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Scientists using animals for research and teaching have certain responsibilities and accountability as described by the Animal Research Act 1985, Animal Research Regulation 1995, and Australian Code of Practice for the care and use of animals for scientific purposes. Compliance requires completion of animal ethics applications including initial and renewal applications, variation applications where necessary, and final reports. Within the approval procedure, peer review must be obtained to evaluate the scientific credibility of the proposed study, and where studies are being performed (e.g., drug or vaccine development) to satisfy regulatory bodies, evidence of the regulatory requirement must be presented.

Some projects such as vaccine development projects require numerous applications to address each part of the development process including basic research, evaluation of vaccine preparations, testing different dose sizes and dosing regimens, testing for cross-protection against different pathogen strains, performing animal toxicology studies and developing *in vivo* assays for vaccine potency that can be used to evaluate vaccine batches and to evaluate vaccine stability under storage conditions. While *in vitro* potency assays can be developed for evaluation of vaccine batches these must be validated against *in vivo* efficacy assays prior to being acceptable to regulatory authorities. A single vaccine development project can generate ten or more initial animal ethics applications. Where more than one vaccine is under development the process must be carried out for each. In addition to the paperwork required for animal ethics, scientists must also submit applications to safety committees, and applications and reports to funding bodies, in addition to recording data, and writing reports and scientific papers.

The peer review process can become onerous for those of us with projects funded outside the usual NHMRC/ARC funding bodies and perhaps more thought needs to be given to how effective this peer review actually is. Another time-consuming aspect of animal ethics is monitoring of animals. While the necessity for this is obvious, the process consumes considerable time on a daily basis for scientists who use large numbers of animals. The actual monitoring is brief compared to the time spent recording observations. This is amplified where staff numbers are small and the monitoring falls on one or two individuals. The process is made easier by the use of monitoring forms that require comment only where a problem is found.

While the present animal ethics approval process helps ensure appropriate treatment of animals, any refinement that can streamline the process and reduce the paperwork required will be appreciated. For example, the process of obtaining animal ethics approval can be made easier for scientists by use of an electronic submission process that avoids photocopying numerous copies for AEC members. This is of particular importance for scientists with little or no administrative assistance.

A/Prof Margaret Dunkley, BSc(Hons), MSc, PhD, MBA (Technology Management), is Chief Scientist-Vaccines for VRI BioMedical Ltd and is a conjoint A/Prof in the School of Biomedical Sciences, Faculty of Health at the University of Newcastle, Newcastle NSW. A/Prof Dunkley runs VRI's Newcastle R&D Unit which is located at the University of Newcastle, and is where VRI's vaccine development projects and diagnostic development projects are based. A/Prof Dunkley has had over 25 years experience in medical research and 12 years association with industry in the biotechnology area.

Responsibility and accountability for the use of animals in research and teaching: a regulator's perspective

Lynette Chave

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This talk appears in the segment of the conference which poses the question "Responsibility and accountability: are bureaucratic demands undermining the responsibilities of scientists?" The terminology of "bureaucratic demands" is very value-laden and can more neutrally be termed "accountability requirements".

The majority of requirements for accountability for investigators are outlined in the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes. These requirements are primarily:

* applications to the Animal Ethics Committee (AEC) to conduct projects;
* reporting back to the AEC on the progress and outcome of projects;
* reporting to the AEC on animal welfare problems encountered during projects; and
* maintaining records related to monitoring the welfare of animals.

In addition, State/Territory legislation, and some bodies such as NHMRC, require the reporting of statistics on animal use.

The reporting requirements, as outlined in the Code of Practice, enhance the ability of investigators to meet their personal responsibilities for animal use by:

* highlighting issues that should be being thought about and acted on, in the course of planning a project, to ensure the implementation of the 3Rs of Replacement, Reduction and Refinement;
* enlisting the help of the AEC (a body with broad expertise) in planning a project and in dealing with animal welfare problems that may arise;
* promoting reflection on the success of the project and its effects on the welfare of the animals used; and
* assisting in implementing effective regimes for monitoring animals specific to each project.

It is acknowledged that accountability requirements add to the workload of investigators. Where requirements for accountability are excessive, conflicting, or to no clear purpose, this can result in negative reactions from those attempting to comply with the requirements, and possibly promote a level of disengagement from the process.

However, it greatly undervalues investigators to suggest that the current requirements for accountability (or "bureaucratic demands") will prompt them to put aside their personal responsibilities towards the animals they use.

Lynette is a Senior Veterinary Officer in the Animal Welfare Unit of the NSW Department of Primary Industries. She is also Executive Officer to the NSW Animal Research Review Panel and an inspector under the NSW Animal Research Act 1985. Her main area of work is related to administration of the NSW animal research legislation. She has been a member of the Code Liaison Group during the period of its revision of both the 5th and 6th editions of the *Australian Code of Practice for the Care and Use of Animals for Scientific Purposes*. She has been with the Animal Welfare Unit for 14 years and prior to this and until 1996, also worked as a veterinarian in private practice. She has a particular interest in horses which takes up some of her work and most of her non-work hours. She also has a passion for singing, which unfortunately exceeds her talent in this area.

Session EIGHT: Responsibility and accountability are bureaucratic demands undermining the responsibility of scientists?

Do we risk taking "ethics" out of the Animal Ethics Committee process?

Susan Dodds

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Research ethics review processes need to strike a balance between prescription and ethical judgement. In Australia, the National Health and Medical Research Council (NHMRC) has responsibility for developing research ethics guidelines that inform the conduct of researchers and the deliberations of research ethics committees, e.g., Human Research Ethics Committees (HRECs) and Animal Ethics Committees (AECs). In the case of research involving animals, State legislation provides additional legislative force to those guidelines, effectively regulating minimum standards in animal research.

This paper examines some recent debates within applied ethics about the different aims of research ethics guidelines, regulation of ethics through legislation, guidelines and committee review, and the role of collective ethical judgement in realising ethical goals. These debates are brought to bear on the evolving roles of AECs, the guidelines and legislation framing those committees, the apparent demands for consistent application of the guidelines and accountability by researchers and AECs. One risk of the increasing formalisation of AEC processes and accountability is that deliberation about the specifically ethical evaluation of research proposals involving non-human animals may be treated as a side-issue. Well-grounded ethical judgement about how different values come into play in particular circumstances requires that those involved in the deliberations do not mistake conformity to rules for ethical judgement.

AECs, in my experience, have not abandoned their responsibility for independent judgement, but there may be good grounds for being concerned about the risk associated with increasing emphasis on regulatory conformity and therefore for taking steps to reassert the centrality of ethical deliberation in the AEC process. The introduction of the latest revisions to the *Australian Code Of Practice For The Care And Use Of Animals For Scientific Purposes* provides an ideal opportunity for debate about how best to promote the role of ethical evaluation in the AEC review process.

Associate Professor Susan Dodds (BA UToronto, PhD LaTrobe) is a philosopher at the University of Wollongong and Chair of the University's research ethics policy committee. She is a past Chair of the University of Wollongong/ Illawarra Area Health Service Human Research Ethics Committee and is a Category D member of the Animal Ethics Committee. Her publications and teaching focus on issues in bioethics, political philosophy and philosophy of feminism. She has published a range of works on research ethics and research ethics committee, with particular reference to research involving humans and human reproduction and embryonic stem cells. She is currently co-coordinator of the International Network on Feminist Approaches to Bioethics of the International Association of Bioethics.

Session EIGHT: Responsibility and accountability: are bureaucratic demands undermining the responsibility of scientists?

Panel discussion

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Pain assessment in laboratory animals: problems and solutions

Johnny Roughan, University of Newcastle upon Tyne, UK

Abstract:

Minimising pain and distress is the most significant welfare problem faced by researchers who need to use animals in their investigations. It is also a major concern of the public, who have indicated that every effort must be made to prevent suffering. The most common approach is to use analgesics; however, the results of some recent surveys of analgesic use in UK research establishments, together with reports of usage published in prominent scientific journals, suggest that the provision of pain relief is far from uniform even after major surgery. Unsubstantiated rhetoric regarding concerns that the drugs will adversely affect research findings is sometimes to blame, but the most likely reason for withholding pain relief is a general inability of those concerned to assess pain severity, or even to recognise its occurrence. The first workshop practical exercise will assess whether this is the case.

Until recently, there were no suitably objective or validated schemes for assessing post-operative pain in any of the most common laboratory species. Rats and mice comprise 84% of all UK experimental animals exposed to potentially painful or stressful procedures. As a consequence of this, developing practicable solutions to pain assessment and alleviation in these species has been the focus of our research in Newcastle. A validated behaviour-based method has been successfully developed for assessing pain and the efficacy of several analgesics in rats of various strains, undergoing a range of surgical procedures as part of other projects. Similar work is ongoing in mice and rabbits. Rabbits are now the third most popular pet in the UK and many require neutering for population control and to prevent aggression and uterine adenocarcinoma. However, there is currently no information on effective treatments to relieve pain, and perhaps because of this, current estimates are that <25% of rabbits involved in research or in clinical practice receive any form of post-operative pain relief.

The workshop aims to present a basis for understanding the reasons for our poor ability to recognise animal pain, and why essential progress has been slow. Some misunderstandings regarding the use of drugs for alleviating post-operative pain will also be addressed. At present, most guidelines on recognising pain rely upon subjective methods that have not, or cannot be validated. This breeds lack of confidence and inconsistent attitudes towards the need for pain relief. As animal carers it is essential to be aware of any methodological improvements in pain assessment that can be used to evaluate the effectiveness of treatment(s). The presentation will use video material to explore problems in pain assessment and subsequently demonstrate use of a simple, rapid, and therefore practically useful approach to assessing post-operative pain in rats and mice. A summary of current knowledge on assessing pain in rabbits will also be provided.

Johnny Roughan joined the Comparative Biology Centre at the University of Newcastle as a Research Assistant in 1994. He obtained his PhD degree from the Queen's University of Belfast the same year on 'Relationships between behaviour and slow potential shift, EEG and evoked potential responses in the brain of the seizure-prone Mongolian gerbil'. Since then he has been researching novel anaesthetic regimens for rodents and rabbits, but the major emphasis of his research has been on developing new techniques using behaviour to assess pain in rodents, and using these to evaluate the efficacy of a range of different commonly used analgesics. He is now the research group's Senior Research Associate.

Staging tumours in a spontaneous malignant melanoma mouse model

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We maintain a colony of mice which have a genetic predisposition for early spontaneous growth of malignant cutaneous melanomas. To better identify and monitor animals with tumours to ensure timely euthanasia, we developed a tracking system through the use of special cage cards and tumour grading stages.

Melanomas may develop in a number of anatomical sites. The most common areas are the perianal region, vulva and prepuce, pinnae, eyelids and muzzle. A single measurement for staging tumours is not possible due to the varied locations of tumours and the relative impact of similarly sized tumours at different sites. Staging is based on tumour location, size and a more subjective evaluation of the animal's overall well-being.
Cages containing mice with small tumours are identified by the placement of a purple Tumour Card, specially developed for this mouse model. The animal is examined by a member of the animal care staff for initial stage designation then tracked by either the Principal Investigator or an animal care staff member. The mouse is examined at least weekly initially, then more frequently as the tumours increase in size.

This method of tracking has resulted in the implementation of scientific and humane endpoints before tumour size/burden adversely impacts the animals' welfare.

Elizabeth Dodemaide has a B.V.Sc. from the University of Queensland, and a M.A. in secondary education from the College of New Jersey, USA. Before moving to the USA, she worked in small animal practice in Australia and Great Britain. She was employed by Johnson & Johnson first as a researcher, then as a post-doctoral fellow in laboratory animal medicine and as a clinical veterinarian. She has also taught high school biology. Elizabeth has been the Associate Director of Laboratory Animal Services at Rutgers University in New Jersey since 2001.

The effect of bright light and noise in the animal house on BALB/c mice

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Standard animal housing and laboratory conditions are artificial environments for animals, so that laboratory animals are often deprived of the possibility of performing their full behavioural repertoire and of achieving physiological stability. Numerous factors in the animal house or the laboratory such as barren environments, handling, noise, predator odour and lighting may be sources of stress for laboratory animals (Manser, 1992). Standard illumination in animal houses and laboratories consists of bright fluorescent lighting. This may cause stress in nocturnal animals (including rodents) which normally spend their time in a lower light level environment. In particular, the BALB/c mice, which are commonly used experimental animals, are albino mice and lack pigment in the eyes. Previous studies have shown that BALB/c mice have a greater sensitivity to bright light than non-albino mice such as C57BL mice (Van de Weerd H.A et al, 1994).

Stress is known to activate the sympathetic adrenal medullary system which leads to changes in the catecholamine release and also changes in cardiovascular physiology. In this study, the effect of 3, 8 and 18 days' housing in a brightly lit room with noise and control was evaluated in BALB/c mice by measurement of the responsiveness of the sympathetically innervated vas deferens to noradrenaline (NA). Telemetry implants were used to investigate the circadian rhythm of heart rate, body temperature and activity of control animals and animals exposed to 18 days of noise and bright light. The control animals were kept in a quiet, dimmed lit room for 18 days.

Exposure to noise and bright light reduced the amplitude difference between the light and dark period for heart rate and temperature. The maximum response of vas deferens to NA increased after 8 and 18 days of bright light exposure. In the telemetry-implanted animals, the maximum NA response of the vas deferens of noise- and bright-light-exposed animals did not increase when compared to the implant control group. However, the maximum NA response of vas deferens from the implanted bright-light-exposed animals was greater than the vas deferens in non-implanted control animals. This may be due to the effect of concurrent stress of bright light and the transmitter implant.

The results of this study illustrate the importance of considering the effect of lighting and noise level in the animal house on the well-being of light-sensitive animals.

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Environmental enrichment in action – some practical techniques for research institutions

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Murdoch University
Western Australia

The benefits of environmental enrichment both to animal welfare and experimental excellence by optimising the physical and mental health of the animals used in research are well documented.

Enrichment has a vital role in the pursuit of refinement, one of the three “R” enshrined in the Australian Code of Practice for the care and use of animal for scientific purposes. Less obviously it can also contribute to the pursuit of a second “R”, Reduction as healthy animals produce better results and hence fewer animals are needed.

The objective in this case was to examine some economical, easily implementable and sustainable enrichment techniques that have high animal house staff acceptability. A search of the literature of enrichment techniques used by authors on four species, cats, rats, mice, and chickens was conducted. Some techniques fitting the specified criteria were implemented at Murdoch University. Discussion and evaluation of each technique is included

While there are a vast a number of enrichment techniques cited in the literature implementation may cause problems. The techniques described are effective, sustainable, low cost and are readily adopted by animal house staff.

Sue graduated from Murdoch University Veterinary School and spent many years in private practice. In 2003 she returned to Murdoch University to take up the position of Animal Ethics Officer. Sue also volunteers her time to the Edith Cowan Animal Ethics Committee as a Category “A” member.

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ANZCCART hopes you found this conference to be informative and enjoyable. We look forward to seeing you at the next ANZCCART conference.

ANZCCART Conference 2004

Animal ethics: new frontiers, new opportunities

Novotel Hotel, Brighton Beach, Sydney, NSW
26 – 28 September 2004[1]

Report to conference sponsors and members of the ANZCCART Board and Council

Conference background:
The way in which we conduct the business of science is open to increasing public scrutiny. There is potential tension between the use of new technology, the implications of new knowledge and the ethical frameworks we use in making decisions. Questions arise as to whether or not we need new ways to address these ethical challenges and the type of process needed to inform public confidence in these activities without undermining scientific initiatives. These are not new questions and have long been part of the public discourse on our use of animals in science. The focus of this conference was to revisit these questions in light of recent scientific developments.

Planning team:
The members of the conference planning team were:

- Mary Bate, Animal Welfare Officer, University of Newcastle, NSW
- Kate Blaszak, Principal Veterinary Officer, Bureau of Animal Welfare, Department Primary Industries, Victoria
- Malcolm France, Director, Laboratory Animal Services, University of Sydney
- Rory Hope (Chairman), Director, ANZCCART, C/- University of Adelaide
- Liz Romer, Executive Officer, National Parks and Wildlife Service, Department Environment and Conservation, NSW
- Margaret Rose, Area Director of Animal Care, Prince of Wales Hospital; Chair, Animal Research Review Panel, NSW Agriculture
- Gill Sutherland, Executive Officer, ANZCCART (New Zealand), New Zealand
- Selina Watson (Conference Administrator), ANZCCART, C/- University of Adelaide

Planning commenced in 2003, and was assisted by a total of 14 fully minuted teleconferences organised through the ANZCCART office in Adelaide.

Sponsors:
Conference sponsors were:

- NSW Ministry for Science and Medical Research – major sponsor. Part of the MSMR sponsorship was used to support the attendance at the conference of 15 lay members of Animal Ethics Committees and early career scientists;
- University of Sydney;
- NHMRC - sponsored Session 4;
- University of New South Wales;
- Bureau of Animal Welfare, Victoria - sponsored Session 8; and
- RSPCA (NSW) - sponsored the *RSPCA Poster Prize.*

[1] The conference was held during an AVCC "Common Week" to ensure that University staff were free to attend.

Sponsorship funds were used to help cover the costs of:

- hiring the conference facilities;
- paying travel and accommodation costs of Australian and overseas speakers;
- attendance at the conference of 15 lay members of Animal Ethics Committees and young scientists likely to use animals in their research; and
- providing the *RSPCA Poster Prize.*

Sponsors were acknowledged on a number of occasions during the conference and acknowledgement will also be made in the *Conference Proceedings*.

The level of sponsorship received by ANZCCART meant that the planning team was able to invite three overseas speakers - Ian Duncan from Canada, Johnny Roughan from UK and Barbara Nicholas from New Zealand. It also enabled the registration fees to be kept at a reasonable level, which in turn assisted students and members of the general public to attend.

Registration:
The full registration fee was $430, with a reduced rate of $165 for students.

Amongst the overseas delegates were visitors from Canada, UK, USA, Taiwan, and Thailand. Taiwan and Thailand are both developing policies on animal ethics and welfare and the delegates from these countries, with assistance from ANZCCART, were able to establish useful contacts amongst people in Australia and New Zealand.

Conference programme:
A copy of the conference booklet, which contains the programme and abstracts of papers and posters, is attached. A special feature of the conference was an "open" session involving short presentations of proffered papers. The provision of ample time for questions after each presentation, and the inclusion of workshop and "question and answer" sessions ensured that all conference delegates had an opportunity to contribute.

Amongst the invited speakers at the conference were:

Professor Warwick Anderson, Head, School of Biomedical Sciences, Monash University
Mr Bob Beale, Public Affairs Advisor, University of New South Wales
Dr Lynette Chave, Senior Veterinary Officer, Animal Welfare Unit, and Executive Officer of the Animal Research Review Panel, NSW Agriculture
Associate Professor Susan Dodds, Faculty of Arts; Chair, University Research Ethics Policy Committee, University of Wollongong
Professor Ian Duncan, Director, Centre for the Study of Animal Welfare (CSAW), University of Guelph, Ontario, Canada
Associate Professor Margaret Dunkley, VRI Biomedical Ltd Newcastle R&D Unit, Newcastle, NSW
Mr Michael Gorton AM, Partner with Russell Kennedy, Solicitors; Chairman of the Victorian Biotechnological Ethics Advisory Committee; President of the Health Services Review Council of Victoria
Dr Bidda Jones, Scientific Officer, RSPCA Australia
Dr Kevin Keay, Pain Management and Research Centre, Department of Anatomy and Histology, University of Sydney
Dr Simon Longstaff, Executive Director, St James Ethics Centre, Sydney
Dr Jack Malecki, Director, Business Development, CSIRO Livestock Industries, Australian Animal Health Laboratory, Geelong, Vic.
Professor Elspeth McLachlan, Co-Director, Spinal Injuries Research Centre, Prince of Wales Medical Research Institute, Sydney
Dr Barbara Nicholas, Senior Advisor, Bioethics Council of New Zealand

Dr Johnny Roughan, Senior Research Associate, Comparative Biology Centre, The Medical School, University of Newcastle upon Tyne, Newcastle, UK

Opening address:
The conference was opened Mr Michael Reid, Director General, Ministry for Science and Medical Research NSW.

Special workshop on pain assessment:
Dr Johnny Roughan presented a special workshop on "Pain Assessment in Animals" on the afternoon of Tuesday 28th September. Amongst the topics he addressed were:

- historical perspectives of pain assessment;
- current techniques and problems in assessing pain in laboratory animals;
- development of pain scoring techniques; and
- pain scoring in laboratory animals - where to next?

RSPCA (NSW) Poster Prize:
RSPCA (NSW) provided a prize of $500 for the best poster on the topic *Environmental Enrichment*. The prize was awarded to Susan Godkin (Animal Ethics Officer, Murdoch University, for a poster entitled *Environmental enrichment in action: some practical techniques for research institutions*. Dr. Magdoline Awad (Acting Chief Veterinary Officer, RSPCA (NSW) presented the award during the conference dinner.

ANZCCART Student Award:
The purpose of this biennial award is to encourage attendance at the conference by Honours and Postgraduate students. The award, worth AUS $1,000, is open to Australian and New Zealand postgraduate students of all disciplines, and is intended to provide for the conference travel, accommodation and registration costs. Students are judged on the quality of a submitted paper on a theme related to the conference and compatible with the goals of ANZCCART. This year's award was given to Darek Figa, School of Psychology, University of Sydney, for a paper entitled *Accommodating behavioural needs of laboratory rodents – a review of enrichment techniques*. Professor Michael Rickard, Chairman of ANZCCART, presented the award during the conference dinner. The recipient presented his paper during Session 7 of the conference.

Conference dinner:
The conference dinner was held at the on the evening of Monday 27th September at the *Novotel* Hotel. A highlight of the dinner was the address by Professor Anthony Basten AO, an immunologist with particular interest in self-tolerance and autoimmunity. Tony is Executive Director of the Centenary Institute of Cancer Medicine and Cell Biology, Royal Prince Alfred Hospital, Sydney.

Publicity:
The conference was widely publicised in Australia and New Zealand, with the following groups being specifically targeted:

- Universities and research institutions;
- Animal Ethics Committees;
- Professional societies; and
- Government Departments and agencies.

A press release about the conference was forwarded to a number of the major media outlets.

Exhibitors:
Several commercial organisations ran exhibits at the conference, for which ANZCCART received a small fee.

Summary:
The conference attracted 195 delegates - a record attendance for an ANZCCART function of this type.

ANZCCART received a great deal of unsolicited positive feed back on the success of the conference.

ANZCCART Conferences in Australia and New Zealand are gaining a strong reputation as venues for fostering open and respectful discussion between delegates who may hold differing viewpoints on a wide range of animal use-related topics. This dialogue contributes to an environment where these differing views and opinions are understood and respected. The conference provided an excellent learning opportunity for delegates at both the lay and scientific level and is likely to have had a long-term and positive effect on people's understanding and attitudes in the area of animal ethics.

Animal Ethics Committees play a critical role in ensuring that animals used for research are treated humanely, and that the potential benefits of the research outweigh the ethical "negatives". Understandably, AECs tend to focus on matters that directly affect animal welfare in specific teaching and research protocols. **The conference provided an opportunity for delegates to focus on the broader ethical issues that relate to teaching and research using animals, taking into account the changing circumstances brought about by recent biotechnological innovations.**

Conference Proceedings:
The *Conference Proceedings* will be published early in 2005.

Thank you:
ANZCCART wishes to thank:

- members of the conference Planning Team;
- conference sponsors;
- speakers and poster presenters; and
- session chairpersons.

Rory Hope
Director, ANZCCART

RMH
26.10.2004