Doing animal experimentation in a national organisation with regional responsibilities under state legislation

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Conducting animal research in CSIRO

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's national research agency with over 6,500 staff located in some 55 sites distributed across all the states and territories of Australia. CSIRO's portfolio of research covers a broad area including agribusiness, the environment, energy, information and communications, minerals and sustainability.

CSIRO operates animal ethics committees (AECs) in all states and territories of Australia with the exception of the Northern Territory and Tasmania. In Tasmania CSIRO operates through the University of Tasmania AEC to obtain approval for animal research conducted within our Division of Marine and Atmospheric Research (MAR). In a number of states CSIRO operates multiple AECs, which reflects the wide range of work undertaken and the need to establish AECs with specialised knowledge (e.g., livestock research versus small laboratory animals). The CSIRO has a policy that covers the use of animals for research and teaching within the organisation and has a designated officer who is responsible for advising the organisation on matters that relate to animal use. CSIRO was a founding member of ANZCCART Australia, and maintains representation on the Board while contributing approximately one third of the annual running costs of the Council.

The National Health and Medical Research Council (NHMRC) Australian Code of Practice for the Care and Use of Animals for Scientific Purposes (The Code) underpins legislation in Australia. Researchers who receive funding from the NHMRC must abide by The Code as a condition of their funding. CSIRO is not eligible for funding from the NHMRC under normal circumstances, although it is a signatory to The Code and is represented on the NHMRC Code Liaison group, which regularly meets to update and oversee the revision of The Code. CSIRO policy requires that all CSIRO researchers must abide by The Code.

The challenges of working across state boundaries

The Code is embodied in state legislation that governs the use of animals in research and teaching, which is enforceable by law. In Australia there are eight states and territories and therefore eight sets of legislation that covers the use of animals in research and teaching within Australia. AECs must be registered within the state they operate and AEC approval must be gained in the state(s) where work is to be carried out.

For researchers operating in a national and some times international environment Australia's state-based animal ethics legislation can present a number of challenges. One possible scenario that represents an extreme example focuses on a group of CSIRO MAR researchers located in South Australia. The group, in collaboration with University colleagues, uses satellite technology to monitor the migratory patterns of Great White sharks. South Australia does not

include fish in its definition of animals and therefore AEC approval would not be required by legislation to conduct this work in South Australia. If the work of our University colleagues was supported by the NHMRC, then AEC approval would be required as part of their conditions for funding. CSIRO policy states that our researchers must abide by The Code, which does include fish within its definition of an animal, and therefore CSIRO work involving the use of fish must be covered by AEC approval. The question then arises how much AEC approval would be required to conduct a Great White shark tracking experiment using satellite technology? If the trapping and tagging of the Great White sharks was to be done off the South Australia coast, approval of an AEC registered in South Australia would be required. Unfortunately Great White sharks have no respect for state or international boundaries or AECs. A Great White shark trapped and tagged off the coasts of South Australia could turn west and enter Western Australia waters or alternatively turn east and head along the Victorian coast before turning north into NSW and Queensland waters or indeed may continue east into New Zealand waters taking the experiment with it. Should the application have approval from all Australian states and territories before commencing to cover all possible alternatives? Who has jurisdiction over a shark that turns up in New Zealand waters?

The impact of working across state boundaries and the need for multiple approvals can be reduced by registering an AEC in more than one state or territory. For example, the CSIRO Sustainable Ecosystems (SEC) AEC can approve animal experimentation conducted in NSW, ACT and Queensland. The potential exists to establish a single CSIRO AEC to enable scientists to gain approval in all states with a single application. This model has not been adopted to date due to the high work load this would place on a single committee and the need for the committee to have a broad background covering applications in fish, livestock and laboratory animals. Two alternative solutions exist— the use of AECs belonging to other research institutions and the recognitions of AECs across state boundaries. While the use of another institution's AEC is a practical solution and one used by CSIRO in situations such as the one described above in Tasmania, it is not a widely used practice, possibly because of issues associated with accountability and who is responsible should something go wrong. The recognition of AECs across state boundaries has received much discussion recently, but to date no agreements have been reached.

How many animals are used for research and teaching in Australia?

The generation of national statistics on the use of animals in research and teaching represents a significant challenge for Australia. Each state collects statistics for their jurisdiction, although variations in the methods of data collection and the data collected makes consolidation of this information into national statistics difficult. For example South Australia does not include fish in its animal use statistics as they are not covered by the legislation. The situation is further complicated in that the need to get state by state approval for a cross-state experiments means that an animal being used for a single experiment may appear in more than one state's animal use statistics. Using the example of the Great White shark experiment described above, if approval was gained to monitor the progress of a shark in South Australia, Western Australia, Victoria, NSW and Queensland the accumulated animal use records would show four sharks were used for this purpose (South Australia would not register the use of a shark), meaning our animal use statistics would be overestimated by 400%. The generation of national statistics is further complicated by the absence of a single body that is prepared to take responsibility for integrating the state data into a single set of national statistics, or paying for the task to be undertaken.

The NHMRC requires all researchers who receive their support to submit animal use statistics each year to the NHMRC using a common form. The CSIRO and State Departments are significant users of animals in research within Australia although they do not receive NHMRC support and therefore are not required to report animal use to the NHMRC. The one exception to this is in Western Australia where it is a condition of licensing that all AEC report animal use data to the NHMRC regardless of whether they receive NHMRC support. The end result is an additional subset of animal use statistics that can not be integrated with other data to provide a complete set of animal use data within Australia.

In the absence of any official national animal use statistics the field is open for anti-animal

experimentation organisations to fill the void. Their statistics are often based on partial data gained through freedom of information exercises that may be interpreted to support a self-interested agenda. The development of a set of standardised national animal use statistics needs to be a high priority for legislators and researchers alike.

When is an animal being used in research?

CSIRO's Division of Livestock Industries (CLI) has three properties that are used both for commercial production and research. In addition CLI works in collaboration with a number of commercial properties sourcing livestock and biological samples. It is relatively easy to distinguish the animals used in mainstream research such as those used in nutritional studies in animal houses or those used in vaccine evaluations. The challenge arises where non-invasive techniques are used to obtain samples from livestock on commercial properties. For example, one of the projects conducted at our Armidale laboratory looks at worm burdens in sheep. If staff visit a property to collect fecal material from a paddock, have the animals that graze the paddock been used in the experiment? Like most working sheep properties, dogs are used to round up sheep on our Armidale property. At our Armidale laboratories we also look at the level of stress induced in animals as a result of standard husbandry practices such as mulesing. Sheep rounded up by our farm dog provide an interesting comparison between farm procedures that are considered of low stress versus those that are considered high stress. When a farm dog is used to round up sheep for our low stress benchmark, should it be covered by an AEC approval even though it is just another day in a working dog's life?

Teaching and training

CSIRO's Australian Animal Health Laboratory (AAHL) is a high containment laboratory designed to play a key role in the diagnosis and prevention of exotic disease outbreaks in Australia such as equine and avian influenza. As part of its preventative role AAHL conducts training courses for Australian and overseas veterinarians in the diagnosis and recognition of exotic animal diseases. The courses are run on a semi-repetitive basis and involve the infection of animals with viral agents. The AAHL AEC would like to replace the use of animals with a series of videos furthering their work on the implementation on the Three Rs. The question currently remains on the quality and impact of this type of training and whether it will provide equivalent training to those who have experienced the diseases first hand?

A number of Australian universities are facing equivalent challenges to those of the AAHL with the use of animals in undergraduate practical classes. In some Australian universities it is possible for undergraduate students who object to the use of animals in teaching to obtain accreditation in a course using videos and various other teaching aids in place of animal experimentation. This then raises the question: if one student can graduate from the course without using animals, why are any students using animals in the course as it would appear that the use of animals in that course is not required to convey the required teaching outcomes? This reasoning is based on two assumptions: first, that the course is only designed to convey facts and figures and not to provide students with a deeper learning experience of what a career in science involves; and second, that it does not take into account the broad and diverse range of occupations that science graduates enter into post-University. A student entering a career in science patent law will require a different educational experience than a graduate who is planning a career in the evaluation and registration of new cancer drugs, though both may opt to take first year biology courses.

Pushing the boundaries: when the AEC wants to go the next step

Although the Code and state legislation outline the minimum requirements for the use of animals in research and teaching, there is scope to go beyond those requirements. CSIRO is Australia's national research agency and the general public has an expectation that our AEC members and staff will operate using "best practice" models. The AECs must balance their desire to move the boundaries forward with the practical needs of researchers to achieve the goals of their experiments in a cost-effective manner. The Three Rs need to be taken in context where the drive to reduce animals numbers, to reduce the impact of the experiment on the animal and to find

replacements for the use of animals in research needs to be balanced against the benefits and outcomes of the experimental work undertaken. This should not restrict the AEC from pushing the boundaries but it needs to be done in collaboration with researchers, not in opposition.

Despite the limitations of a system that is based on non-harmonised state legislation the Australian systems functions effectively because of the work of a wide range of dedicated people who have a belief in, and a commitment to, the outcomes.