Submission No 209

INQUIRY INTO USE OF PRIMATES AND OTHER ANIMALS IN MEDICAL RESEARCH IN NEW SOUTH WALES

Organisation: The Westmead Institute for Medical Research

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The Westmead Institute
FOR MEDICAL RESEARCH

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Hon. Greg Donnelly
Chair of Portfolio Committee No.2 Health
Legislative Council
Parliament of New South Wales
Macquarie Street, Sydney NSW 2000

Submission by the Westmead Institute for Medical Research to the Inquiry into the use of primates and other animals in medical research in New South Wales

This submission is by the Westmead Institute for Medical Research (WIMR). It is home to 450 research and support staff including 70 PhD and higher degree students. An independent institute, it has the University of Sydney and Western Sydney Local Health District as two founding partner organisations. WIMR is a member of the Westmead Research Precinct, the largest health and research precinct in the Southern Hemisphere with more than 1500 dedicated research staff, over $100 million annually in research funds and more than 2000 clinical trials. As a multidisciplinary research institute, we undertake research in a broad range of diseases including Cancer, Infection and Immunity, cardiorespiratory diseases, neuroscience and vision, and liver and metabolic diseases including diabetes. WIMR is translational research institute with a focus on research that impacts directly patient care, we-undertake the full range of research modalities, from in-silico computer modelling, lab-based assays, the use of organoids, as well as small and large animal models of disease, including the use of non-human primates.

In writing this submission, we wish to emphasise the importance of animal research to improving patient outcomes for a broad range of diseases, improving the safety and efficacy of new therapies and technologies, and improving our understanding of the pathobiology of disease. Medical research should be viewed as a continuum from dry laboratory computer modelling through to clinical trials. Animal research is an essential component of this continuum, that cannot be excised from other research activities. Without animal research our understanding of disease would be severely diminished, the introduction of new therapies severely curtailed, and an unreasonable burden and risk will be placed on vulnerable people who will either have their medical needs unmet or face an increased risk when new, inadequately tested therapies are put forward for clinical trials without thorough evaluation. Our replies to your terms of reference are as follows:

(a) The nature, purpose and effectiveness of medical research being conducted on animals in New South Wales, and the potential public health risks and benefits posed by this research;

There are numerous examples of how animal research benefits the public. Specific examples from WIMR include; better therapies for fibrotic liver disease, improved understanding of the pathogenesis of diabetes, the introduction of pancreas and islet transplantation for type 1 diabetes, better organ preservation for transplants, advances in our understanding of kidney failure, new stem cell therapies for heart failure, vaccine development, and the use of CAR T cells to treat lymphoma. In all of these examples, animal research led to a measurable improvement in patient care and outcomes.

(b) The costs associated with animal research, and the extent to which the New South Wales and Federal Government is commissioning and funding the importing, breeding and use of animals in medical research in New South Wales;

The vast majority of the pre-clinical research undertaken at WIMR is funded by the major research funders including the NHMRC, the National Institutes of Health, Cancer Council NSW, National Heart

Foundation and Juvenile Diabetes Research Foundation. These funds are highly competitive and only research with high impact is undertaken. NSW has been increasingly successful at attracting these funds which are awarded to nationally, and in many cases internationally, competitive research groups. It provides high value, 'smart jobs' for the state and forms a career structure for science graduates and is the basis of a nascent biotechnology industry. If this research were severely curtailed or over-regulated, it would make the state uncompetitive in all aspects of research and would lead to a major diminution of our research-based Universities and Institutions. It would also lead to a brain drain out of the state and overseas. It should be noted that the costs of Animal Research Facilities are subsidised by Research Institutes as funding bodies to not cover the full costs of running these facilities.

(c) The availability, effectiveness and funding for alternative approaches to animal research methods and technologies, and the ability of researchers to meet the 3 R's of Replacement, Reduction and Refinement;

All researchers are looking to ways to implement the 3R's. On the Westmead Precinct all animal ethics applications are evaluated against the 3R's to avoid unnecessary duplication, and to ensure the optimal number of animals are used to achieve the research objective. At WIMR, animal research is funded by external funding bodies such as the NHMRC, which means it is externally peer reviewed, is innovative and of high value. This protects against unnecessary duplication. New technologies such as advanced imaging, advanced flow cytometry and high throughput genomics and proteomics have meant that more information can be obtained with smaller animal numbers. Hence, in the past many more animals would have been required to achieve the same findings. WIMR has also introduced the use of 3D printing of organoids which in some instances of cancer research has markedly reduced the use of animals.

(d) The ethical and animal welfare issues surrounding the importing, breeding and use of animals in medical research;

In our experience, the only animals imported from overseas for medical research are specific, genetically modified mice that are purchased from reputable research providers (e.g. Jackson Laboratories in USA). In these cases, breeding pairs are imported and a breeding colony is established in the local institution. The importation and breeding are subject to approval by the Animal Research Ethics Committee (AEC) and requires an import permit and oversight from AQIS. To our knowledge all animals used for large animal medical research, including non-human primates, are bred in Australia under strict conditions. They are from captive bred colonies and not imported. For all aspects of use of animals in research we comply with or exceed accepted international standards to ensure the welfare of animals and WIMR places a strong emphasis on animal welfare.

(e) The adequacy of the current regulatory regime regarding the use of animals in medical research, particularly in relation to transparency and accountability;

NSW has a strong regulatory regime for the protection and welfare of all animals used for research. Governed by legislation, all institutions using animals for research must be accredited by the Department of Primary Industries (DPI). Animal Ethics committees must contain members with veterinary experience (Category A), members representing the welfare of animals (Category C), lay members (Category D) and those with relevant scientific expertise (Category B). A third of the committee must be category C & D members. In addition to approving research projects, they undertake inspections and audits of research facilities, which are also audited by inspectors from the DPI. Genetically modified animals have additional regulation via the Office of the Gene Technology Regulator. Non-human Primates (NHP) have added layers of oversight and regulation as is appropriate. All protocols for NHP are reviewed and approved by 3 separate and independent ethics committees: The AEC of the Sydney Central Health Network who has oversight of the Baboon colony, the local AEC where the work is being undertaken, and the University of Sydney Ethics Committee. In addition, the protocol is reviewed by the NHMRC NHP Research Committee for NHMRC funded projects using NHP,

and the Animal Research Review Panel of the DPI. In our experience, all ethics committees and review panels undertake inspections and audits. The current level of regulatory oversight is comprehensive, has been demonstrated to remove 'bad actors' and improve animal welfare and ensures compliance with the 3R's. ***In our opinion the current regulatory framework is rigorous within a mandated good governance framework and does not need to be changed.*** We believe that further regulation will adversely impact productivity without any significant impact on animal welfare.

(f) Overseas developments regarding the regulation and use of animals in medical research;

As a higher order animal, NHP deserve the additional oversight they receive with an emphasis on their environment and provision for their welfare. We agree that Institutions, and Ethics Committees, must ensure the work is necessary, beneficial and humane. However, due to their relative similarity in behaviour and biology to humans there will always be a role for NHP in research. Many small molecules and drugs that are designed for humans, are inactive in rodents. Hence NHP play a small but important role in translating discoveries in lower order animals into therapies in humans, i.e. they are an important pre-clinical model prior to phase I clinical trials. Their similarities to humans in terms of receptor/ligand compatibility, and development, means that NHP have a special place in neuroscience research (in particular Alzheimer's, Parkinson's Disease, neuroAIDS and some mental health disorders), Immunology (especially transplantation, checkpoint inhibitors for cancer, and infectious disease research), vaccine development (especially for HIV, COVID-19 and emerging viral infections) and gene therapy. For all these diseases there are examples of NHP research yielding results that have translated successfully into better patient care. Equally important, are examples where therapies have not progressed to human trials due to failure in NHP testing, thereby sparing humans from the futility and risks or what would be a failed therapy. By its nature, NHP related research is complex, requires a large multi-disciplinary team and is expensive. For these reasons, the majority of this work is undertaken in North America, Europe and Japan and more recently in China. As a developed nation with a comprehensive and high-quality research infrastructure, we have the capacity to undertake this research in areas that are aligned with our National Research Priorities. It is better that this research is undertaken in a regulated environment such as Australia, because stopping it here will only mean that it is taken off-shore to less regulated jurisdictions with a resultant decrease in the welfare of animals.

(g) Any other related matters;

Animal research is a major component of a broad range of research technologies and capacities. The translation of medical research into better patient outcomes requires animal models for pre-clinical evaluation of potential therapies and a better understanding of human biology and disease. It has been responsible for the large advances in therapeutic options for a broad range of diseases and has led to a remarkable increase in life-expectancy. The development of checkpoint inhibitors for the cure of once incurable cancers, such as melanoma or kidney cancer, would not have occurred without animal research. Following the sequencing of the human genome, and increase in multi-omic technologies, it is anticipated that we will see a marked increase and large global investment in bio-medical technology. The NSW State Government has earmarked Westmead as a lighthouse precinct for biomedical commercialisation and investment. It is expected to create more than 50,000 well paid, 'knowledge' jobs in Western Sydney; based around the Westmead Health and Medical Research precinct. If access to appropriate use of animals for research is unreasonably curtailed or impeded, then many world class research groups in our Institute will cease to exist. There will be a brain drain to other states and overseas. In the long term it will lead to higher healthcare costs, and an inability to develop appropriate responses to Australia's health priorities. The recent events around COVID-19 has been a classic example. The outstanding outcome in our state and nation was in large part due to our long-established research expertise in viral and vaccine research. The development of RNA vaccines was very much dependent on animal research which meant that we witnessed a life-saving vaccine developed in record time rather

than countless lives lost, and our health system and city morgues overwhelmed. The next major epidemic we face may not be global but rather be regional. Weakening our research infrastructure will severely inhibit our ability to urgently address these future health challenges.

This submission has been written and approved by the Executive of WIMR after extensive consultation. We are prepared to answer any questions the Committee feels answering.

Yours Sincerely

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