22 December 2015

Re. Inquiry into the Environment Protection and Biodiversity Conservation Amendment (Prohibition of Live Imports of Primate for Research) Bill 2015-12-09

Disclosure of interests: Chair, Nonhuman Primate Breeding and Research Facility Board, NHMRC Research Committee, NHMRC Senior Research Fellow and Project Grant Holder and nonhuman primate biomedical researcher.

Despite certain claims, it is undeniable that animal-based research has contributed to significant improvement in the length and quality of our lives. Indeed, wherever one might stand on the issue, we all benefit from the use of laboratory animals in biomedical research. This letter will consider the benefits that non-human primate (NHP) research brings to the greater population of Australia and why continued importation of NHPs is required.

Why are nonhuman primates important to biomedical research?

Research with NHPs plays an important role in the advancement of human and animal health but only make up a small part of animal research, accounting for 0.3% in the USA. Primates share 98% of human genes and a number of anatomical similarities. For this reason, NHPs are critical to biomedical research targeting the causes, progression, prevention, and treatment of a wide variety of diseases. Furthermore, the benefits move in both directions – breakthroughs in human medicine are also used to treat diseases in other animals, including nonhuman primates.

Because NHPs reflect the anatomical, physiological, and behavioural makeup of humans, they provide an indispensable, and currently irreplaceable, bridge between basic laboratory studies and clinical use. Much of what we know about the brain, heart disease, Alzheimer's, AIDS, viruses, hepatitis, and cancer has come from NHPs. Examples of successful outcomes of NHP research include the identification of the rhesus blood group system, Salk's polio vaccine, deep brain stimulation for Parkinson's disease sufferers and the efficacy of tenofovir for the treatment of HIV.

The future of non-human primate research

Transgenic primates are coming of age and hold great potential for advancing the field of biomedical research as demonstrated by the advances achieved through the generation of genetically modified rodents. A ban on the import of NHPs would not only hinder current NHP research efforts but would also restrict translation of potential cures to diseases that have been identified in the rodent. Additionally diseases such as autism, schizophrenia and Alzheimer's disease cannot be completely modelled in lower order species such as rodents due to their more rudimentary cognitive abilities, impeding the search for therapies for such diseases. This leads the way for more translatable primate-based research models, which have more comparable cognitive and behavioural abilities to humans to account for this short fall.

Many drugs that have been validated in rodents have had poor translation into therapeutics for humans due to the differences between the species. NHP models may offer a more accurate representation of how newly developed drugs may elicit effects in humans, due to the closer similarity to humans both genetically, physiologically and socially.

Ability to monitor research in Australia under appropriate guidelines

NHP research in Australia is currently regulated at all levels of government and performed in strict adherence to the NHP research codes as set by the NHMRC, ensuring that any NHP related work is performed to the highest standard of ethical care. To conduce research using NHPs, as for all animal research in Australia, ethics applications detailing all experimental procedures are required and must be approved prior to any work commencing. Many other countries do not hold as high ethical standards as Australia demands for NHP research but Australian researchers will be forced to work in these countries if NHP models are unavailable in Australia. Continuing the possibility of NHP research in Australia will ensure standards are met and researchers are appropriately governed.

As mentioned, Australia is not the only player in the domain of primate research. Countries such as Japan, UK, and USA all undertake NHP based research programs. NHP research is therefore an important factor for Australia to maintain a competitive edge in medical research globally.

Biosecurity and protection of the population against future diseases

Biosecurity and protection from zoonoses is an issue that Australia takes seriously, and are a continued threat to the population (e.g. Ebola and influenza). While countermeasures have been afforded from non-NHP models, this may not be the case for future threats. Furthermore, the development of novel vaccines often requires a NHP model, for example, the novel dengue virus vaccine is currently being tested in African green monkeys – the most suitable model. HIV vaccines are also being tested for their efficacy and safety in NHP models of HIV (SIV), which are the most appropriate model. Therefore, exclusion of the potential to study diseases in a primate species and/ or the development of a vaccine/ treatment could put Australia in a vulnerable position.

Why should we continue the import of non-human primates currently available in Australia?

While Australia currently has established colonies of NHPs available for research, the health of these colonies and ability for them to continue to represent the heterogeneous human population depends on outbreeding to maintain genetic diversity. Hence, importation of NHPs from various colonies around the world is required for maintaining the wellbeing of NHP colonies that currently exist in Australia. In the absence of NHP imports, Australia's existing NHP colonies would suffer from issues of inbreeding resulting in an increased chance of congenital defects and mortality, ultimately reducing the welfare of the animals themselves.

If a ban on the importation of primates were legislated, Australia would be the only country that would continue primate research without continued import of the species.

Please consider this letter in light of the proposed bill to ban the import of non-human primates for research purposes. I am keen to present the facts and explain the importance of primate models for medical research and biosecurity to the Committee and welcome any questions or concerns regarding the need for such research.

For more information on NHP research and its benefits please refer to the following:

The use of non-human primates in research - The Weatherall report - http://www.mrc.ac.uk/research/research-policy-ethics/related-content/the-use-of-non-human-primates-in-research/

NHMRC Policy on Care and Use of Non-Human Primates for Scientific Purposes
https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/ea14.pdf

Precision gene editing paves way for transgenic monkey
http://www.nature.com/news/precision-gene-editing-paves-way-for-transgenic-monkeys-1.14098

The need for on-human primates in biomedical research
http://ec.europa.eu/food/fs/sc/ssc/out253_en.pdf