**Submission No 215**

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

**Organisation:** Neuroscience Research Australia

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**Re: Inquiry into the use of primates and other animals in medical research in New South Wales**

Neuroscience Research Australia (NeuRA) is one of the nation's largest centres of research on the brain and nervous system in Australia. Based in Randwick, Sydney, NeuRA is recognised as an international leader in research, changing the face of research into diseases and disorders of the brain and nervous system, not just in Australia, but around the world. Our eminent neuroscientists, clinicians and outstanding research leaders relate laboratory-based research to clinical research involving patients to ensure that our discoveries are translated into health benefits for people as soon as possible.

NeuRA's researchers rely on animal use in their preclinical research, most of which is funded by the National Health & Medical Research Council. Any change to this valuable resource would set back the discovery of new treatments for many conditions impacting Australians by many years. Following are just some examples of what NeuRA research has delivered through the use of primates and other animals in research.

- Professor George Paxinos, a NeuRA-based world-renowned researcher, constructed atlases of the brain of humans and experimental animals. His publication of *The Rat Brain in Stereotaxic Coordinates* was the first accurate stereotaxic atlas. Prior to its publication, scientists working on the rat brain had to derive empirically the coordinates of each structure of interest necessitating the use a lot of rats. The atlas provided accurate coordinates and reduced the number of rats needed for such experiments.
- In constructing the atlas *The Rhesus Monkey Brain in Stereotaxic Coordinates*, Prof Paxinos and colleagues used a single rhesus monkey. This animal was to be terminated, after being part of a study at UCLA that did not affect brain anatomy. The monkey was deeply anesthetized and fiducial (locating mark) needle marks were made prior to euthanasia. The construction of the atlas itself did not entail the use of additional animals.
- The principal reason Prof Paxinos constructed *The Rhesus Monkey Brain in Stereotaxic Coordinates* was to study a primate brain in optimal conditions prior to attempting an atlas of the human brain. He would not have been able to study the human brain in the detail he did without firstly knowing what to expect by studying the monkey in advance. The monkey brain can be obtained immediately after death, while the human brain over 8 hours after death, by which time critical chemicals degrade and the staining of the tissue is not optimal.
- The use of small animals (rodents) in medical research at NeuRA has been critical in the understanding of biological mechanisms and development of novel treatments for mental health disorders. Using animal models of cancer and depression, we have been able to dissociate the psychosocial impact of life-threatening diagnoses to understand the causal role of the immune system on the brain. This has led to the development of new interventions and biomarkers currently being trialled in patients with depression and cancer that would not have otherwise been possible.

- Small animal models (rodents) have been critical in discovering the mechanisms by which cerebrospinal fluid flow disruption causes spinal cyst formation in people with Chiari Malformation and spinal cord injury. These discoveries have led to changes in treatment for patients and improved surgical outcomes.
- Rodent experiments have also been an essential part of developing a novel therapy for Obstructive Sleep Apnoea that is currently in development. Moreover, these are mandated by regulatory authorities to establish safety prior to human clinical trials for many new treatments, particularly gene therapy.

The use of animals underpins a significant component of the medical research undertaken at NeuRA and NeuRA researchers have contributed to, and strongly endorses, the submission made by AAMRI (attached).

NeuRA understands the NSW Government's need for ethical and compliance rigour in this area, and acknowledges the importance of such an inquiry. As evidenced by the examples above, NeuRA's researchers take seriously and apply the principles of replacement, reduction, and refinement in each and every application for the use of animals in research. I implore the NSW Government to work with the medical research sector in NSW in supporting the scientifically justified and humane use of primates and other animals in medical research to provide advances to treating diseases of humans that cannot be achieved by other means.

Thank you for considering this submission.

Yours sincerely

Professor Peter R Schofield AO
23 March 2022