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USE OF INVERTEBRATE ANIMALS

The use of invertebrate animals for scientific purposes is not regulated by the Animals and Birds Act: Animals and Birds (Care and Use of Animals for Scientific Purposes) Rules 2004. However, the welfare of invertebrate animals should be considered when used in NUS. These animals should be used ethically based on the 3R principles of Replacement, Refinement and Reduction.

Although there is no consensus that invertebrate animals are capable of perceiving pain, current scientific understanding of the nervous systems and behaviour suggest that some groups such as cephalopods and decapods have the ability to experience pain, suffering, distress and lasting harm. Various countries' national codes of practice and legislation on animal use have included Cephalopods. In view of the developments in the use of these higher invertebrates, IACUC has the following SOPs for their use in NUS.

Cephalopods
The use of Cephalopods such as cuttlefish, nautilus, octopus and squid requires IACUC review. An application should be submitted to IACUC in an appropriate IACUC form through the Integrated Online Research Compliance (iORC) system.

Decapods
The use of decapods such as crabs, crayfish and lobster does not require IACUC review. However, if decapods are to be housed in an animal facility, proper documentation of their use should be submitted to IACUC for record with the following procedures:

1. PI should discuss with Comparative Medicine (CM) to develop an SOP on the care and handling of the species.
2. PI should also discuss with Office of Safety, Health and Environment (OSHE) on the project risk assessment if the species or the experimental procedure is hazardous to personnel.
3. The SOP should address the following:
    a. Species to be used and the procedures to be performed. A brief outline on the aim of the project should also be included.
    b. Training or experience of personnel caring for and handling the animals.
    c. Husbandry practices, including holding tank, sanitation, diet, and adequate space (especially if they are held with or alongside vertebrates).
    d. Health monitoring and record keeping.
    e. Euthanasia method (consistent with the AVMA Guidelines for Euthanasia of Animals) and humane endpoints/criteria for early euthanasia.
    f. Species interactions for those held in the same room or area.
    g. Occupational health and safety risks (e.g., animal bites, zoonotic diseases and hazardous materials used in experiments).
4. A copy of the SOP accepted by CM should be submitted to IACUC for documentation.

Reference

1. Andrews P.L.R. et al ((2013). The identification and management of pain, suffering and distress in cephalopods, including anaesthesia, analgesia and humane killing. J Exp Mar Biol Ecol. 447: 46–64.

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2. Elwood R.W. (2011). Pain and Suffering in Invertebrates? ILAR 52(2): 175-184.

3. Fiorito G. et al (2014). Cephalopods in neuroscience: regulations, research and the 3Rs. Invert Neurosci. 14: 13–36.

Revision	Author	IACUC approval date
Last reviewed	Dr Foo Tet Wei, John	20 April 2015
P302.01. Reviewed to: 1. ensure policies are in compliance with the NACLAR Guidelines 2022 and the updated Animals and Birds (Care and Use of Animals for Scientific Purposes) Rules 2004; and 2. up-to-date with current practices No revision needed.	Dr Chew Li Li IACUC	3 January 2023

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