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|  | **JCU SINGAPORE IACUC**  **APPLICATION FOR ANIMAL BASED RESEARCH** |

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| ***An electronic copy of the application form and proposed animal usage spreadsheet must be emailed to the IACUC Secretary:*** [**iacuc-singapore@jcu.edu.au**](mailto:iacuc-singapore@jcu.edu.au) |  | ***For Office Use only*** |  |
|  | **Date Received:** |  |
|  | **Internal Ref:** |  |
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| *NParks Animal and Veterinary Service (AVS)*  *Registration Number: VR041*  *Registered User: James Cook University Pte Ltd* | IACUC NUMBER  *(Office Use ONLY)* | A |
| IF YOUR PROJECT INVOLVES:  LABORATORY OR ANIMAL FACILITY WORK: COMPLETE THE ORANGE SECTIONS  FIELDWORK: PARKS, COASTAL WATERS, EXTERNAL AQUACULTURE ETC. COMPLETE THE GREEN SECTIONS  IF IT INVOLVES BOTH TYPES OF WORK, COMPLETE BOTH GREEN AND ORANGE SECTIONS  WHEN COMPLETING THE APPLICATION, REFER TO THE IACUC APPLICATION GUIDE  ALL RELEVANT SECTIONS OF THE APPLICATION MUST BE COMPLETED  INCOMPLETE APPLICATIONS WILL BE RETURNED TO THE APPLICANT  *Reference numbers refer to relevant sections of the NACLAR Guidelines 2nd Ed.* | | |

**PART 1 – ADMINISTRATION AND COMPLIANCE**

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| **1** | **Title of project** |  |

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| **2** | **Purpose Category**  **What is the purpose of the project?** (Use drop-down box) (See Appendix 1 for explanation of the categories) | **Primary Purpose**  Choose an item. |

**3 Personnel**

**Principal Investigator /Academic Supervisor**

If the Principal Investigator is a student, complete the information below for their Supervisor in the project and the Supervisor becomes the person with ultimate responsibility for the oversight of the project, and so must sign in place of the Principal Investigator in the declaration.

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| **3a** | **Title first and last names** |  | | | | | |
| **Qualifications** |  | | | | | |
| **Phone** |  | | **Mobile** | | |  |
| **Email** |  | | | | | |
| **Discipline, school or organisation** |  | | | | | |
| **What is your relationship to JCU? 1** |  | | | | | |
| **JC Number (if applicable)** |  | | | | | |
| **Does this project contribute to a higher degree by research?**  If ‘Yes’ provide details of your supervisor and have your supervisor sign the declaration below. | | No | | Yes | If ‘Yes’, which degree (PhD, MSc etc) | |
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| **Role**  What will be your role in the project? | | | | | | |
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| **Experience**  Outline your experience in the role/experience/species used or outline how you will be trained and supervised until competent.  NB: All users of animals for scientific purposes e.g., Principal Investigators, Collaborators, Research Fellows, postdoctoral and postgraduate students, as well as Research Technicians, must first attend and pass this “Responsible Care and Use of Laboratory Animals” course before commencing any work on animals. (NACLAR Guidelines)  All JCU Singapore staff/student researchers must also provide evidence of completion of mandatory training as relevant to animal researchers: <https://www.jcu.edu.sg/research/research-ethics-and-integrity-overview> | | | | | | |
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*Indicate if the investigator is currently an* ***E****mployee or a* ***S****tudent of JCU, or a researcher who is* ***N****ot affiliated with JCU. If not affiliate with JCU, provide details of the organisation’s AVS Animal Research Registration number below the signatures.*

**Academic Supervisor Details (if applicable)**

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| **3b** | **Title first and last names** |  | | |
| **Qualifications** |  | | |
| **Phone** |  | **Mobile** |  |
| **Email** |  | | |
| **Discipline, school or organisation** |  | | |
| **What is your relationship to JCU? 1** |  | | |

**Co-investigators**

Copy and paste more tables if required or delete tables that are not used.

**Co-investigator 1**

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| **3c** | **Title first and last names** |  | | | | | |
| **Qualifications** |  | | | | | |
| **Phone** |  | | **Mobile** | | |  |
| **Email** |  | | | | | |
| **Discipline, school or organisation** |  | | | | | |
| **What is your relationship to JCU? 1** |  | | | | | |
| **JC Number (if applicable)** |  | | | | | |
| **Does this project contribute to a higher degree by research?**  If ‘Yes’ provide details of your supervisor and have your supervisor sign the declaration below. | | No | | Yes | If ‘Yes’, which degree (PhD, MSc etc) | |
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| **Role**  What will be your role in the project? | | | | | | |
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| **Experience**  Outline your experience in the role/experience/species used or outline how you will be trained and supervised until competent. | | | | | | |
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**Co-investigator 2**

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| **3d** | **Title first and last names** |  | | | | | |
| **Qualifications** |  | | | | | |
| **Phone** |  | | **Mobile** | | |  |
| **Email** |  | | | | | |
| **Discipline, school or organisation** |  | | | | | |
| **What is your relationship to JCU? 1** |  | | | | | |
| **JC Number (if applicable)** |  | | | | | |
| **Does this project contribute to a higher degree by research?**  If ‘Yes’ provide details of your supervisor and have your supervisor sign the declaration below. | | No | | Yes | If ‘Yes’, which degree (PhD, MSc etc) | |
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| **Role**  What will be your role in the project? | | | | | | |
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| **Experience**  Outline your experience in the role/experience/species used or outline how you will be trained and supervised until competent. | | | | | | |
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**Co-investigator 3**

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| **3e** | **Title first and last names** |  | | | | | |
| **Qualifications** |  | | | | | |
| **Phone** |  | | **Mobile** | | |  |
| **Email** |  | | | | | |
| **Discipline, school or organisation** |  | | | | | |
| **What is your relationship to JCU? 1** |  | | | | | |
| **JC Number (if applicable)** |  | | | | | |
| **Does this project contribute to a higher degree by research?**  If ‘Yes’ provide details of your supervisor and have your supervisor sign the declaration below. | | No | | Yes | If ‘Yes’, which degree (PhD, MSc etc) | |
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| **Role**  What will be your role in the project? | | | | | | |
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| **Experience**  Outline your experience in the role/experience/species used or outline how you will be trained and supervised until competent. | | | | | | |
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| **4** | **SOP List**  If any SOPs have been referred to in this application, please list these SOPs below (the reference number is adequate) | |
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| **5** | **Duration of project** (more than 3 years can be requested if matched to a grant/funding source) | 1 year | 2 years | 3 years |
| 4 years | 5 years |  |

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| **6** | **Funding Source** | | | |
| Grant title |  | | |
| Funding Body |  | Duration |  |
| Fund Scheme |  | Value | $ |

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| **7** | **Has this project been submitted to any other IACUC?** | No | Yes |
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| **7a** | **If ‘Yes’, which IACUC was it submitted to and what was the outcome of the submission?** |
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| **8** | **Approvals, permits and biosafety – Does this project involve:** | Yes |
| Work in a national park? |  |
| Wildlife? |  |
| Endangered or threatened species or populations? |  |
| Any genetically modified animals or vectors? (including knock-out or knock-in animals, transgenic animals, cloned animals or GM bacterial, fungal or viral vectors) |  |
| Release of any genetically modified organisms into the environment? |  |
| Any infectious agents? |  |
| International work? |  |

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| **8a** | **If ‘Yes’ to any of the above, indicate whether any additional licenses, permits or approvals are being applied for** (e.g., OGTR, Biosafety Committee, NParks, etc.) |
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| **9** | **Collaborating Organisation(s)**  Provide the names of any organisations collaborating in the project (if applicable) |
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| **10** | **Conflicts of Interest**  Do any of the investigators on this project have any actual or potential interest, including any financial interest or other relationship or affiliation that may affect judgements and decisions regarding the wellbeing of the animals involved? |
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**PART 2 – JUSTIFICATION**

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| **11** | **Project Outline:**  Please supply below a brief description of your project in LAY language. State the AIMS, CONTEXT and a brief overview of the METHODS of your proposed project. Providing information in the form of diagrams, tables or flowcharts can assist the IACUC to understand the project, especially when it involves difficult concepts or complicated biology. Please DO NOT cut and paste answers from grant applications. |
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| **12** | **Potential Benefits:**  Please outline below the potential benefits and significance of the results that may come from the project. |
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| **13** | **Justification for the use of animals:**  Please justify the use of animals in the study weighing the predicted scientific or educational value against the potential impact on the welfare of the animals. (Please ensure to justify any ethically contentious or potentially severe procedures). |
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| **14** | **Replacement:**  Please explain why you need these animals for the project. Are there any alternatives available? Why are these alternatives unsuitable? |
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**PART 3 – ANIMAL HOUSING, CARE\* AND HUSBANDRY**

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| **15** | **Research Facilities or Sites:**  Provide details of every location where living animals will be held or where animal procedures will take place. | |
| **Laboratory / Facility Work** | | |
| **Singapore [1Licenced Facility – for any variation from specific site, indicate Other]** | | |
|  | 1Aquaculture Research and Teaching Facility (JCUS campus), Block E1-09 |  |
|  | 1Aquaculture Research and Teaching Facility (MAC, St John’s Island), Block 8 #02-01 |  |
|  | 1Aquaculture Research and Teaching Facility (MAC, St John’s Island), Block 11 #01-01 |  |
|  | Other (please specify and provide location) |  |

\*Attach Duty of Care Agreement as relevant.

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| **Fieldwork – (Field sites, parks, external properties including farms, animal production facilities, external vet clinics, etc.)**  Add more rows if required by unlocking the form and cut and paste | | | |
| **Name/approx. location**  Provide the name or general location of the site e.g., Gaslight Station, Rogers National Park, Ashmore Reef, etc. | **Type of site**  Choose an option from the list that best fits the site (if more than one) | **Specific address or location**  Provide details of the specific location or range e.g., GPS coordinates, street address, national park | **Country**  If not in Singapore, what country is the site in? |
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| **Laboratory / Facility Work** | |
| **16** | **Source, transport and arrival (Commercially available species):**  If the animals are sourced from a breeder or supplier:  What is the source of the animals (source, suppliers, JCU breeding colonies)?  How will the animals be transported to the facility/location where they will be housed?  (i.e., II.6.4.11 Mode of transport of animals must address animal biosecurity, safety, health, and liability risks for the animals, personnel, and the institution.)  Describe how the animals will be acclimatised to the new housing before experiments begin – include period and any handling undertaken |
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| **Fieldwork** | |
| **17** | **Source and transport (Field work):**  If the animals are sourced from the wild:  Outline where the animals will be captured/sourced and details of their transport (if applicable), and how they will be introduced into their new environment (if applicable) |
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| **18** | **Housing/Holding:**  Describe the type of caging/holding systems to be used for the animals including dimensions, number of animals per unit, bedding, environmental enrichment and environmental conditions.  If the project uses multiple types of housing for different parts of the project, describe each type including the reason for, and duration of holding in each.  If animals are to be housed individually, provide a reason for this and outline measures to be taken to prevent any stress associated with this social isolation.  **OR**  Provide or refer to an SOP containing the above details (provide a link or SOP reference below) |
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| **19** | **Husbandry, care and feeding:**  Describe the husbandry and care of the animals including frequency of cleaning, type of food/water and frequency of feeding/watering, grooming and other aspects that contribute to the wellbeing of the animals.  Describe how the entry of disease will be prevented e.g., infection control or quarantine.  **OR**  Provide or refer to an SOP containing the above details (provide a link or SOP reference below) |
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**Part 4 – METHODS AND EXPERIMENTAL DESIGN**

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| **Animal Details** | |
| **20** | **Justification of choice of animal**  What is the reason for choosing the species/strain/genotype of animal(s) used in this project? |
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| **21** | **Welfare issues presented by choice of animal**  Does the animal you plan to use have any underlying animal welfare issues requiring special consideration? If so describe these and outline how their wellbeing will be provided for. E.g., genetic modification that requires special diets, or native animals that need to be housed individually  **OR**  Provide or reference a Phenotype report for the GM strain of animal(s) you plan to use (provide reference below) |
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| **Experimental Design** | |
| **22** | **Describe the experimental design**  Including the groups, number of animals per group, etc.  The answer here needs to show how you have come up with the numbers requested in the Animal Usage Spreadsheet. Do not describe the methods here. |
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| **23** | **Animal Numbers – Proposed Animal Use Spreadsheet Must be Attached**  **NB Please provide the total number of animals required over the whole project**  **(not per year or per site)**  A proposed animal use spreadsheet must be completed and attached to the application. The spreadsheet can be found under Animal Ethics Forms on the Animal Welfare and Ethics @JCU webpage. <https://www.jcu.edu.sg/research/animal-welfare-and-ethics-@-jcu> . |
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| **Reduction** | |
| **24a** | **Is this a repeat or continuation of a previous project?** |
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| **24b** | **What is the statistical basis for the numbers of animals requested in this project?**  E.g., group numbers, sample size, etc. |
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| **24c** | **Has a statistician reviewed or been involved in deciding the number of animals being used on this project?** |
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| **Methods** | |
| **25** | **Provide a step-by-step description (in lay language) of what will happen to the animals during the project.**  Include in this description the following:  Details of any procedures, samples taken and methods of sample collection, measurements made, anaesthesia, time periods for each part of the project, dose and route of any pharmaceuticals and any potential side effects of these.  NB. Respiration and corneal and flexor withdrawal reflexes must not be used to judge the level of anaesthesia when neuromuscular blocking agents are used.  For field work, include methods of trapping, catching, observation methods, animal handling, number of traps used per session, etc.  **OR**  Provide a timeline of the project and include SOPs for any procedures and other methods being used. |
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| **Fieldwork** | |
| **26** | **Is there a chance that any of the following may occur in the field where it may not be possible to apply for an amendment?**   1. **Taking of voucher specimens** 2. **Collection or use of species not contained in this application** 3. **Use of methods not outlined in this application** |
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| **Refinement** | |
| **27** | Identify and describe each step or procedure in this proposal that may compromise an animal’s wellbeing. State how any potential adverse effects will be avoided or minimised, pain and distress will be avoided and the wellbeing of animals will be maintained.  Details could include treatment with substances, including antibiotics, anaesthetics and analgesics as well as their dose and each route of administration. Provide a brief description of measures taken to prevent any adverse effects the research may have on the animals involved. Please note:  a. Researchers must consider non-pharmacological methods to reduce pain and distress, such as special housing, dietary and other environmental enrichment, adjustments and careful supportive care  b. Surgical success can be improved by careful attention to the following depending on the context of the study: iv. Antibiotic administration should only be given when appropriate and should not be used as a replacement for aseptic technique. |
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| **Animal Monitoring** | |
| **28** | **How will animal wellbeing be monitored at each stage of the project including: post-arrival, during procedures and post-procedure?**  Include the frequency of monitoring, what criteria will be monitored to determine the wellbeing of the animal and whether they are experiencing pain or distress, which aspects of the monitoring will be done by the researcher and which will be done by animal technicians.  (e.g., II.6.3.4 When devices are used to track the movement of wildlife, the weight, design and positioning of attached devices must minimise interference with the normal survival requirements of the animal.) |
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| **Please provide examples of the animal monitoring records or checklists when submitting this application.** |

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| **Endpoints and Contingency Planning** | |
| **Laboratory or Facility Work** | |
| **29** | **What criteria will be used to determine the animal use in the research will end in the following situations?**   1. **Expected end of the animal’s use in the project** e.g., Day 42, 5 weeks after tumour induction, immediately after samples are taken, etc. 2. **Humane endpoints (an unexpected end of the animal’s use in the research, determined when the animal’s involvement must end for animal welfare reasons)** |
| a)  b) |
| **Fieldwork** | |
| **30** | **If any animals are injured during the fieldwork, what plans are in place for their treatment or euthanasia it is required?**  e.g., Is there a local veterinarian that can receive the animals?   * II.11.9.3 The choice of a method of euthanasia depends on the species, age, availability of restraint, and skill of the individual performing the euthanasia, and should be consistent with the research goals. * II.11.9.7 Criteria to ensure death must be detailed in the protocol, including a secondary method of euthanasia, where appropriate. |
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| **Fate of animals/method of humane killing** | |
| **31a** | **What will happen to the animals at the end of their time on the project?**  e.g., returned to normal husbandry conditions, returned to farm, released, euthanised, kept in a laboratory or display |
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| **31b** | **Have any of the animals been used previously and/or will any of the animals be reused in other projects in the future?**  If so provide details of their previous and potential future use  Outline how you will ensure the animals have recovered sufficiently in between use |
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| **31c** | **If any animals are to be rehomed/rehoused or released following the project, what steps will be taken to ensure the animals ongoing wellbeing?** |
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| **31d** | **If animals are to be euthanised as part of the project or because they are seriously injured, how will this be done, where will it take place and who will carry this out?**  Include details of the agent used, concentrations, dose, route of administration.  (Refer to the Policy and Guidelines for the Humane Killing of animals use for scientific purposes for acceptable methods)  OR  Provide or refer to an SOP containing the above details (provide a link or SOP reference below)  *NB. Non-pharmaceutical grade chemicals should be described, justified, and approved by IACUC.* |
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| **31e** | **Could animal tissues or carcases be shared with or provided to other investigators to replace the use of living animals in their work?** (Replacement/reduction) |
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|  | **JCU SINGAPORE IACUC**  **AEC MONITOR’S REPORT / PEER REVIEW** |

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| ANIMAL ETHICS NUMBER  *(Office Use ONLY)* | A |

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| **IACUC Application Title:** |  | | | | |
| **Principal Investigator:** |  | | | | |
| **General Comments:** | | | | | |
| **Part 1 – Administration and Compliance:** | | | | | |
| **Part 2 – Justification:** | | | | | |
| **Part 3 – Animal Housing, Care and Husbandry:** | | | | | |
| **Part 4 – Methods and Experimental Design:** | | | | | |
| **Part 5 – Personnel and Declarations:** | | | | | |
| **Please indicate your recommendation:** | | | | **Yes** | **No** |
| This application **requires the above issues to be addressed** before it can go to the IACUC | | | |  |  |
| This application should be **approved:** | | | |  |  |
| This application should be **approved with the following comments, provisions and/or reservations:** | | | |  |  |
| This application should **not be approved** for the reasons listed above: | | | |  |  |
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| Monitor/Reviewer Name |  | Review Date |  | | |

**PART 5 – DECLARATIONS**

**32 Principal Investigator/Academic Supervisor Declaration:**

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| I declare that:   1. I will provide adequate project supervision, ensure animal health and wellbeing and oversee the conduct of all staff participating in the project such that I will take overall responsibility for all aspects of the conduct of the project. 2. Adequate resources are available for the conduct of the project. 3. I have read the most recent Singapore Guidelines on the Care and Use of Animals for Scientific Purposes. I am aware of and agree to meet the responsibilities set out in these documents. 4. All staff involved in this project have been read this application and appropriate legislation and Guidelines and agreed to meet their responsibilities and directions from the IACUC. 5. I will ensure that the scope of monitoring the wellbeing of the animals at all stages of their care and use in the project is clearly outlined and communicated to all parties. 6. I undertake to inform IACUC of any changes to the proposed procedures or details given in this form subsequent to its submission (including change of contact details) by submitting an Amendment Application. 7. I agree to submit the mandatory IACUC Report that will be forwarded to me annually and provide a final report upon completion of the project. 8. This project complies with the policy on Animal Research Ethics within James Cook University. 9. The purpose of this project cannot be achieved by alternatives to the use of animals. | | |
| **Name - Principal Investigator OR student’s supervisor** | **Signature** | **Date** |
| **Name – Academic Supervisor (if PI is a student)** | **Signature** | **Date** |
| If the Principal Investigator/Supervisor named above is not affiliated with JCU, provide the IACUC Animal Research Registration number: | |  |

**APPENDIX 1 - DETAILS OF ANIMALS TO BE USED:**

**Please read the list below to determine the category and purpose of use for the animals in your project.**

**Purpose Category**

**Scientific Purposes for which the Animals will be Used:** Pick ONE category that BEST describes the main purpose of your project and use the dropdown box in **Question 4** to choose the appropriate category. Use the brief guide and the examples given to help categorise the procedure.

**YOU DO NOT NEED TO HIGHLIGHT CATEGORIES HERE**

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| **Cat.** | **Description** | **Examples** |
| **1** | **The Understanding of Human or Animal Biology**  Using animals for activities that aim to increase the basic understanding of the structure, function and behaviour of animals and humans, and processes involved in physiology, biochemistry and pathology | Molecular biology studies, studies of hormone levels for reproductive physiology |
| **2** | **The Maintenance and Improvement of Human or Animal Health and Welfare**  Activities that aim to produce improvements in the health and welfare of animals, including humans. | Animals used to develop a new diagnostic test for a disease; Development of a painless method of spaying cattle; Developing a new vaccine for animals or humans; Production of biological products such as anti-sera, hormones and antibodies |
| **3** | **The Improvement of Animal Management or Production**  Activities that aim to produce improvements in domestic or captive animal management or production. | Developing an improved molasses/urea based supplement for cattle; Determining optimum stocking rate for a pasture; Evaluation of a calcium supplement for layer hens |
| **4** | **The Achievement of Educational Objectives**  Activities carried out for the achievement of educational objectives. The purpose of the activity is not to acquire new knowledge, rather to pass on established knowledge to others. This would include interactive or demonstration classes in methods of animal husbandry, management, examination and treatment. | Animals used by veterinary schools to teach examination procedures such as pregnancy diagnosis or artificial insemination; Sheep used in shearing demonstration classes for students; Dogs used to teach animal care to students; Rats and toads used in schools for dissection classes; Animals used in agricultural colleges or schools to teach routine husbandry procedures |
| **5** | **Environmental Study**  Activities that aim to increase the understanding of the animal’s environment or its role in it, or aim to manage wild or feral populations. These will include studies to determine population levels and diversity and may involve techniques such as collection of voucher specimens, radio tracking or capture and release. | Fauna surveys for environmental impact studies; Research into methods to control feral animals |

**APPENDIX 2 - DETAILS OF ANIMALS TO BE USED:**

**Please read the list below to determine the category of the procedure(s) of use for the animals in your project. These imply the degree of impact the project will have on any group of animals.**

**Category of Procedure**: The procedure categories are intended to give some indication of the impact the procedure will have on the animals or a group of animals. Place the categories in the appropriate column in the Animal Use Spreadsheet (Question 22). Use the brief guide and the examples given to help categorise the procedure.

**YOU DO NOT NEED TO HIGHLIGHT CATEGORIES HERE**

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| **Cat.** | **Description** | **Examples** |
| **1** | **Observational studies involving minor interference**  Animals are not interacted with or, where there is interaction, it would not be expected to compromise the animal’s welfare any more than normal handling feeding etc. There is no pain or suffering involved | Observational study only such as photographing whales at close quarters; Breeding or reproductive study with no detriment to the animal; Behavioural study with minor environmental manipulation |
| **2** | **Animal unconscious without recovery** Animal is rendered unconscious under controlled circumstances (i.e. not in a field situation) with as little pain or distress as possible. Capture methods are not required. Any pain is minor and brief and does not require analgesia. Procedures are carried out on the unconscious animal that is then killed without regaining consciousness | No experimentation on living animals eg animals killed painlessly for dissection, biochemical analysis, in vitro cell culture, tissue or organ studies; Teaching surgical techniques on live, anaesthetised animals which are not allowed to recover following the procedure |
| **3** | **Minor conscious intervention without anaesthesia** Animal is subjected to minor procedures that would normally not require anaesthesia or analgesia. Any pain is minor and analgesia usually unnecessary, although some distress may occur as a result of trapping or handling | Injections, blood sampling in conscious animals;  Minor dietary or environmental deprivation or manipulation, such as feeding nutrient-deficient diets for short periods; Trapping and release as used in species impact studies; Trapping and humane euthanasia for collection of specimens |
| **4** | **Minor operative procedures with recovery** Animal may be rendered unconscious with as little pain or distress as possible. A minor procedure such as cannulation or skin biopsy is carried out and the animal allowed to recover. Depending on the procedure, pain may be minor or moderate and post-operative analgesia may be appropriate. Field capture using chemical restraint methods is also included here | Biopsies  Cannulations  Sedation/anaesthesia for relocation, examination or injections/blood sampling |
| **5** | **[[1]](#footnote-1)Surgery with recovery** Animal may be rendered unconscious with as little pain or distress as possible. A major procedure such as abdominal or orthopaedic surgery is carried out and the animal allowed to recover. Postoperative pain is usually considerable and at a level requiring analgesia. | Orthopaedic surgery  Abdominal or thoracic surgery |

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| **6** | **Minor physiological challenge** Animal remains conscious for some or all of the procedure. There is interference with the animal’s physiological or psychological processes. The challenge may cause only a small degree of pain/distress or any pain/distress is quickly and effectively alleviated. | Minor infection, minor or moderate phenotypic modification, early oncogenesis  Polyclonal antibody production  Antiserum production |
| **7** | **Major physiological challenge** Animal remains conscious for some or all of the procedure. There is interference with the animal’s physiological or psychological processes. The challenge causes a moderate or large degree of pain/distress that is not quickly or effectively alleviated. | Major infection, major phenotypic modification, oncogenesis with pain alleviation  Isolation or environmental deprivation for extended periods  Monoclonal antibody raising in mice |
| **8** | **Death as an endpoint** This category only applies in those rare cases where the death of the animal is a planned part of the procedure. IACUC approval is required.  **Death as an end point does not include: death by natural causes; animals which are euthanized on completion of the project; animals which are killed if something goes wrong; animals killed for dissection or for use as museum voucher specimens; or accidental deaths.**  **II.11.5.3 Death as an endpoint: Unless there is strong scientific justification for death as an endpoint (refer to III.4.4.4 and CCAC in Appendix I: Section II: General), death as an endpoint must be avoided.**  **a. If death as an endpoint must be used, and is approved by the IACUC, the PI must ensure**  **that the animal’s distress or pain is minimised, including the appropriate use of sedation, analgesia, anaesthesia or other interventions.** | Lethality testing (LD50, LC50) (refers to Animal Research Act 1985, Australia)  Toxicity testing with death as a planned end point without euthanasia. |

1. A dedicated space in an animal procedure room/lab is required for most survival surgeries in rodents and other small species. The IACUC must assess the availability of the necessary facilities during the protocol review. [↑](#footnote-ref-1)