

Dalhousie Animal Ethics Guidance for Best Practices for Undergraduate Student Research with Animals

This guidance is for undergraduate students conducting research at Dalhousie University. Undergraduate research supervised by faculty members on the Halifax and/or Saint John campuses requires UCLA approval, and for supervisors at the Agricultural Campus in Truro, ACUC approval is required.

Undergraduate students may be engaged in the use of animals in research as part of Summer, Honours or Special Topics research projects. A principal investigator (PI) that is currently qualified to conduct animal research must supervise the student.

There are two possible scenarios:

A) The proposed Summer, Honours or Special Topic research project fits within the scope of the PI's animal research that has already been peer-reviewed for scientific merit and is funded and covered by a current, approved UCLA or ACUC research protocol.

In this situation, the student must be included within a new protocol under the section titled, 'research personnel', or an Amendment Form (UCLA Form B/ACUC Amendment) can be submitted to add the student to an existing protocol. When adding undergraduate students to a new or an existing protocol please provide a description of the animal procedures they will perform. Please refer to the section of this document, "Considerations for Experimental Procedures Involving Animals" for a description of routine versus invasive procedures.

B) The proposed Summer, Honours or Special Topics project falls outside the scope of the PI's peer-reviewed and funded animal research.

In this case the project must be reviewed for pedagogical and scientific merit. The student therefore must compose and submit a document to the their respective Honours/Special Topics committee that fully describes the proposed scientific activities including the methods of proposed work, the experimental design and statistical analysis to be employed, as well as evidence of consideration of the three Rs in relation to their project. In accordance with these criteria, the Honours or Special Topics project committee or chair will judge these responses as acceptable or not. Acceptance will be viewed by the UCLA or ACUC as the equivalent of a valid (and required) merit review. The proposed supervisor must be a current animal user and have research experience that relates to the proposed project. A UCLA or ACUC Research Protocol Form describing the animal research project must then be submitted by the Supervisor. Review and

Approval by the UCLA or ACUC is required before the animal research project can begin.

Considerations for Experimental Procedures Involving Animals

Honors and Special Topics Projects must be designed to be appropriate for the skill level, individual capacity for competency, and time availability of an undergraduate trainee. Not all trainees will be capable of developing advanced sensorimotor skills for complex procedures like surgery, and not all trainees will be able to develop the observational skills required to detect and react appropriately to animal welfare issues which evolve from invasive research in a timely fashion, in order to meet current humane guidelines. In some instances the scope and practice required to achieve competency in a high skill level project may not be feasible or attainable within a given timeline for a particular individual. There is always a learning curve when trainees learn new procedures and this involves time, uses animal lives and may entail an increased level of pain and suffering in animals. Each case needs to be carefully considered from not only a didactic but also from a humane and best practices viewpoint.

In the majority of cases, projects most suitable for undergraduates without prior animal research experience entail lower levels of invasiveness ([See CCAC category of invasiveness guidelines](#)), such as observational studies, those involving minor procedures (e.g. feeding/weighing, injections, blood collections, short duration inhalation anesthetic) or acute non-recovery procedures (e.g. euthanasia and tissue collections).

Hands on work by undergraduate students in more invasive projects ([See CCAC category of invasiveness guidelines](#)) requires special consideration by UCLA/ACUC because of the higher moral and ethical cost and will be considered on a case by case basis. Due diligence to ensure animal welfare is optimized in these studies entails time consuming and demanding levels of training, competency assessment and supervision both by training/regulatory personnel and by the PI, similar to what would be expected for a graduate student or post-doctoral fellow.

Under **direct supervision**, Honours and Special Topics students may be permitted to observe or assist skilled personnel (e.g. PI, graduate student or technician) with more invasive and complex procedures, and eventually when fully trained, assessed for competency and while supervised, may be permitted to conduct such studies. In keeping with the parsimonious use of animals in teaching and research the 3Rs principles must be strictly adhered to.

Caution should be exercised in the training process and ongoing work where undergraduate students are performing techniques with known potential negative emotional and traumatic effects on the psyche of the operator. In such cases, the need for a high degree of training and competency, the sharing of onerous duties among research personnel in labs to ensure the emotional burden is fairly distributed and the

opportunity for all involved personnel to dialogue meaningfully about their feelings should be considered. The student will always have the opportunity to decline these procedures.

Training Requirements and Competency Assessment

All students who use animals in Honours or Special Topics projects are expected to complete the CCAC online training modules before initiating their research. Furthermore students conducting invasive research are required to complete the relevant project specific workshops (e.g. rat handling, mouse handling, fish handling and water quality, introduction to anesthesia and introduction to aseptic surgical technique) or custom sessions as required. These training sessions can be arranged by contacting the Lab Animal Training Coordinator at the Halifax Campus or Chair, ACUC at the Truro Campus. Students conducting invasive procedures involving surgery are expected to complete the surgery and anesthesia workshops, and are required to pass individual competency assessment before the project begins. The Laboratory Animal Training Coordinator should be contacted for additional information and guidance.

Definition of Supervision

Undergraduate students conducting invasive research must be under the direct supervision of the PI or senior designate (usually lab manager), generally the signing authority for the grant under which the work is conducted.

Direct supervision is legally defined as being within the same room at the same time as the student, or within reasonable voice (not electronic) calling distance (so they can immediately assist). This holds true both for invasive procedures and for handling and recording practices for isotopes, pathogens, narcotics, barbiturates and other scheduled substances, monitoring animal models of injury or disease which are the PIs responsibility.

Graduate student and post-doctoral fellows may not meet the legal requirement for direct supervision of undergraduates.