

# Non-Animal Alternatives in Teaching



## **Alternatives to Animals in UBC** **Undergraduate Teaching: Project Report** *August 2015*

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## Project Background and Aims

The British Columbia Society for the Prevention of Cruelty to Animals (BC SPCA) has long had an interest in the use of animals in science. The BC SPCA has also had an enduring relationship with the University of British Columbia (UBC), providing funding for the launch of the Animal Welfare Program in 1997. Further, a senior BC SPCA staff member previously sat on UBC's Animal Care Committee as a community member for many years, and now he currently sits on the Board of Directors for the Canadian Council on Animal Care (CCAC).

Despite the BC SPCA's strong interest in the welfare and national governance of animals used in science, the BC SPCA lacks the resources to have a full-time staff member dedicated to working on these issues. Consequently, Dr. Elisabeth Ormandy was hired on contract within the Society's Scientific Programs Department to conduct an outreach project on the use of animals in undergraduate teaching at UBC under the supervision of Dr. Sara Dubois, Chief Scientific Officer.

Dr. Elisabeth Ormandy is a former Ph.D. student and postdoctoral fellow with the UBC Animal Welfare Program. Her expertise is in the ethics of using animals in research, teaching and testing, and the governance of animal-based science. She worked as a Research Fellow in Animal Policy Development for CCAC from 2009-2011, and currently sits on the CCAC Standards Committee as a representative for the Canadian Bioethics Society.

Both Dr. Dubois and Dr. Ormandy have been teaching UBC undergraduate students in the Applied Animal Biology program for several years. During this time they have heard concerns from students about the use of animals in UBC undergraduate classes. Together, they conceptualized this project on the use of animals in undergraduate teaching at UBC to better understand how and why animals are used, and to be able to offer non-animal alternatives to those students with concerns.

Upon hearing of the project's goals, the British Columbia Foundation for Non Animal Research (BCFNAR) invited Dr. Ormandy to request additional funding from the Foundation to increase the scope of the project. The BCFNAR is dedicated to the support and promotion of alternative methods to the use of animals in research (<http://www.bcfnar.org>), and each year offers a grant to the UBC Department of Medicine for \$10,000.

According to UBC, 2,619 live animals were used in teaching in 2013: <https://animalresearch.ubc.ca/animal-statistics.html#2013>. Nationally, approximately 150,000 live animals are used annually for teaching purposes on approved protocols. The three tenets of animal-based research that guide the ethical care and use of animals in science are Replacement, Reduction and Refinement: [http://www.ccac.ca/en/\\_standards/threer](http://www.ccac.ca/en/_standards/threer). As one of the tenets of

using animals in science is to replace live animal use whenever possible, teaching is one of the first areas where this goal may be achieved.

Considerations for replacing the use of animals in undergraduate education at UBC are important for numerous reasons, including but not limited to:

- 1) The pedagogical merit of non-animal alternatives has been shown to be equal to or higher than the use of animals
- 2) A wide range of non-animal alternatives exist and UBC strives to adhere to the Three Rs principles outlined by national policy
- 3) The desensitization to animals use can create a culture of research where animals are seen as “tools” or commodities
- 4) The civil liberties of students may be impinged upon as UBC states that students do not have to use animals as part of their education, yet there is limited support for those students or instructors who want to opt out
- 5) The scientific disciplines may lose valuable students to other disciplines that do not use animals
- 6) The use of animals in teaching is a cost incurred every term, or year; with non-animal alternatives costs are reduced over time

Given the numerous reasons for replacing animals in undergraduate teaching, the aims of this project were to:

- a) Engage with members of the UBC community about the use of animals in UBC courses;
- b) Provide relevant and timely information to UBC students and instructors about non-animal alternatives that can be implemented in UBC courses that typically use animals or their tissues; and,
- c) Provide a mechanism through which UBC can implement a student choice policy (i.e., all students who want to opt out of using animals as part of their UBC education can do so without penalty)

## Timeline and Milestones

The project ran from December 2014 to September 2015. The first steps involved engagement with undergraduate instructors and students at UBC to evaluate barriers to and motivations for replacing animals in undergraduate teaching. A literature review was also conducted to compare the pedagogical merit of using animals versus non-animal alternatives. These tasks were completed between December 2014 and April 2015.

The knowledge gained from these steps (instructor and student engagement, and literature review) set the foundation for the development of a web-based resource where instructors and students can find information about non-animal alternatives relevant to the UBC courses currently being offered. The website was developed through consultation with a consultant web developer, and the web support team at the Faculty of Land and Food Systems. The web resource was created between May-August 2015.

The web-based resource can be found at: <http://alternativestoanimals.landfood.ubc.ca/>

The resource is intended to be dynamic and to grow and be refined over time as new non-animal alternatives are developed and as new information emerges. It is hoped that this project can provide a template for other universities who want to provide non-animal alternatives in undergraduate education.

## Instructor Engagement

The first step in this project was to engage with instructors about the animal labs they offer to undergraduate students. Several instructors generously gave their time and talked about their own personal experience and gave valuable insights into the undergraduate animal labs that are taught in the Faculties of Land and Food Systems and Science.

Instructors were asked about the animals used in their labs, any non-animal alternatives that are currently offered, and barriers to and motivations for replacing animals in their teaching. The current use of animals in teaching by the instructors was documented, and specific non-animal replacements identified. The aim of the informal interviews was to identify willingness and need among UBC instructors for the development of a non-animal alternatives web-based resource.

### What was learned?

1. The animals used for dissection are not required to be documented on a CCAC teaching protocol, thus the animal numbers published by UBC are an underestimate of the actual number of animals used for the purposes of teaching since they reflect only live animals
2. Overall there is the perception that students are eager to perform dissection and have a hands-on learning experience
3. Animals are procured from one primary company which either purpose breeds animals for dissection (e.g. rats and pigeons), or sources “waste” animals from the fishing industry (e.g. dogfish and mudpuppies) or food production industry (e.g. fetal pigs, cow organs)
4. The courses that involve animal dissections rarely offer non-animal alternatives, with the exception of requiring dissenting students to watch other students perform the dissection, which is not a true alternative
5. Lab courses themselves are optional, unless students want to major in Applied Animal Biology or Animal Biology, in which case courses offering dissection are required to graduate with Honours in animal-related specialties (e.g. Animal Biology)
6. Overall, the efforts to implement reduction and use the fewest number of animals possible were impressive. For the most part, the instructors showed great compassion for the animals used and shared their own concerns about replacing animals with non-animal alternatives (e.g., the lack of hands-on comparison of bodily systems between species)

## Student Engagement

To engage with undergraduate students in Biology and Applied Animal Biology, an online survey was conducted. All registered students in these programs (across all years) were invited to participate, whether they had taken, or intended to take, courses offering dissections or not. The survey was advertised with the generous help of program coordinators. A total of 221 students responded to the survey.<sup>1</sup> The aim of the survey was to identify willingness and need among UBC undergraduate students for the development of a non-animal alternatives web-based resource.

### **What was learned?**

1. Of those students surveyed who had either already taken, or were intending to take, courses offering animal dissections, 30% responded that they would like to be offered non-animal alternatives
2. A minority of students (n=17) who responded to the survey never took (or intended to take) animal-related courses; however the majority of these students (10/17) opted out of taking courses requiring dissection because of their personal views that dissection is unethical

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<sup>1</sup> Before conducting the survey, the UBC BREB was contacted to ask whether ethics approval was required to run the survey. Since this was not a research project, BREB stated that an ethics approval was not required. As a result, please consider the information shared here for internal use only.



## Literature Review

A literature review of all available studies in English language journals that have compared student performance (in various settings, such as veterinary education, high schools and undergraduate biology classes) using animals versus non-animal alternatives in teaching was carried out. The aim of the literature review was to establish the pedagogical merit of non-animal alternatives versus animal-based teaching methods. The results of this literature review are summarized below. A list of full citations for the studies consulted appears on the web-based resource.

Study Category	Number of studies
A. Equivalent teaching efficacy of animal and non-animal teaching methods	23
B. Superior efficacy of non-animal teaching methods	18
C. Superior efficacy of animal teaching methods	5

### What was learned?

From the available literature, it appears that the majority of non-animal alternatives that have been tested were equivalent or better than animal methods in terms of how well students achieve their learning outcomes.

This supports the idea that replacement of animals in teaching is possible, and in many cases non-animal alternatives can enhance student learning. The Three Rs tenet states that animals should be replaced “wherever possible” – this literature review provides compelling evidence for the need to implement non-animal alternatives in teaching.

## Development of a Web-based Resource

All of the information gathered from the instructor engagement, student engagement and literature review formed the foundation for the web-based resource that was developed. An additional section was included where students or instructors can search non-animal alternatives by course number – this is intended to take the burden off instructors by providing easy links to non-animal alternatives that might be able to be implemented in UBC courses. Some pdf resources that might be help for both students and instructors are also provided.

Feedback is welcome: there is a “Contact” page where students and instructors can write with information about new non-animal alternatives, new studies to add to the literature review, or anything else that would be beneficial to include. The web resource is intended to be dynamic, and to grow and become more refined over time, as more advanced non-animal alternatives are developed.

The website is hosted by the Faculty of Land and Food Systems, and before launch was demonstrated to LFS Dean Rickey Yada who acknowledged support for this project.

## Acknowledgements

This project would not have been possible without the knowledge and time offered by the instructors and students who engaged on this important topic.

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