Module 02 - Ethics in Animal Experimentation

The objectives of this module are:

- to introduce readers to basic notions in ethics
- to identify the socio-historical basis of the debate on animal experimentation
- to define levels of ethical questioning in animal experimentation

Science and Ethics

At the start of the twenty-first century, it is obvious to the public as well as to the scientific community that the scientific enterprise routinely begs a host of ethical questions. In the area of animal-based research, these can include questions such as:

- Is there anything inherently wrong with transferring human genes into other species?
- Is the pursuit of knowledge enough to justify carrying out experiments involving pain and/or distress to an animal?
- When primates are no longer needed for research, should they be destroyed humanely or retired to a primate sanctuary?
- If research involves dogs, is it better to use purpose-bred laboratory dogs or unclaimed strays from a pound?

The informed public expects scientists to have thought through these and other issues. To do this, scientists need to see the ethical issues not as someone else's field, not as peripheral to the scientific enterprise, but as an essential element of being a scientist.

Basic Notions in Ethics

The word philosophy, derived from the Greek literally means "love of wisdom." In keeping with its roots, The *Cambridge International Dictionary* defines the word philosophy as "the use of reason in understanding such things as the nature of reality and existence, the use and limits of knowledge and the principles that govern and influence moral judgment." As an academic discipline, philosophy's chief branches include logic, metaphysics, epistemology, and ethics. Although "ethics" is an academic discipline in its own right, it is useful for scientists to understand the concepts used in ethical discussions. Just as a discussion of business ethics should

involve business people, so a discussion of ethics in science should involve scientists. A scientists bring an in depth knowledge and data, necessary to inform decision making. Discussion of any of the issues listed at the beginning of this module would benefit from an understanding of the scientific data associated with the issue.

Ethics is derived from the Greek *ethos* meaning custom, people, the predominant community spirit. Within that community spirit, morality is the distinction between right and wrong. The field of ethics, also called moral philosophy, involves developing, defending, and recommending concepts of right and wrong behaviour. There has been a tendency for scientists to view themselves and their work outside this realm; however, increasingly science is being seen as part of society rather than apart from it. For example, the Canadian Institutes of Health Research is mandated by Parliament to promote, assist, and undertake health research that meets the highest standards of ethics. It now has an ethics secretariat and ethics directors associated with each of the Institutes.

The Socio-Historical Basis of the Debate on Animal Experimentation

Concerns about the use of animals in science have existed for almost as long as animals have been used to better understand the workings of the human/animal body. In order to understand the basis of some of today's attitudes to the use of animals and the philosophical debate, it is useful to have an appreciation of the history of animal-based research and the underlying ethical attitudes. The detailed history of animal based research has been outlined in many publications. Here only a few key landmarks are given, in order to give a background to the time-frame for the debate of the use of animals in science. Alongside are given some of the key ethical attitudes about the use of animals. It should be clear that almost from the outset that scientists have concerned themselves with discussions of the "rightness or wrongness" of the use of animals, and in considering what conditions should be placed on the use of animals for scientific purposes.

Chronology of Landmarks in Animal Based Research and the Key Moral Statements.

In 1989, the American Medical Association Council on Scientific Affairs published an impressive list of medical advances made possible through research using animals including, among others: studies on autoimmune deficiency syndrome, behaviour, cardiovascular disease,

cholera, haemophilia, malaria, muscular dystrophy, anaesthesia, nutrition, and the prevention of rabies. Such research resulted in subsequent benefits for humans and non-human health. Further lists of medical milestones during the past century can be seen on the Research Defence Society website and Americans for medical progress.

With World War I, the focus on antivivisection shifted; benefits to human health through animal research were welcomed by the public, and in addition, for those who had witnessed the human suffering as a result of the war, consideration of animal pain seemed "faintly ridiculous". After World War I, groups with an interest in the well-being of animals used in science were formed such as the Universities Federation for Animal Welfare (UFAW). UFAW commissioned a philosopher and a microbiologist, William Russell and Rex Burch to write *The Principles of Humane Experimental Technique* (1959), a guide which pioneered the notion of the Three Rs that became a uniting focus both for the animal welfare and the scientific community worldwide, including in Canada.

The Nature of Science and the Emergence of Bioethics

In parallel with the emergence of physiology, the school of thought called "Positivism" developed which shaped ideas about the nature of science. Positivism resulted from Auguste Comte's (1798-1857) attempt to create a clear distinction between the study of the material world and other branches of human thought such as theology and metaphysics. Science, as seen by the Positivists, is concerned only with what we can observe. It asks purely empirical questions: what, where, when, how much? Within this system, ethical questions — good and evil, right and wrong, should and should not — have no obvious place. Positivism helped to reinforce the distinction between the empirical and the ethical. However, that distinction expanded into the much broader view that science should not, or cannot, concern itself with ethical questions at all — that science is an island of pure, empirical investigation, unattached to ethical values.
By the end of the Second World War, this view was actively being challenged. At that time, experiments were being carried out, some of them lethal, on human beings who had been imprisoned and then forced to serve as subjects solely on the basis of race, religion, or mental development. Other experiments focussed on designing weapons of mass destruction. Even after the war, there were renowned scientists who conducted painful or harmful experiments on human subjects. These were clear cases where no one could portray scientific research as a

disinterested search for knowledge, unrelated to ethical values or social agendas. In the wake of such tangible examples, many scientists found it necessary to re-conceptualize their roles to incorporate both the empirical and the ethical issues inherent to science. In 1975, the American Association for the Advancement of Science declared: "It is often said that science is ethically neutral and value-free". Such statements can be misleading and in some respects quite false. It is, of course, obvious that a scientific discovery, once published can be used in exceedingly diverse ways, with consequences that may be good or bad, or commonly a complicated mixture of both. The activities of scientists and technologists, however, are conditioned and directed at every turn by considerations of human values. This is true over the whole range of activity.

Toward a Coherent Ethic of Research Involving Laboratory Animals

At present there is no widely accepted comprehensive moral theory pertaining to research involving laboratory animals. Ethical theories for animal-based research have lagged behind those of human medical ethics, partially because of the focus on human research ethics following the experiments during World War II, but also because concern for non-human animals did not and still does not fit well with the dominant intellectual paradigms driving the development of the field of bioethics. The 1970s and 1980s saw increased interest in the use of animals among moral philosophers. Australian philosopher Peter Singer's *Animal Liberation* (1975) together with Richard Ryder's *Victims of Science* (1975) and Tom Regan's *The Case for Animal Rights* (1983) were published. Because these publications were both accessible to the lay public as well as firmly rooted in ethical theory, they attracted the attention of opponents of animal research as well as academic philosophers. Singer argued for the liberation of animals based on equality of consideration of "interests" and their capacity to suffer, and claimed moral status for animals on that ground. Singer has been criticized by other philosophers as a preference utilitarian for his approval of the use of less sentient animals. Ryder based his considerations more on the ability of animals to experience pain, an extension of the concerns expressed by the physiologists Boyle, Hooke, and Lower as well as the English essayists Pope and Johnson. Another moral view, supported most strongly by Tom Reagan involves animal "rights." The beginnings of this theory can be seen in Primatt's extension of the principle of justice beyond the human sphere. Other philosophers such as Frey and Wren have argued for the interests of individual species, and for the right to use animals in research. The distinction between those who recognize rights in

animals and oppose research and those who opt for animal welfare and permit or endorse humane research may be useful, but it does not accurately reflect the positions taken by leading contemporary philosophers. Some of those who advocate animal rights, such as Jerrold Tannenbaum, support the humane use of animals in research. Others, like Singer, do not claim rights for animals, but are strongly opposed to research involving animal subjects.

Moral Stewardship

In the absence of a universal ethic of animal experimentation, animal welfarists, both within science and without, have plotted a different course of action recognizing that animal researchers have a role to play as moral stewards. To a certain extent this view can be said to be based on the approach of Albert Schweitzer (1875-1965), Nobel Peace Laureate, medical practitioner, and doctor of philosophy — i.e., to cause pain or death when it can be avoided is wrong. In addition, it signifies the beginnings of a move towards an ecological ethic, where the preservation of a greater whole is seen as important occasionally at the expense of individual animal lives. In this context, animal experimentation is viewed as a "necessary evil," which is justifiable as long as those who conduct the experiments are in tune with their moral obligations — to society and to the animals in their care. The CCAC position statement "*Ethics of Animal Investigation"* published in 1989 expresses these concepts for the CCAC. Building on principles first outlined by Marshall Hall, it also enshrines the Three Rs into the CCAC system. This is the convergence point for the more than 2,000 scientists, veterinarians, animal care technicians, students, community representatives and animal welfare organizations participating in the CCAC system of ethical review and oversight for the care and use of animals used in science in Canada since 1968. In brief we present:

Marshall Hall's Principles

1. No experiment should take place if the necessary information could be gained by observation.
2. Only experiments that would result in the fulfillment of clearly defined and attainable aims ought to proceed.
3. Unnecessary repetition of an experiment must be avoided — particularly if reputable physiologists had been responsible for the original experiment.
4. All experiments must be conducted with a minimum of suffering.

5. All physiological experiments should be witnessed by peers, further reducing the need for repetition.

Applied Ethics in Animal Experimentation: Defining Levels of Ethical Questioning

As outlined at the beginning of the module, there are genuine societal debates about animal use that need to occur outside the boundaries of the CCAC system of ethical review and oversight for the care and use of animals in science. For example, questions such as:

- Should animals be used in research?
- Do we as a society want xeno-transplantation as a medical procedure?
- Should marine mammals be kept in captivity?
- Should society permit stem cell research involving fusion of human-mouse embryos?

The involvement of scientists in these debates is critical to ensure that appropriate scientific data is used to inform the debate. However, scientists also need to be aware that not only scientific knowledge will be engaged and other societal inputs may result in a prohibition of certain areas of animal-based research. (For example, an 18-month Canadian consultation to answer the question "Should xeno-transplantation proceed?" led to the conclusion that scientific knowledge is not sufficiently advanced to answer two of the key issues: disease transmission, and the balance between immune-suppression and the genetic modification of the source organ to prevent rejection – so it should not proceed until further research.

When we have the answers to these types of questions, or rather when we have some understanding of where we stand as a society on these issues, at this time, in this place, then we are able to engage in the process of developing guidelines which accept as the societal norm that animals are going to be used for research, teaching and testing, or that xeno-transplantation should only proceed under a set of prescribed conditions. The CCAC guidelines development process provides a framework under which the activity can take place, based on a willingness to do our best, taking into consideration all the information available. Scientists have a key role to play here in ensuring that the guidelines are based on sound scientific evidence. Institutional animal care committees (ACCs), whose functioning is described in more detail in the Guidelines module, make ethical decisions on individual projects involving animal use. ACCs, composed of scientists/teachers, animal care personnel, personnel who do not use animals, and community

representatives, function as a microcosm of society, using the guidelines and policies of the CCAC and their own expertise, experience, values, and common sense to reach decisions about what animal-based work should be allowed to proceed and under what conditions. Scientists have a crucial role to play in ensuring responsible experimental animal care and use, and in fostering a caring attitude towards animals in the conduct of their research. Beyond overseeing the appropriate conduct of their own projects, the role that scientists play on ACCs is essential. Scientists provide ACCs with informed views on the need for animal use in science, and exchange views with all other members of the committee, including those with informed views on animal welfare and community representatives, to arrive at decisions that balance costs to animals with expected benefits for humans and animals. ACCs strive to reconcile public demands for medical, scientific, and economic progress with demands that animal welfare and integrity be protected.