Institutional Animal Care and Use Committee
UNIVERSITY OF GEORGIA

Quarterly News

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What are the 3 Rs?

The tenet of the 3 Rs originates from a scientific study done in the late 1950s of humane technique in laboratory animal experiments. Within the resulting publication, *The Principles of Humane Experimental Technique*, W.M.S. Russell, a zoologist, and R. L. Burch, a microbiologist, coined the concepts of Replacement, Reduction, and Refinement as a systematic component of the methodology of research. The 3 Rs provide a guide for the ethical and scientific evaluation of animal use in research. Having been made accessible by widespread use in publication and incorporated into law, replacement, reduction, and refinement alternatives have made a pervasive impact on the way research is conducted. These laws place moral and legal obligations on scientists and animal care committees to prepare and review proposed studies for the consideration of non-animal methods or use of a less sentient species, use of fewer animals to obtain sufficient data, and the inclusion of procedures that minimize each animal's pain and distress.

Replacement

Research methods which permit a given purpose to be achieved without the use of animals are considered replacement alternatives. Absolute replacement alternatives encompass a range of methods including the use of human volunteers, in vitro methods, and using the latest science and technologies, such as computer models, to address important scientific questions without the use of animals. Relative replacement may include the use and exchange of information about previous animal experiments as well as the use of invertebrates or species of a lower phylogeny than the proposed animal. Investigators must consider whether animals are required, and should conduct a good literature search to elucidate possible replacement alternatives.

Reduction

Strategies which result in the use of fewer animals to obtain sufficient data, or which maximize the data obtained from an individual animal so as to decrease the use of additional animals, are referred to as reduction alternatives. It is important that applying the reduction principle does not compromise an individual animal's welfare. Studies should be designed and analyzed to be statistically valid and robust and should not be repeated unnecessarily. Sharing data and resources (e.g. animals, equipment and tissues) can contribute to reduction.

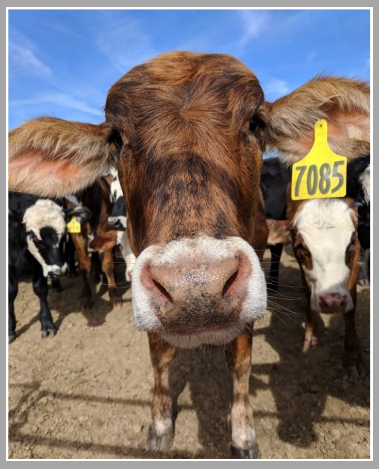
Announcements

- Please consider joining the OACU for an informational on "Writing and Maintaining an AUP" April 16th in CVM H203 beginning at 9am.
- In an effort to reduce burden on researchers, the literature search (section 7.1 and 7.2) conducted during AUP development for Highest Use Categories B and C is now required only if USDA species will be utilized in the project.

- The USDA is looking for "public ideas on regulations, guidance documents, or any other policy documents that are in need of reform, for example ideas to modify, streamline, expand, or repeal those items." Comments can be submitted electronically by clicking here until July 17, 2018.

Refinement

Modifications to husbandry or experimental procedures so as to minimize pain and distress and enhance animal well-being are referred to as refinement alternatives. Evidence suggests pain and distress can cause alterations in an animal's behavior, physiology and immunology. Such changes can lead to variation in experimental results which diminish the reliability and repeatability of studies. Refinement alternatives not only benefit animals, but, in reducing animal stress, also improve the quality of research. Strategies to achieve refinement include but are not limited to ensuring the



provided environment and husbandry allow for expression of species-specific behaviors (known as environmental enrichment), use of proper anesthesia and analgesia, and training animals to cooperate with procedures. It is tantamount to these strategies that researchers and husbandry staff are properly trained to correctly discern between an animal's normal behaviors and those indicating pain or ailment. Prompt identification of welfare concerns allows for swift intervention which minimizes the time an animal might feel pain or distress. Recognizing, minimizing, and eliminating pain and distress in the laboratory are central to the refinement objective.

Why use the 3Rs?

It is important to understand the impact of an animal's welfare on scientific outcomes; good animal welfare results in good science. The 3Rs provide a means to achieve consistently good science by giving equal consideration to each "R" in order. The premise which grounds the principle of the 3 Rs is that animals should only be used if a scientist's best efforts to find a non-animal alternative have failed. Furthermore, if animals are needed, only the most humane methods will be employed on the smallest number of animals required to obtain valid information. W. Russell and R. Burch were the first to argue that using the most humane methods is not a hindrance to animal research, but actually a prerequisite for conducting a successful animal study. Requiring the use of as few animals as possible, justification of those animal numbers, and careful consideration of each procedure and the potential impact on each animal illustrates how the 3 Rs are instrumental in focusing on each individual animal's welfare rather than welfare indicators at a group or population level. In addition to consideration of the impact of research on each individual animal, the 3 Rs are a constructive set of principles in that they are responsive to new information. For example, as new welfare science is conducted the Refinement principle has developed from just minimizing harms of experimental procedures to include both minimization of negative states (harms) and promotion of positive states throughout the life of a research animal. This flexibility allows the scientific community to reflect on empirical data as well as the evolution of ethical values. The 3 Rs allow practices to be revisited and reassessed so that welfare standards are continuously improving. Lastly, the 3 Rs have a role in uniting various interest groups, scientists, and humane organizations, because it is supported by a broad cross section of opinions as a uniting ethical concept for the conduction of research which utilizes animals.

Upcoming Inspections

4/24 Coverdell

4/25 Life Sciences

4/26 Biosciences & Psychology

4/26 CCRC & CMM

4/27 RBC

4/27 Pharmacy PI Labs

5/3 GNHM

5/4 North Georgia Circuit

5/9 Horseshoe Bend

5/10 PRC

5/15 Double Bridges

5/15 LARU

TBA (June) CVM

TBA (June) PDRC