

ANIMAL RESEARCH: A PRIMER

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Why Do We Need Animals for Research and Education?

- Animals serve as good models to help us understand how living tissues function and the biology underlying disease.
 - The interaction of cells, tissues and organs within the body is very complex, and can often only be studied in the whole animal.
- Only by understanding how disease or injuries affect living organisms can we develop treatments or cures.
- Animal models are used to:
 - Help researchers understand the fundamental ways in which diseases affect living tissue.
 - Develop and test treatments for illness or injury.
 - Train future scientists and physicians.

Can Computer Models and Cell Cultures Replace Animal Research?

- Computer models and cell cultures are good for screening and are used frequently.
- Such models cannot replicate complicated interactions in the whole system.
- Final testing depends on studies in animals; sometimes it is required by law.
- Animal and non-animal models used in conjunction achieve the best answer.

What Have We Learned From Animal Research?

- Animal research has played a major role in nearly all medical advances for both humans and other animals.
- These include, but are not limited to:
 - Angiograms, X-Rays, CAT scans, blood pressure measurement, cardiac pacemaker, hypertension medications, insulin for diabetes, MRI, numerous vaccines, cardiac catheters, kidney dialysis, cataract surgery, burn treatments, heart valve replacements, artificial hips.... The list goes on and on!!

Are the Animals Used in Research and Education Protected?

- There are a number of federal and local laws, regulations and institutions, as well as nonprofit organizations, that ensure animals used in research and education are being treated humanely.
- These include:
 - Animal Welfare Act
 - Office of Laboratory Animal Welfare
 - Department of Agriculture, Animal and Plant Health Inspection Service (APHIS)
 - IACUCs
 - Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC)

Animal Welfare Act

- A series of laws regulating animal use activities.
- The enforcing body of the Animal Welfare Act is the United States Department of Agriculture.
- Violation of the Act is punishable under federal law and could lead to research program suspensions, fines and/or imprisonment.

AWA and PHS policy

- Includes mandatory surprise inspections of animal research facilities.
- These federal laws and regulations are in place to ensure that all research animals receive:
 - Good veterinary care
 - Appropriate housing
 - Feeding
 - Humane handling
 - Sound sanitation and ventilation

What Do the Regulations Ensure?

- That animals are used in research only when it is absolutely necessary.
- That when animals are used in research they are humanely treated.

When Can Animals Be Used?

1. When there are no other alternatives.
2. When confirmation has been made that research activities are not unnecessarily duplicating previously conducted experiments.
3. Experiments involving animals are relevant to human or animal health, will advance scientific knowledge, or will be for the good of society.

Institutional Animal Care and Use Committee (IACUC)

- Required at all research institutions by both AWA and PHS policy.
- Committees consist of veterinarians, scientists, members of the public.
- Without IACUC approval no research using animals may proceed.
- Among IACUC considerations are the measures used to control potential pain and avoid distress as well as the potential value of any scientific outcome from the proposed studies.

The IACUC

- A committee of your peers that have been empowered by law to ensure all research activities involving animals satisfy federal, state and local regulations and policies governing the use of animals in research.
- The committee is comprised of a:
 - ✓ **Chairperson**
 - ✓ **Veterinarian**
 - ✓ **Scientist** - Must be experienced in using research animals.
 - ✓ **Non-Scientific Member** – Conducts protocol evaluations not based on the science.
 - ✓ **Nonaffiliated Member** – Represents the general interests of the community.

Basic Requirements

1. When animals are used for research a scientist must avoid or minimize discomfort, distress, and painful situations.
2. If a procedure involves more than momentary or slight pain or distress, it must be performed using appropriate pain relieving drugs (e.g. sedatives, analgesia or anesthesia).
3. If animals are to be transported, appropriate arrangements must be made to ensure the process is comfortable and occurs with as little stress as possible.
4. The living conditions of animals must be clean and appropriate for the species.

How Does the Committee Satisfy Their Responsibilities?

They review and approve all research, teaching or testing activities that involve animals before scientists begin their experiments to ensure:

- ✓ there are no alternatives to using animals,
- ✓ that research is not being unnecessarily duplicated, and
- ✓ that the experiment is relevant to human or animal health and will be for the good of society.

IACUC Oversight

- Review of animal use procedures:
 - ✓ Reviews and approves all procedures to be conducted on animals.
 - ✓ Identify potentially painful and stressful procedures and ensure medications are being used to eliminate or minimize the pain/distress.
 - ✓ Monitor the research activities to ensure only IACUC reviewed and approved procedures are being conducted on animals.

IACUC Oversight

- Inspect the living quarters of animals at least twice a year to ensure:
 - ✓ Animals are checked daily that , their housing facilities are clean and that they regularly receive fresh food and water.
 - ✓ They are appropriate for the species being housed.
 - ✓ Animals are receiving appropriate veterinary care.

IACUC Oversight

➤ The IACUC also ensures:

- ✓ The number of animals used for the research will yield statistically valid results.
- ✓ The appropriate specie of animal is being used for the project.
- ✓ Humane experimental endpoints have been established.
- ✓ Appropriate methods of euthanasia are being utilized.

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Outside Oversight

- Remember – one IACUC member is a non-affiliated member and is acting on behalf of the community.
- Reports made to federal agencies are available to the public for review.
- Opponents of animal research will do everything in their power to hold research institutions accountable to federal regulations and policies.