

Ethics in animal studies

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rat



gerbil



guinea pig



mouse (pl mice)



hamster



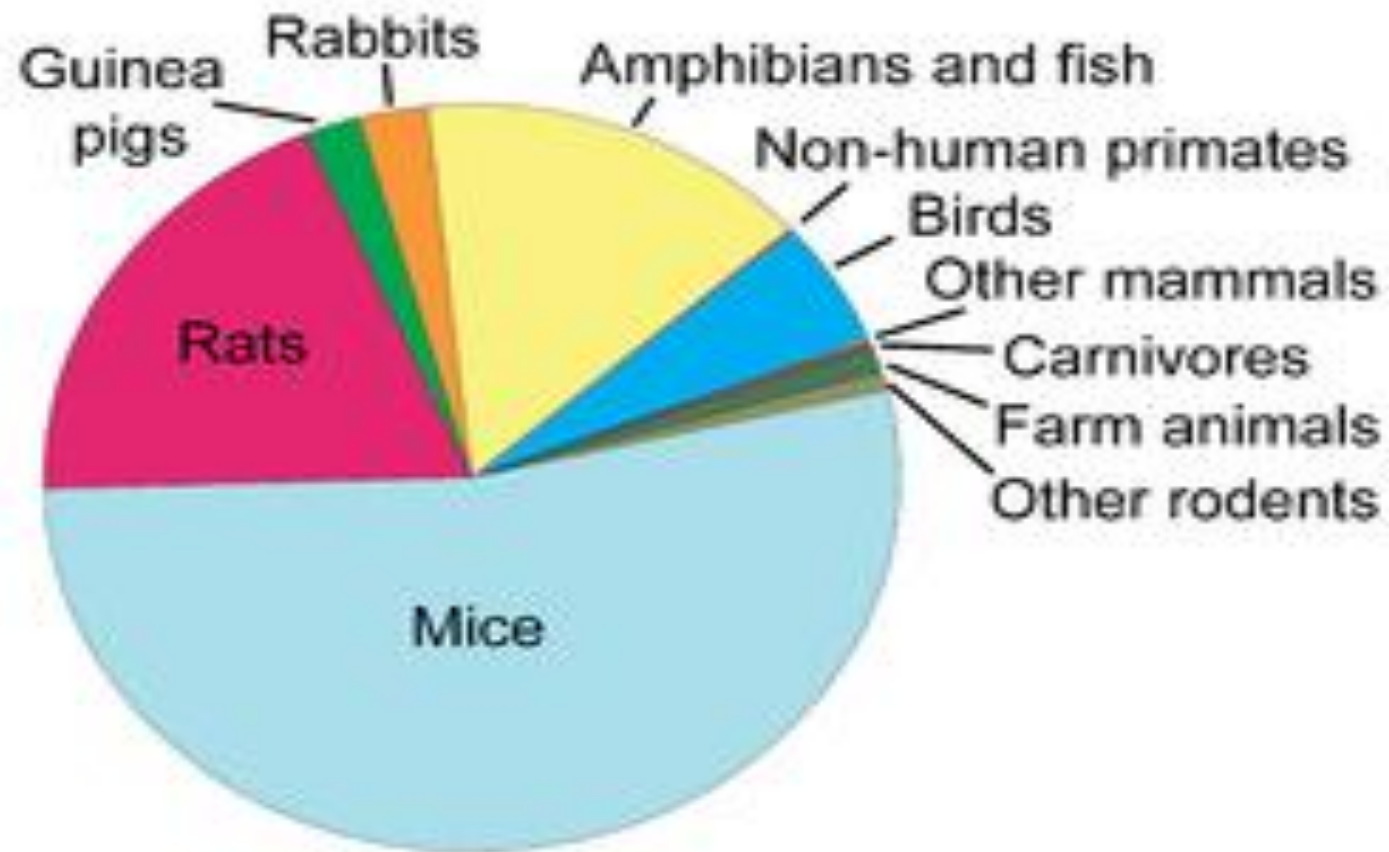
rabbit



pig



Animals were used for research, testing, and educational purposes in the U.S. in 2010



Rabbits

- Thrombosis research
- Toxicology

Cattle/horses

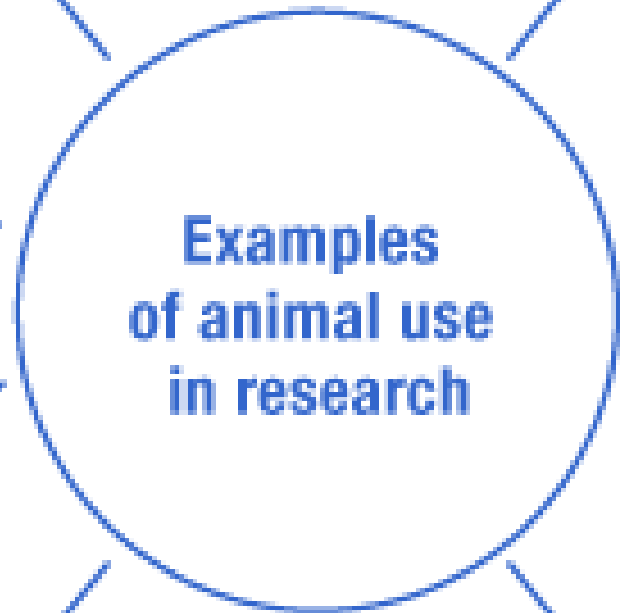
- Developing and obtaining vaccines
- Animal health

Dogs

- Cardiovascular research
- Kinetics and toxicology

Cats

- Animal medicine
- Neurophysiological studies



Examples of animal use in research

Rats/mice

- Cancer research
- Cardiology
- Genome research


Pigs

- Cardiovascular research
- Osteoporosis research
- Animal health

Primates

- Gynecology
- Biologicals
- Toxicology

- ▶ Why do we need animal models for research and education?
 - ▶ What about alternatives like computers or cell lines?
 - ▶ Can results from animal studies really apply to humans?
- ▶ What have we learned from animal research?
- ▶ Are the animals used in research & education protected?
 - ▶ Regulations to protect research animals
 - ▶ Do scientists care about animals? Do they treat them well?
 - ▶ Are lab animals suffering and in pain?
- ▶ Opposition to animal research

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- ▶ Why do we use animals?
 - ▶ To understand animals
 - ▶ To understand humans
 - ▶ To conduct research that cannot be conducted on humans

Why do we need animals for research & 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.
 - ▶ Test new drugs and other products

Can Results from Animal Studies Really Be Applied to Humans?

- ▶ There are many similarities between animals and man. Examples include:
 - ▶ Immune function in mice
 - ▶ Cardiovascular function in dogs
- ▶ Animals provide index of safety.
 - ▶ Nuremberg Code mandates that animal studies precede and support human studies.
 - ▶ Declaration of Helsinki mandates that medical research on humans must be supported by preceding animal research.
- ▶ Nearly all medical advances of the past century started with research in animals.

Research with Animals

Justification

- ▶ Justify the use of animals
- ▶ Justify the benefits of the study
- ▶ Justify the use of a particular species

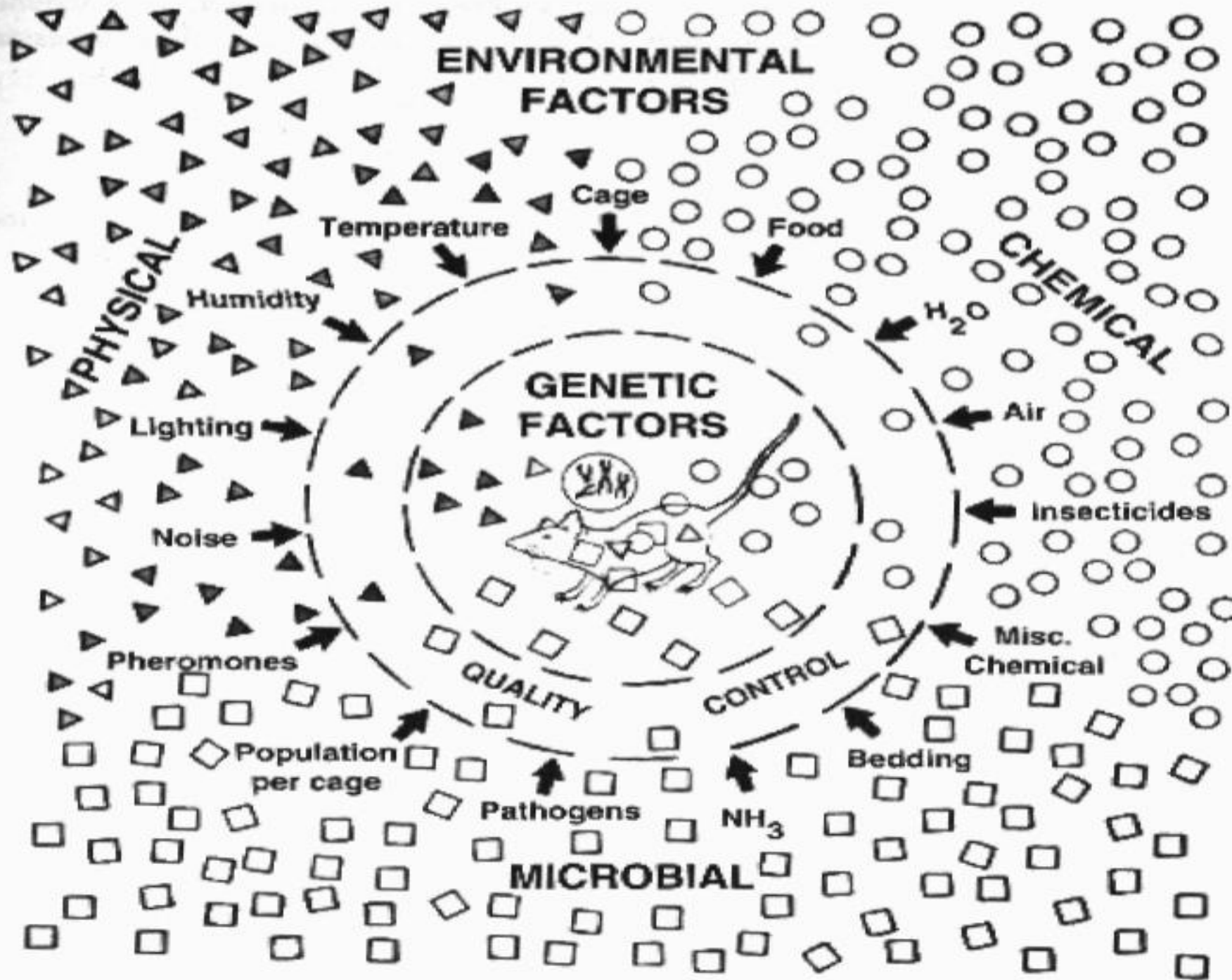
What have we learned from animal research?


- ▶ 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!!
- ▶ So what animals have helped which medical advances?
 - ▶ Let's look at some specific examples...

Ethical considerations

- ▶ Protect animals?
- ▶ Protect personals?
- ▶ Protect others and environment?

Keeping animals physically and mentally healthy will help to ensure the quality of experimental data and thereby reduce the need to repeat studies



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- ▶ Researchers and teachers are required to minimize the ethical cost of animal use by considering the three Rs:
 1. Animals should be **replaced** with alternative procedures wherever possible
 2. The number of animals used should be **reduced** to the minimum required
 3. Manipulations should be **refined** to minimize their noxiousness
 - ▶ All staff and students intending to use animals **must** read the Code of Ethical Conduct before submitting an application.

Controversies in Animal Testing

- ▶ **Is it ethical** to harm animals with the aim of improving human lives?
- ▶ An experiment's design and application must be ethical whether the research subjects are humans or animals, but **how "ethical" is defined across species** is the subject of much debate.
- ▶ **A key difference** between an animal and a human is that **animals cannot provide informed consent** to participate in an experiment because they cannot understand the risks or consequences of the experiment.

The Animal Rights?

- ▶ The suffering and well-being of other species are just as important as the suffering and well-being of humans and should be treated accordingly. It is known that animals can feel pain and distress, and therefore many consider the act of subjecting animals to pain, injury, or death for the sake of science to be immoral.
- ▶ Argue **against extending equal rights to animals**, positing that human interest should be placed above the well-being of animals. Many argue that animal research has yielded substantial benefits to the human race, and that these outweigh the negative effects on animals.
- ▶ **A Middle Ground:** Those who feel uncomfortable with animal experimentation, but believe that in some circumstances the good arising out of experimentation does outweigh harm to the animal. Proponents of the middle ground position usually advocate a few basic principals that they believe should always be followed in animal research.

- ▶ A legal right is a law-based entitlement that applies to all members of a particular group and is upheld by the justice system.
- ▶ Local or regional Research Ethics Committee or Animal Research Ethics Committee

Ethics in research with animals

APA's 2002 Ethics Code

- ▶ Acquire, care for, use and dispose of animals in compliance with current federal, state and local laws and regulations, and with professional standards.
- ▶ Ensure that all individuals under their supervision who are using animals have received instruction in research methods and in the care, maintenance and handling of the species being used, to the extent appropriate to their role.
- ▶ Make reasonable efforts to minimize the discomfort, infection, illness and pain of animal subjects.

Cont.

- ▶ Use a procedure subjecting animals to pain, stress or privation only when an alternative procedure is unavailable and the goal is justified by its prospective scientific, educational or applied value.
- ▶ Perform surgical procedures under appropriate anesthesia and follow techniques to avoid infection and minimize pain during and after surgery.
- ▶ Proceed rapidly when it is appropriate that an animal's life be terminated, with an effort to minimize pain and in accordance with accepted procedures.
- ▶ Moreover, psychologists trained in appropriate research methods and experienced in the care of laboratory animals must supervise all procedures involving these animals and are "responsible for ensuring appropriate consideration of their comfort, health and humane treatment," says the code.

• Nuremberg Code

- ▶ This 1947 code for biomedical research was the first to focus on the importance of informed consent.
- ▶ Developed post WWII in response to the inhumane research performed by Nazi doctors on prisoners
- ▶ 1st attempt to develop guidelines for research with human participants

- **Helsinki Declaration**

This 1964 declaration provided guidance in such areas as the use of animals for research purposes



