

Handling and Care of Animals in the Laboratory



The study of anatomy and physiology of animals is fundamental to the training of zoology students. Many students find that working with living and preserved animals is one of the most interesting and beneficial aspects of their education. Prospective employers in business and industry, and admissions committees of graduate programs, as well as medical, dental, and veterinary schools, have frequently emphasized the importance of such practical experience.

Research with laboratory animals has led to important scientific advances in physiology, genetics, behavior, nutrition, ecology, and other fields. Advances in human medicine that are direct results of experimentation involving animals include immunization against polio, diphtheria, measles, and other diseases; insulin production and therapy; blood transfusions; chemotherapy; electrocardiography, open-heart surgery, and artificial heart valves; organ transplantation; and kidney dialysis.

Major advances in veterinary medicine resulting from experimentation with animals include the development of vaccines for rabies, distemper, swine cholera, and brucellosis; medication for dog heartworms; artificial insemination, in vitro fertilization, and embryo transfer technology; methods for preserving endangered species; and surgical techniques for hip replacement. These veterinary advances have saved thousands of animal and human lives and have contributed greatly to the human food supply and to the quality of life of farm and companion animals.

Studies of animals from textbooks, photographs, charts, models, and computer simulations are good supplements, but they are not adequate substitutes for actual laboratory experience with living and preserved animals. Zoology students need to learn and practice proper methods to observe, handle, care for, experiment with, and dissect laboratory animals. Consider the dilemma of a neurosurgeon who has never observed, handled, or dissected an actual brain, but who is about to do his or her first operation on a member of your family with a brain tumor.

The handling and treatment of vertebrate animals is regulated by federal law under the Animal Welfare Act of 1966, amended subsequently in 1970, 1976, 1985, and 1990. Additional regulations governing the use and care of laboratory animals have been developed by the National Institutes of Health. Many individual states also have laws governing an-

imal use. Invertebrate animals are generally not covered under these laws, but such animals should also be treated with care and respect as living creatures. Rare and endangered species are protected by special laws and may not be collected or used in laboratory studies except under special permits. All teachers and researchers must be familiar with these federal and state regulations and be responsible for using good judgment and for following appropriate procedures for handling and experimenting with all animals.

As a responsible citizen and a student of zoology, you should also handle living and preserved animals with care and respect. When working with both vertebrate and invertebrate animals, you should always take adequate precautions to avoid causing unnecessary stress or discomfort to the animals due to your handling or experimenting. Any animals kept in the laboratory must have a clean and appropriate environment, including adequate ventilation, food, water, and regular care. Be sure to follow the specific federal guidelines established for the care of animals kept in the laboratory for the duration of an experiment. At the end of the experiment, the animals must either be disposed of in an approved humane manner or returned to a permanent animal care facility as directed by your instructor.

Some people oppose the use of animals in the laboratory either for training or research because they believe it is unethical for humans to use animals in any way that might be harmful or detrimental to the animals for the benefit of humans or other animals. Appropriate usage of animals has been one of the most active controversies in the United States and elsewhere during the past several years.

Such opponents of animal use seek to reduce or eliminate the use of animals in teaching and research based on their convictions. They often cite alternatives to the use of animals in research and testing, such as computer simulations, models, films or videos, tissue culture, and in vitro chemical tests, as effective substitutes. While many scientists agree that alternatives to the use of animals are effective in some cases, no adequate alternatives are available in many other cases. Most scientists agree that the rational use of animals for teaching and research continues to be essential for the progress of human health and welfare. This position has been endorsed by several prestigious scientific bodies, including the American Society of Zoology, the American

Association for the Advancement of Science, the Society of Sigma Xi, the National Science Teachers Association, the National Association of Biology Teachers, and several state academies of science.

The continuing controversy over the use of animals for teaching and research, as well as the escalating costs of obtaining and caring for laboratory animals, has already resulted in substantial reductions in the number of animals

used for study and in research and improvements in the care and handling of animals in the laboratory. Concerns over the use of animals have also led to numerous governmental regulations on the use and handling of animals in the laboratory. Therefore, in addition to learning about the animals themselves, zoology students must also learn the rules and methods for the proper care and handling of the animals.