

# Caring Comes First Animals in Cornell's Research and Teaching Programs\*

We have come a long way since the 1860s when the first animals were used in teaching at Cornell. Cats for comparative anatomy classes were kept in the basement of McGraw Hall alongside the janitor's quarters. In *A History of Cornell* (1962), Morris Bishop states that the "cats' fleas were so ferocious that Uncle Josh [the janitor] had to wear anklets of flypaper—with the sticky side outside."

## Species-Diverse

Today, Cornell cares for about 48,000 animals daily on the Ithaca and Geneva campuses. (The Weill Cornell Medical College operates its own animal care and use program.) Cornell is home to a wide variety of laboratory animals: fish, birds, snakes, frogs, rats, mice and other rodents, rabbits, woodchucks, dogs, cats, horses, cattle, sheep, pigs, poultry, and others. Nearly 80 percent of the animals in the Cornell program are rodents, birds, and fish, and most are bred solely for a research purpose.

Because mice and humans share about 90 percent of the same genes, there has been tremendous growth in the use of mice. They account for 30 percent of the animals used annually at Cornell. Their size, ease of care, and short life span make them useful for studies on aging, the progression of disease, and diseases that occur later in life. Mice with natural genetic deficiencies can be bred as models of human disease, and scientists can insert non-native genes or "knockout" genes to study gene function and human genetic diseases.

## Invaluable Knowledge

Research that requires animal use is conducted in the Colleges of Agriculture and Life Science, Arts and Sciences, Engineering, Veterinary Medicine, and Human Ecology. Of the nearly 1,600 faculty at Cornell's Ithaca and Geneva campuses, more than 250 use vertebrate animals in research and teaching, which involves approximately 3,500 undergraduate, graduate, and postdoctoral students. More than 650 individual research projects require animal use. Cornell's upstate campuses received approximately \$57 million in federal funding in 2005 for animal-based research. The knowledge scientists gain from studies involving research animals contributes to saving and improving the lives of humans and animals and brings advances in the diagnosis and treatment of diseases.

## Model of a Superior Program

Five years ago, Cornell embarked on a quest to improve its animal care and use program, aiming to be the model of a superior program—a program recognized as one of the best in North America. The university conducted detailed reviews of all animal facilities, identifying those that were aged or required

upgrades, such as better heating, ventilation, and air-conditioning systems, and clarifying their purposes. Integrating information from facility reviews with the long-term needs for animal facilities, we developed a master plan for animal facilities at Cornell.

The master plan includes the construction of two new animal facilities—the East Campus Research Facility (ECRF) and the Life Sciences Technology Building (LSTB)—and major renovations of two other facilities. Renovations are now completed in one facility, and are in progress in the other. The new investment in animal care facilities is \$100 million.

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**The Home of Biomedical and Behavior Research Animals**

Facilities for animals used in biomedical and behavioral research are among the most expensive research spaces to build (approximately \$700 per gross square foot) and to operate. In order to minimize the number of animals used for research, variables that could confound or skew research results must be minimized. The design, construction, and operation of heating, ventilation, and air-conditioning systems are therefore critical and account for almost 40 percent of the cost of construction.

Small fluctuations in temperature are very stressful, especially for rodents, and these could affect animal health and diminish the quality of the research data. The temperature in each animal room must be individually controlled to ensure the optimum for the species and age of the animal. Relative humidity in these facilities is as close as possible to 50 percent throughout the year—too little or too much humidity can cause health problems and affect reproduction in some species.

The air quality in animal facilities is critical. The air is 100 percent fresh air with 12 to 15 air changes per hour. For comparison, an

office has mostly recirculated air with a couple of air changes per hour. The animal room air changes are necessary to remove odors, gases, and particulate matter from the facility. In addition to preventing research variability, appropriate air circulation protects people in the vivarium from exposure to excessive allergens.

Properly balanced air systems provide appropriate directional airflow. Positively pressurized rooms protect pathogen-free (clean) animals from unwanted viral contamination. Negatively pressurized rooms prevent potential pathogens from coming out.

Sanitation is very important in a vivarium. All surfaces must be sanitizable; they must be smooth and sealed so that they are impervious to water. High-quality finishes are imperative. Every cut or hole made in a surface must be sealed, and light fixtures must be watertight.

Many mice are irreplaceable or worth hundreds, even thousands, of dollars. Viral or bacterial contamination of the animals can destroy the research. Consequently, these mice are housed in individually ventilated cages—like having their own “private room” within the animal room. Their air source, cage, food, bedding, and water are sterile, and the cages are only opened under a sterile air source. All equipment entering the animal room is steam-sterilized or passed through a disinfectant misting tunnel.

**Facilities for Farm Animals**

Cornell has dairy, beef, horse, poultry, duck, sheep, and pig farms! Animals on these farms are used in research to improve animal nutrition, breeding management, and production efficiency or to improve the quality of food. The farm animals live on high-quality, well-managed farms. The animals’ identification, individual data, veterinary care, and research or teaching use are well documented.



Michele Bailey

**The East Campus Research Facility** INFO

- Replaces animal housing that would require major investment
- New capacity for 45,000 mice
- 79,000 g.s.f. (gross square feet)
- \$55 million
- Expected completion: September 2007

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## Life Sciences Technology Building

INFO



- Consolidation of some existing animal housing with new capacity
- 256,000 g.s.f. at \$157 million
- 22,400 g.s.f. vivarium at \$18 million
- Expected completion: January 2008

### CARE

The Cornell Center for Animal Resources and Education (CARE), a unit within the Office of the Vice Provost for Research, is responsible for the administration and oversight of Cornell's animal care and use program. CARE provides veterinary care to the animals and assists researchers in research design and procedures. CARE ensures not only the clinical health of the animals, but also the psychological or behavioral well-being of the animals—that is, the animals must be free to express normal behaviors. Seven CARE veterinarians and eight veterinary technicians routinely visit the animal facilities and laboratories to work with the investigators and animal care staff, as well as to examine and treat animals.

### IACUC

The Cornell University Institutional Animal Care and Use Committee (IACUC) reviews, approves, and monitors animal use in research and teaching to ensure compliance with applicable regulations. The IACUC, which includes three members from the Ithaca community who are not affiliated with Cornell, communicates directly with the Office of the Vice Provost for Research. The IACUC inspects all animal housing and procedure areas twice a year.

### Beyond State and Federal Requirements

Although state and federal laws govern the work we do with animals, Cornell strives to exceed the requirements. We are committed to treating the animals with care and dignity. Cornell has a stringent set of closely monitored university policies that go beyond minimum standards. Cornell requires that research and teaching adhere to standards and practices delineated in the *Guide for the*

*Care and Use of Laboratory Animals*, published by the National Research Council's Institute of Laboratory Animal Resources, and the *Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching*, published by the Federation of Animal Science Societies. Inspectors from the New York State Department of Health and the United States Department of Agriculture conduct unannounced inspections at least once a year to assure compliance.

### AAALAC

Cornell voluntarily participates in a rigorous peer review conducted by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC). This private, nonprofit organization promotes the humane treatment of animals in science through voluntary accreditation and assessment programs. Every three years, AAALAC site visitors assess Cornell's animal care and use program. They review institutional policies and responsibilities, including the function of the IACUC, personnel qualifications and training, and the occupational health and safety program; the animal environment, housing, and management; veterinary medical care; and the physical plant and facilities. In July 2006, AAALAC brought ten site visitors to spend six days assessing Cornell's animal care and use program. Accreditation by AAALAC demonstrates that our animal care and use program meets the minimum standards required by law and that we have gone beyond to achieve excellence in animal care and use.

### Protocols

Before animals can be acquired for use in research and teaching, the faculty member submits a detailed protocol form that



# Ethical Standards

“Cornell University regards the use of animals in research and teaching as essential to continued progress in science, engineering, medicine, agriculture, and education. We also consider it essential to devote all resources necessary to adhere to the highest ethical standards of animal care and use.”

*Biddy Martin, Provost  
Cornell University*





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describes animal care and use procedures from onset until conclusion. The protocol provides scientific justification for the project; for example, it explains the relevance to human or animal health, the advancement of knowledge, or the good to society. The protocol is thoroughly reviewed by the IACUC, including a veterinary review. The research or teaching cannot commence until the review process is complete and the IACUC has approved the study.

Cornell's faculty and their research personnel, including students—even students taking courses that involve the use of animals—are required to have training in the care and use of research animals before commencing with animal use. The 300 animal-care technicians, who care for animals every day, are trained to recognize any signs of injury, ill health, or abnormal behavior and to alert a CARE veterinarian immediately if needed.

#### An Essential Program

The safe, humane, and judicious use of animals is imperative for advancing human and animal health. We consider all alternatives to the use of animals in research, but must rely on live animals as appropriate models

in many situations. An effective and appropriate animal care and use program is essential to this purpose. Cornell's faculty, staff, and students are committed to the university's goal of providing the best possible animal care and use to carry out the university's mission of research, teaching, and outreach, while ensuring optimal animal health and well-being. At Cornell, we understand that using animals is a serious matter.

*Michele Bailey, Associate Vice Provost  
CARE/Laboratory Animal Services*

#### For more information:

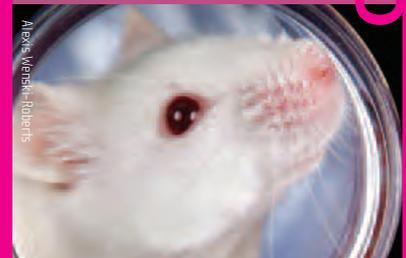
*Cornell University Policy 1.4: Care and Use of Animals in Research and Teaching*  
[www.policy.cornell.edu/vol1\\_4.cfm](http://www.policy.cornell.edu/vol1_4.cfm)

*The Use of Animals in Research and Teaching at Cornell*  
[www.research.cornell.edu/care/Documents/AnimalRes\\_screen1.pdf](http://www.research.cornell.edu/care/Documents/AnimalRes_screen1.pdf)

CARE  
[www.research.cornell.edu/care](http://www.research.cornell.edu/care)

IACUC  
[www.research.cornell.edu/iacuc](http://www.research.cornell.edu/iacuc)

## Animal Research Facilities



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