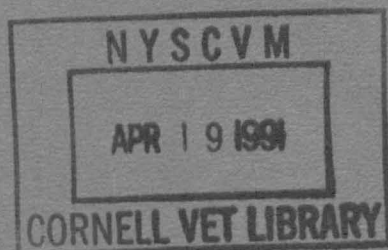


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THE FELINE REPORT

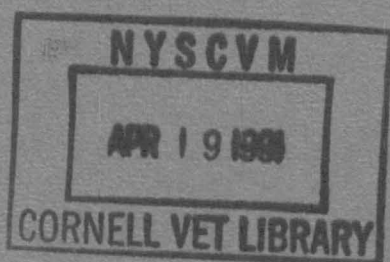


From the
CORNELL FELINE RESEARCH LABORATORY

New York State Veterinary College
Cornell University, Ithaca, New York 14850

September, 1974

Volume I



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New Veterinary College Research Tower with over 153,000 square feet of laboratory, office, and animal housing space. Offices overlook the scenic Cornell campus and neighboring country side. Laboratories are well designed, air conditioned, and equipped with the most modern equipment available. The administrative offices of the Cornell Feline Research Laboratory are located on the sixth floor.

On February 12, 1974, the Board of Trustees of Cornell University, Ithaca, New York, approved the formation of the Cornell Feline Research Laboratory (CFRL) as a unit of the New York State Veterinary College at Cornell University. This formalized a program started in 1964 by Dr. James H. Gillespie to study the infectious diseases of the cat. The formation of the Laboratory expands this program to study not only the infectious diseases but all diseases which pose a significant threat to the health of cats.

The purposes of the Cornell Feline Research Laboratory are (1) to promote and conduct research on diseases of the domestic cat in order to prevent or cure these diseases; (2) to provide continuing education on feline diseases to feline practitioners and cat owners; (3) to aid feline practitioners when new or unknown diseases occur.

STAFF

The staff of the Cornell Feline Research Laboratory is composed of a Director and a group of faculty, graduate research assistants, and staff from several departments within the New York State Veterinary College, all of whom have a keen interest in understanding, preventing, and curing diseases of the cat. Each investigator conducts his independent research in his area of expertise with collaborative help from other specialists when needed. Thus, this multidiscipline research may involve investigators from clinical medicine to the most basic sciences in order to solve a particular disease.

FELINE RESEARCH LABORATORY STAFF

FREDRIC W. SCOTT, B.S., D.V.M., Ph.D., Associate Professor of Veterinary Microbiology and Director of the Cornell Feline Research Laboratory.

ADMINISTRATION

JAMES A. BAKER, B.S., M.S., D.V.M., Ph.D., Professor of Veterinary Virology and Director of the Veterinary Virus Research Institute. Consultant.

JAMES H. GILLESPIE, V.M.D., Professor of Veterinary Microbiology and Chairman of the Department of Microbiology.

SUSAN HUBERT, Secretary.

GRANT KALEY, D.V.M., Former Director of the Division of Animal Industry, Department of Agriculture and Markets, State of New York. Consultant.

ANN MARCHAM, B.S., M.S., Director of Fiscal and Personnel Affairs, New York State Veterinary College.

PATRICIA P. MARION, Veterinary Microbiology. Account Clerk.

STEPHEN R. MARTIN, B.A., M.A., Associate Director of Development, Cornell University.

JEAN REINBOLD, B.S., Veterinary Virus Research Institute. Administrative Assistant.

PARTICIPATING STAFF

Cat Leukemia Laboratory

ELLSWORTH DOUGHERTY, III, B.S., V.M.D., M.S., Ph.D., Senior Research Associate, Veterinary Pathology.

CHRISTIAN L. GRIES, D.V.M., Ph.D., Senior Research Associate, Veterinary Pathology.

FERNANDO M. NORONHA, D.V.M., Professor of Veterinary Virology.

JOHN E. POST, B.S., D.V.M., Ph.D., Associate Professor of Veterinary Pathology.

CHARLES G. RICKARD, D.V.M., M.S., Ph.D., Professor of Veterinary Pathology; Associate Dean of the New York State Veterinary College; Principal Investigator on Cat Leukemia Contract.

FAUSTO E. WATERMAN, D.V.M., Senior Research Associate, Veterinary Pathology.

Clinical Neurology Laboratory

ALEXANDER DE LAHUNTA, D.V.M., Ph.D., Professor of Veterinary Anatomy.



Mrs. Catherine Fabricant, Senior Research Associate, examining a cell culture prepared from kidneys of a cat that died of urolithiasis. A new type of herpesvirus, isolated from this culture, produces crystals both inside and outside of infected cells. The role of this virus as a possible cause of urolithiasis is currently being investigated.

Clinical Nutrition

FRANCIS A. KALLFELZ, B.S., D.V.M., Ph.D., Mark L. Morris
Professor of Clinical Nutrition.

Clinical Studies

STEPHEN I. BISTNER, B.S., D.V.M., Associate Professor of
Comparative Ophthalmology, Department of Small Animal
Medicine.

GARY BOLTON, D.V.M., Associate Professor of Small Animal
Medicine-Cardiology.

ROBERT W. KIRK, B.S., D.V.M., Professor and Chairman, De-
partment of Small Animal Medicine.

RONALD C. RIIS, B.S., D.V.M., Resident, Department of Small
Animal Medicine.

DANNY W. SCOTT, B.S., D.V.M., Assistant Professor, Small
Animal Medicine.

Computer Center

FREDERICK L. HILTZ, B.S.E.E., M.S.E.E., Ph.D., Senior Re-
search Associate, Physical Biology.

JOHN LEWKOWICZ, Director, Computer Facility, Physical Bi-
ology.

Electron Microscopy Laboratory

JAMES N. SHIVELY, D.V.M., M.P.H., M.S., Ph.D., Professor of
Veterinary Pathology.

Laboratory Animal Services

CLYDE I. BOYER, JR., V.M.D., M.S., Professor and Director of
Laboratory Animal Medicine.

JOHN E. GILMARTIN, B.S., Assistant Director of Laboratory
Animal Medicine.

Microbiology Laboratories

JACK H. CARLSON, B.S., D.V.M., Graduate Research Assistant.
CATHERINE G. FABRICANT, B.S., M.S., Senior Research As-
sociate.

DOROTHY F. HOLMES, D.V.M., Ph.D., Research Associate.

ROBERT HOPPE, B.S., Research Assistant.

KYU M. LEE, M.D., Ph.D., Professor of Virology.

JOHN F. TIMONEY, B.Sc., M.V.B., M.R.C.V.S., M.S., Ph.D.,
Assistant Professor of Microbiology.

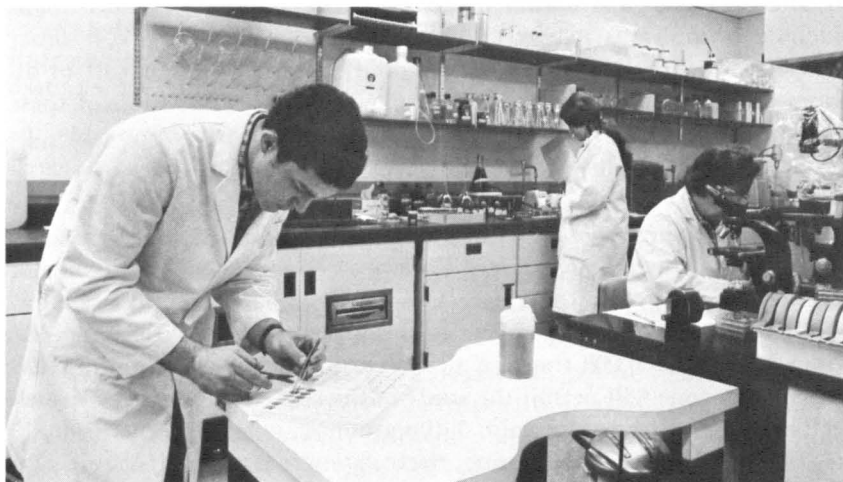
JYI-TEH WANG, B.S., D.V.M., M.S., Ph.D., Research Associate.

FACILITIES

Individual laboratories and clinics comprising the Cornell Feline Research Laboratory are located within 5 separate departments of the New York State Veterinary College. Most facilities are situated on the main Cornell Campus within the Veterinary College complex either in the main building or the adjacent new 10-story, 10.5 million dollar Veterinary College Research Tower. The Cat Leukemia Laboratory and specific pathogen free breeding colony are located on Snyder Hill approximately 2 miles from the Cornell Campus.

The New York State Veterinary College has 171 Faculty and professional staff, and 270 non-professional staff. The operating budget of the College is over \$7,500,000 per year with about 50% of this from state appropriations and 50% from other sources.

The *Cat Leukemia Laboratory*, under the direction of Dr. C. G. Rickard, was founded in 1965 by a contract from the National Cancer Institute, U.S. Public Health Service. It is equipped with 80 isolation cages to protect cats and caretakers from the feline leukemia virus, inside-outside pens for holding or rearing cats, and a specific pathogen free breeding colony. This breeding colony has the capability of producing several hundred cats per year each of which is free of all known



One of many research laboratories in the Veterinary College Research Tower. In foreground, Dr. Jack Carlson, graduate research assistant, prepares samples for immunofluorescent diagnosis of panleukopenia. In the background, Mrs. Eleanor Tompkins (right) and Mrs. Melinda Kittell, laboratory technicians, assist in feline research.

disease producing viruses, bacteria, protozoa, funguses, and parasites. It will play a key role to the Cornell Feline Research Laboratory by providing a source of disease-free cats to be used for comparison with cats known to be diseased.

Clinical neurology laboratory is equipped to study in detail clinical cases of neurological diseases of the cat.

Facilities for *clinical studies* include the clinic and supporting laboratories for the Small Animal Clinic and the Department of Small Animal Medicine. Examining rooms, treatment rooms, wards and runs, an ultramodern surgical facility (with 5 surgical suites, a central nurses station, preparation and recovery rooms, and instrument and drape preparation areas), and an intensive care unit for critically ill patients are some of the facilities available. Support laboratories include a radiology section for diagnostic x-rays, a clinical pathology laboratory for performing numerous diagnostic tests, and a pathology laboratory for gross and microscopic examination of tissues.

A recent addition to the Veterinary College is the *computer center* with its 2 main computers located on the sixth floor of the Research Tower and terminals located in the clinics, support laboratories, and other key areas of the College. Information on clinical or research cases is fed into the main computers from the terminals and is added to the data bank on similar cases for future reference. Future plans include connections between this computer and computers at other veterinary colleges throughout the country. This instant recall of all cases of a particular disease of the cat will enable evaluation of these diseases and their treatments to a degree previously impossible. In addition, more sophisticated analyses and interpretations of research data will be possible.

Electron microscopy facilities include 7 transmission electron microscopes within the Veterinary College, 4 of which are available for use by participants in the Feline Laboratory. These microscopes allow study of the ultrastructure of viruses, cells, and tissues with magnifications of up to 200,000 times. A new Veterinary College scanning electron microscope will permit the study of the surface structure of tissues, cells and parasites in dramatic 3-dimension at magnifications from 15 to 100,000 times. This scanning electron microscope will enable new studies on enteric diseases, respiratory infections, infectious peritonitis, and infectious anemia.

The ground floor of the new Research Tower contains a 30-room modern *laboratory animal facility* which is designed on a clean-dirty corridor concept to prevent spread of infectious diseases. A \$220,000



Central computer room in the Veterinary College Research Tower. In foreground, Dr. John Lewkowicz recalls information from data bank stored in large computers. Terminals are located in several clinics and key support laboratories throughout the college. Pertinent data on each clinic case or research experiment can be fed directly into the central computer where it is added to the data bank for future recall.

grant was received from the Laboratory Animal Resources Branch of the National Institutes of Health to equip the facility with modern cages and equipment. Automatic tunnel cage washers, a rack washer, and a large walk-in autoclave are available to clean and sterilize cages. Special plastic isolators are used to rear germ-free cats, and stainless steel and fiberglass isolation cages are available to house cats in an environment free of extraneous viruses, bacteria and other disease producing organisms. Twelve to 15 air-changes per hour of fresh outside air are conditioned to constant temperature and humidity before entering the individual rooms through a laminar flow ceiling. Lights are controlled by individual time clocks for each room. Cats and other animals are cared for by professionally trained animal caretakers.

Eight individual research laboratories currently comprise the *Microbiology Laboratories* of the Feline Laboratory. Laboratories contain special microscopes, centrifuges, ultracentrifuges, environmental chambers for cell cultures, cryostats, ultralow temperature freezers, and

modern instruments for immunologic studies. These well equipped laboratories enable sophisticated studies of viruses and bacteria which produce disease in the cat.

Two *Research Services Laboratories* provide centralized services to investigators in the Veterinary College. The first facility is located in the Department of Microbiology and provides cell cultures for virus assays and bacterial media and cultures for bacteriologic studies. The second is a centralized glassware processing facility.

The State of New York has approved 1.5 million dollars for construction of a new *diagnostic laboratory* at the New York State Veterinary College. The staff of the Feline Laboratory will work closely with the staff of this new diagnostic laboratory to develop new and improved diagnostic tests to aid feline practitioners.

Photographic and medical illustration capabilities are available from the new college *Biomedical Communication* facility.

The *Flower Veterinary Library* is second in size only to the Library of Congress in the number of periodicals and text books relating to Veterinary Medicine. In addition, a computer terminal on campus is part of the State University of New York Biomedical Communications Network. Through this terminal, a printout list of all reference citations on any disease or subject relative to the cat can be obtained quickly from more than 2,000,000 citations from over 2,400 journals that are stored in the system.

PAST RESEARCH AT CORNELL UNIVERSITY ON FELINE DISEASES

Research inquiry into the diseases of cats is not new to the Cornell campus. During the last ten years approximately 50 dedicated faculty members, research associates, and graduate research assistants have published more than 120 scientific papers on various feline diseases. However, much of this work has been conducted on the basis of short term grants which precluded continuity of the research efforts. Assuming that adequate funds are forth coming, the new facilities, coupled with a permanent feline research staff, will permit each research project to be carried out to a logical end point — the development of a cure, a means of control or a means of prevention.

Following is a summary of the scientific reports mentioned in the preceding paragraph. A complete list is available on request.

Scientific Feline Publications 1965–1974

<i>Subject</i>	<i>Number</i>
Lymphosarcoma (leukemia)	32
Respiratory diseases	24
Panleukopenia (enteritis)	23
Urolithiasis	14
Other infectious diseases	9
Clinical	9
Textbooks	9
Miscellaneous	3
<i>Total</i>	<hr/> 123

Because of the research being conducted, the World Health Organization has designated the Department of Microbiology as a "Collaborating Laboratory for Comparative Medicine in Feline Diseases."

In September, 1970, an international "Colloquium on Selected Feline Infectious Diseases" was sponsored by the American Veterinary Medical Association, Cat Fanciers' Association, National Cancer Institute, and several pharmaceutical companies. Cornell University was honored to host this colloquium.



Mrs. Eleanor Tompkins, laboratory technician, counting virus plaques produced in cell cultures as part of a plaque reduction test to determine immunity of a cat vaccinated with an experimental rhinotracheitis (herpesvirus) vaccine. Licensing of this commercial vaccine is a milestone in continuing efforts to keep cats healthy.

FUTURE RESEARCH

Future research at the Cornell Feline Research Laboratory will concentrate on those diseases of cats judged to cause the greatest suffering and for which no adequate prevention or treatment is available. These diseases include the respiratory diseases, urolithiasis and urinary tract diseases, infectious peritonitis, and lymphosarcoma (leukemia). Other diseases will be studied as funds and staff become available and as the diseases listed above are conquered.

Research is moving rapidly to develop vaccines to prevent respiratory diseases in the cat. A new rhinotracheitis (herpesvirus) vaccine recently has been developed and licensed, and indications are good that the second most important respiratory virus, picornavirus or calicivirus, also may have a vaccine in the near future. The importance of the pneumonitis agent and other respiratory agents needs to be evaluated.

Research has indicated that one or more viruses may be involved in urolithiasis. Extensive research is needed to determine the exact role of these viruses and, if they are the cause, to develop an effective vaccine for this disease.

Feline infectious peritonitis has no known cause, treatment, or prevention, yet it causes death in 100% of clinical cases. Research is desperately needed to elucidate its many mysteries and to develop an effective prevention.

During the past decade, the viral cause of feline lymphosarcoma (leukemia) was identified and studied, and effective laboratory tests were developed to identify infected and carrier animals. It is now possible to eradicate the virus from infected catteries. There is a good possibility that an effective vaccine can be developed with additional research.

Abortions and neonatal deaths are important problems that need considerable study. Nutrition, medical treatments, and surgical procedures of many diseases also need further investigation.

SUPPORT FOR THE CORNELL FELINE RESEARCH LABORATORY

Past research on feline diseases was supported primarily by U.S. Public Health Service research grants, training grants, and contracts from the National Institutes of Health, and by grants and fellowships from the Morris Animal Foundation. Investigators at Cornell are indebted to these sources for supporting feline and comparative research. Since federal funding for feline research in certain areas has become difficult to acquire, we must turn to the individuals, clubs, and foundations that have an interest in the health of the cat for added support of this desperately needed research. The State of New York has now supplied well equipped research facilities and salaries for the nucleus of the professional and technical staff that will be needed to develop the full potential of the Feline Research Laboratory. Expansion of staff and routine operating costs must be met by groups and individuals who have a personal or professional interest in the health and welfare of cats.

In establishing the Cornell Feline Research Laboratory, the Board of Trustees authorized the Treasurer's Office of Cornell University to act as custodian of all funds given in support of the Laboratory. Donors, therefore, are assured of maximum benefit from their gifts by means of this supervision by Cornell University officials. Cornell welcomes any gifts or bequests that will help the work of the Laboratory. All such gifts are tax exempt. The Legal Department of Cornell University suggests the following provision in making a bequest for feline research:

"I hereby give, devise, and bequeath (*description of property*) to Cornell University, an educational corporation located at Ithaca, New York, for the uses and purposes of the Cornell Feline Research Laboratory."

Checks should be made payable to Cornell University and should be mailed to:

Office of the Director
Cornell Feline Research Laboratory
New York State Veterinary College
Cornell University
Ithaca, New York 14850



Clinician examining a healthy patient in the Small Animal Clinic. Periodic well-visits help keep cats healthy and free of disease.



Dr. Fredric W. Scott, Director.

Dr. Fredric W. Scott was appointed the first Director, Cornell Feline Research Laboratory, by the Cornell Board of Trustees in March, 1974. He is eminently qualified to direct this important and new Laboratory that signifies a total college approach to the study of diseases of the domestic cat.

Dr. Scott began his studies on feline diseases in 1965 as a graduate student when the Department of Microbiology first initiated serious studies in feline virology. In 1968, he joined the professional staff as an Assistant Professor and became an Associate Professor in 1973. He has continued his studies of various viruses and bacteria that cause infection in the cat. This has culminated in the publication of 35 papers, monographs, or textbook chapters on feline diseases. In a decade, he has made many notable contributions to feline health and feline health research.

Under Dr. Scott's direction, the Cornell Feline Research Laboratory should develop and grow. We expect this laboratory to become a leader in the field of feline health in the same manner as the Cornell Research Laboratory for Diseases of Dogs in the dog health field.

We wish Fred and his colleagues success in the further development of Cornell's feline research program.

James H. Gillespie
Professor and Chairman
Department of Microbiology