



C O R N E L L

Veterinary Medicine

1995-96

Winter 1996

New Teaching Hospital Opens

Cornell's Companion Animal Hospital officially opened for business in the new Veterinary Medical Center the week of September 25, 1995. Clients, faculty, students, and staff alike are delighted with the spacious and more efficient design of the sophisticated new facilities. The accompanying photographs will take you behind the scenes with some recent patients in the hospital.

The hospital has a total of 16 examination rooms, grouped in sets of 4 to 6 around 3 large treatment rooms. One set is devoted to the Internal Medicine Service and another to the Ophthalmology and Surgery Services. The third set of rooms is devoted to the Community Practice and Dermatology Services and is also shared with the Behavior, Wildlife/Exotic Pets, and Small Animal Fertility and Infertility clinics. A special exam

room with a one-way mirror is used by reproductive specialists to observe animals that have breeding problems. Separate hospitalization wards are reserved for medicine, surgery, ophthalmology, and wildlife and exotic patients.

The Intensive Care Unit can house up to 30 animals and is, of course, staffed round-the-clock



365 days a year by experienced, caring animal health technicians. Fourth-year DVM students, residents, and faculty clinicians are regularly found in the ICU, attending to the needs of critically ill patients, as well as giving them a generous dose of "T.L.C." Special facilities in the ICU include two oxygen cages for patients with respiratory problems; clinical monitors that measure ECG, blood pressure, pulse rate, and other vital signs; infusion pumps for administering all types of intravenous fluids; and life support and emergency resuscitation equipment. The ICU also functions as the small animal emergency room because it has the sophisticated equipment used to stabilize patients with traumatic injuries or critical illnesses.

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Fourth-year DVM student Sarah Ford performs an ophthalmic exam on an adult golden eagle under the supervision of (L to R) ophthalmologist Dr. Thomas Kern and wildlife veterinarians Dr. Ned Gentz and Dr. George Kollias. Brought to the college by a licensed wildlife rehabilitator, the bird was treated for fractures in its left wing. Because injured raptors are often found to have impaired vision and other problems that may affect their ability to survive in the wild, diagnostic procedures in the college wildlife clinic included full body radiographs, an eye exam, and tests for blood and intestinal parasites. Although the bird was undernourished and radiographs revealed it had been shot, its vision was normal and the prognosis for recovery was good.

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Dean Loew Charts a New Course

Long before garnering its reputation as a world class research institution, Cornell's College of Veterinary Medicine was known for saving animals in crisis and producing graduates who went out into the world and became successful veterinarians. For such it must become known once again, says Franklin M. Loew, speaking of changes he foresees during his tenure as the college's eighth dean.

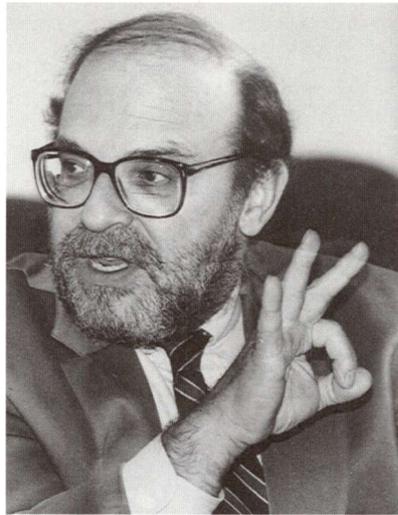
"Because of Cornell's position as a research university the college has felt the road to success lay in emphasizing high standards and research," Loew explains. "While that's important, it's only half the story. We need to intensify what I call a 'culture of caring' in which we teach veterinarians how to be gentle, good doctors and where our hospitals regain the reputation for being attentive to both the client and patient in equal measure."

It's going to take a shift in attitude within the college to make this happen, one that Loew believes is essential to meet changing times—times when money for veterinary schools is tight and getting tighter and where most veterinary patients are companion animals that can be expected to live well into old age.

"In addition," Loew says, "we need to recognize the new urban and suburban sensibilities regarding animals, what I call the elevated moral status of animals. We need to understand and respect the *fin de siècle* view of animals as sentient creatures."

In his first interview for alumni since becoming dean September 1, Loew also shared his thoughts on

- **The college's signature programs:** "At the moment we have the best teaching and learning environment of any veterinary school in the country. We've got a new curriculum, the most up-to-date physical plant, and the finest library and information resource centers. We also have superb farm animal and equine programs and



Dean Franklin M. Loew, DVM '65, PhD

the most extensive basic veterinary research program in the United States. The companion animal program, however, needs a major investment in the two areas that will be most important in the future: diseases of aging, particularly oncology, and emergency and critical care."

- **New program:** "While there are more animals in New York City than in the entire rest of the state, the college has never physically served the city except through its graduates. I'd like to make our resources available there and am exploring the forms that this might take. It may not mean a physical facility operated by the college but perhaps regularly scheduled on-site consultations by our specialists, say, in the fields of animal behavior, dermatology, and ophthalmology. It may also involve college-sponsored lectures of interest to the profession and animal owners. There are lots of options to explore."

- **Fund raising:** "A secondary reason to increase our presence in New York City is its number of very generous philanthropists who, in the past, have had no reason to be interested in the college. Our alumni have been exceptionally generous, but in times of shrinking state and federal support they can't

be expected to carry an increased burden alone. We need to develop a much bigger nonalumni constituency among our donors."

- **Stabilizing the college's financial base:** "As income from public sources continues to decline, we have to do two things: cut our expenses and increase our nonstate income. So we're going to have to develop more entrepreneurial ways of doing business and revamp our fee structure for everything, including use of the library by corporate clients, developing new degree and summer programs and more and better continuing education programs, and by improving and expanding money-making publications such as the *Cornell Animal Health Newsletter*."

- **Student recruitment:** "The fact is that three or four of the nation's 27 veterinary schools had more applicants than we did last year. Cornell is no longer the veterinary college of choice for many applicants, and we have to find out why. Part of this is the perception around the country that Cornell is concerned about standards and not about the kinder, gentler face of veterinary medicine—the direction in which the profession is going. Also, our tuition is one of the highest, though we are increasing our scholarship funds."

- **Attracting minority and male applicants:** "One of the duties of our newly appointed associate dean, Janet Scarlett, is to work very hard with me and the faculty on increasing our attractiveness to minority applicants, particularly African Americans. One possibility is to develop what are known as articulation agreements with historically Black undergraduate colleges so we have a special relationship with schools that have a large minority population.

"In terms of male applicants, what's happened in the last 20 years is that people being attracted to

veterinary medicine are those who are more interested in the healing, caring part of the profession and, for whatever the reasons, a high proportion of these people happen to be women. It would be nice to have a more equitable gender distribution in the incoming classes, but the Association of American Veterinary Medical Colleges projects that there will be equal numbers of men and women in the profession by the year 2005."

- **Gender imbalance among faculty and administrators:** "Right now, of the college's 10 key administrators one is a woman, and we have only one woman department chair.

Among the student body 70 percent are women while among the faculty 80 percent are men. So I'm committed to moving more women into positions of administrative and academic responsibility through new appointments and career development for those who wish it. I'm also concerned that we do all we can to ensure those opportunities through initiatives in child care and other means of supporting families."

- **Controlling rising tuition for DVM students:** "When your main source of revenue is declining it's very difficult to keep tuition level. It's a problem throughout the SUNY system. We're going to try to hold the line on costs and I'm going to go out on the road raising more financial aid funds—primarily from private, nonalumni sources once we've captured that constituency. It's important to remember that tuition covers only one-fourth of the true costs of a veterinary education, so students are still getting a pretty good deal."

- **Research program:** "Stringent budget cuts from Albany force us to order our priorities with new rigor. Declining state support at the same time that the federal government is cutting support for the NIH, the USDA, and the NSF—all agencies

that fund our research programs—means we're probably not going to be able to sustain as big a research enterprise as we have in the past. Plus we've got clinical areas including oncology and emergency and critical care that need a substantial financial investment. So in the years to come, there may be a gradual shift away from basic science research toward more clinical work."

- **Teaching hospitals:** "With our beautiful new teaching hospital we're in an excellent position to recapture our reputation of caring for animals and clients by putting sensitivity before expediency when it comes to treatment options. We need to roll up our sleeves and offer services that the next millennium demands: treatments for geriatric diseases, including cancers and heart disease, and emergency and critical care. And we must do so recognizing that fewer of our patients will be farm animals and more will be companion animals. But we also must increasingly address agricultural, environmental, and public health issues regarding diseases carried by wildlife and their need for habitat."

- **Serving the profession and the public:** "We know well what both of these groups want from us. While the public expects us to be available in periods of public health crisis—rabies vaccination and food safety scares, for example—mostly they want clinical services of the highest quality from our graduates and our faculty.

"In equal measure the profession wants a referral center that will handle their most difficult cases in a timely and friendly manner, applied research that will help their patients, a place where bright young people can become veterinarians, and an alma mater in which they can take pride for its excellence across the board in clinical veterinary medicine."

Acknowledging that a bumpy road lies ahead, Loew reaffirms his hope "to make a real difference in the life of this institution. . . . Even after the expected future budget cuts we'll remain one of the best funded veterinary colleges in the world—a great place, but it can be even greater. I want the college to be known as a fun place to work and study, I want our alumni and friends to feel even greater pride in what we do. I want us to make a real difference in the lives of all creatures great and small." ■

Accreditation Team Visits

Earlier this fall, an eight-member team representing the AVMA Council on Education visited the college to conduct the on-site portion of its accreditation process. Veterinary colleges are evaluated every seven years, but Cornell received a one-year extension in 1994 because the new Veterinary Medical Center was still a year away from completion. To prepare for the accreditation process, the college began its own internal review and self-assessment study in January 1995. The accreditation team spent four days at Cornell in October, meeting with faculty, staff, and students and touring all college facilities. Their preliminary findings, presented to Dean Franklin M. Loew and Provost Don M. Randel on October 4, suggested that the college should continue with full accreditation status. The final report is expected in spring 1996.

Faculty Profile: Susan S. Suarez '71, MS, PhD

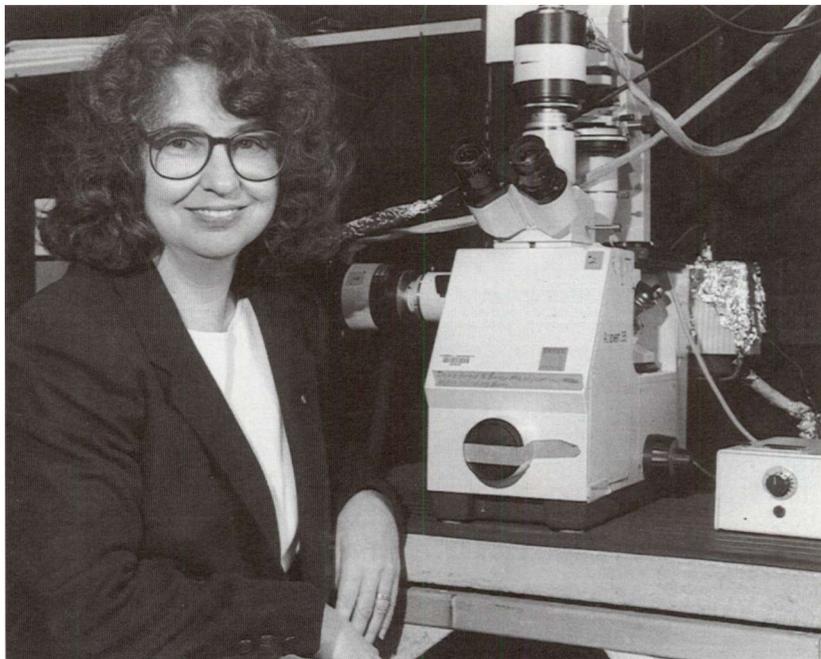
Sperm are so lively that a stroboscope flashing 60 times per second is required to capture sharp images of them as they whiz by under the microscope. What intrigues Susan S. Suarez, an associate professor of anatomy, is that the pattern of movement differs as sperm make their way through the reproductive tract. What switches the pattern, she wants to know, and why?

One clue is that rising amounts of calcium inside the cell act as a signal to the flagellum. To follow this line of inquiry, Suarez had to invent a device to see what had never been seen before—an imaging system fast enough to keep up with the sperm's activity while at the same time recording shifts in calcium concentration with each distinct movement. It took three years collaborating with an engineer to do it.

Suarez's penchant for watching things (her second study is observing the stop/start progress of sperm as they make their way through the uterine tube) has enabled her to carve out a unique niche in biomedical research and to attract federal dollars to back up basic research that may someday lead to more effective treatments for infertility and new methods of contraception.

"Most people who study sperm come from the point of view of biochemistry, but I like to look directly at what they're doing, using just enough biochemistry to determine how the movement is regulated," Suarez explains. "Also, I don't feel truly comfortable with techniques developed by other people. I understand techniques better if I develop them myself, so that has helped me stand out a bit from the crowd."

Indeed she has done so ever since she was the sole female face in many of her undergraduate biology classes at Cornell in the late sixties. A year into her master's degree program, Suarez landed her first National Science Foundation



Dr. Susan Suarez, associate professor of anatomy, with the image analysis system she built herself

(NSF) fellowship. At mid-career she's now garnered more than a million dollars in research support from the NSF, the United States Department of Agriculture, and the National Institutes of Health.

As biomedical research goes, a million dollars is a modest sum, Suarez is quick to point out. She also maintains it's taxpayers' dollars well spent. As the district coordinator for the Congressional Liaison Committee of the American Society for Cell Biology, Suarez invited U.S. Representative Maurice Hinchey (D-26th) to meet with the college's scientists this summer to discuss proposed cuts in the NIH research budget.

"It's amazing how completely unaware congressional representatives are about how federal support for research works, how completely dependent we are on it, and what a good investment it is," Suarez says. For example, it was pointed out to Hinchey that the cost of caring for the 400,000 premature babies born each year in the United States exceeds the annual budget of the NIH for all fields of medical research.

In her "spare" time, Suarez, mother of two school-age children, chooses to teach a slightly younger age group than the DVM foundation she tutors in the first-year foundation course, The Animal Body. With cutbacks in the public school budget in Ithaca there are no longer nurse-teachers to present units on sex education. Following New York State guidelines for age-appropriate content, Suarez has taught the workings of the reproductive system to third and fourth graders in her children's school. She expects to take her presentations into other grades as a public service.

The common thread that connects Suarez's research and her volunteer spirit is a concern for the environment. "Having been trained originally as an ecologist, I continually worry about the degradation of the environment," she explains, citing overpopulation as the primary cause of pollution, the increased scarcity of natural resources, and growing number of endangered species. Birth control and education are the dual solutions she sees; both stand squarely at the center of her life's work. ■

People, Honors, and Awards

Bruce W. Calnek, DVM '55, MS '56, Dipl ACVM, Dipl ACPV, the Rudolph J. and Katharine L. Steffen Professor of Veterinary Medicine emeritus, received the 1995 Special Service Award from the American Association of Avian Pathologists. The award is given to a person who has made outstanding contributions in the field of avian medicine, demonstrated through scientific work, organizational involvement, and service to colleagues.

Thomas J. Divers, DVM, Dipl ACVIM, associate professor of medicine in the Department of Clinical Sciences, has received the 1995 Samuel F. Scheidy Memorial Award from the American Veterinary Medical Foundation. As an award winner he presented clinical research on equine motor neuron disease (EMND) at the World Veterinary Congress, held in September in Yokohama, Japan.

Divers's investigations have focused on determining the prevalence, clinical signs, laboratory findings, and clinical progression of the disease. He is collaborating with Drs. Cummings and deLahunta (Anatomy), Dr. Mohammed (Clinical Sciences), Dr. Valentine (Pathology), and several graduate students in the investigation of EMND. Their long-term objectives are to determine the cause(s) of EMND and to increase the general body of knowledge on equine/comparative neurology, especially that pertaining to the relationship between antioxidants and EMND.

Eric Y. Denkers, PhD, has joined the faculty in the Department of Microbiology and Immunology as an assistant professor of immunology. Denkers will spend his first year concentrating on his research interest—the immune system's response to the parasite *Toxoplasma gondii*, which causes illness in cats and sheep as well as in humans suffering from AIDS and other immunodeficient conditions.

Denkers spent five years as an IRTA fellow in the Laboratory of Parasitic Diseases at the National Institutes of Health in Bethesda,

Maryland, before coming to Cornell in October.

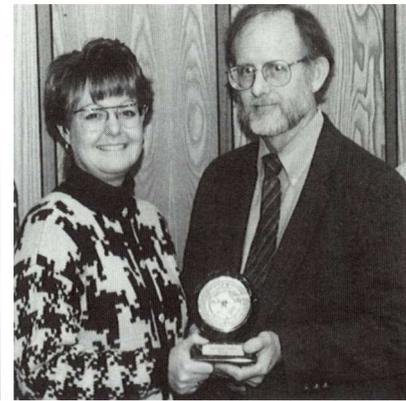
Janet Scarlett, DVM, MPH, PhD, associate professor of epidemiology, has been appointed associate dean for student services. In this half-time position Scarlett will oversee the college's DVM student recruitment, admissions, and advising programs and related student services, including issues of gender, underrepresented minorities, and other diversity concerns among applicants and students.

Elaine D. Tullson, DVM, PhD, has been appointed assistant professor of microbiology in the Department of Microbiology and Immunology. She is involved in the foundation course "Host, Agent, and Defense" and also teaches an undergraduate course in pathogenic bacteriology and mycology.

Tullson's research interests focus on the molecular pathogenesis of *Borrelia burgdorferi*, the causative agent of Lyme disease. She also is a member of the Cornell Technical Support Group working on the New York City watershed research project and will soon begin a molecular epidemiologic analysis of *Cryptosporidium sp.* in test samples isolated from domestic and wild animals and humans.

Marjorie Laughlin, administrative assistant to four deans, retired this summer after 39 years at the college. Mrs. Laughlin first served as secretary to Dr. E. P. Leonard, chair of the Department of Therapeutics and Small Animal Clinic. She became Dean George Poppensiek's administrative assistant in 1963 and worked with Dean Edward Melby (1974–84), Acting Dean Charles Rickard (1984–85), and Dean Robert Phemister (1985–95).

Patricia Janhonen has been appointed administrative assistant to Dean Franklin M. Loew. Ms. Janhonen came to the college 11 years ago as secretary in the section of small animal surgery in the teaching hospital. In 1987 she became administrative assistant to the hospital director, Dr. Robert



Dr. Terri Wheeler Ledoux of Merck AgVet presents the MSD AGVET Award for Creativity in Teaching to Dr. William Hornbuckle, director of the Community Practice Service. Dr. Hornbuckle received the award for an innovative program in which second-year veterinary students learn methods of health maintenance and infectious disease prevention within the context of a general companion animal practice. The students participate in routine history-taking, physical examinations, and infectious agent testing, receiving peer instruction from fourth-year students on clinical rotation in the college's Community Practice Service.

Playter, and continued working for his successor, Dr. Francis Kallfelz, until she moved to the position in the dean's office in September.

The college's **Student Chapter of the American Association of Feline Practitioners** received the 1995 Hill's Outreach Program Award for its volunteer program of providing preadoption physical examinations to cats at the Ithaca area SPCA.

Last year, Hill's Pet Nutrition Inc. provided all 27 veterinary schools in the United States with a gift of \$1,500 to fund outreach programs implemented by veterinary students that communicate the importance of the relationships between humans and animals, particularly cats and dogs. The Cornell project was one of three selected by the company to receive special recognition as the most innovative. The Outreach Program Award provides the college with a \$5,000 grant for equipment to enhance teaching. ■

New Emeritus Faculty

In the past year, six college faculty members were promoted to emeritus status. Although officially this means they are "retired," most are still seen frequently on campus and continue to be active in their professional pursuits. We regret that space does not permit a full description of each individual's work, but the brief profiles below focus on their major contributions to the college and the profession.

Bruce W. Calnek, DVM '55, MS '56, Dipl ACVM, Dipl ACPV, the first Rudolph J. and Katharine L. Steffen Professor of Veterinary Medicine, is one of the world's leading experts on viral diseases of birds. For nearly 30 years the National Institutes of Health supported his research leading to a broader understanding of neoplastic diseases, especially Marek's disease in birds.

He developed the vaccine used against avian encephalomyelitis, and his studies on Marek's disease led to the discovery of how the causative virus spreads. He also discovered an important and novel way to process and store the Marek's disease vaccine in a freeze-dried state.

Calnek joined the faculty in 1961 and served as chair of the Department of Avian and Aquatic Animal Medicine from 1977 until the department was merged with Microbiology and Immunology in summer 1995. In addition to his research, teaching, and administra-



Dr. Bruce W. Calnek

tive duties, Calnek chaired the college's Central Planning Committee, which was responsible for planning the \$90 million facilities expansion project now nearing completion.

Fernando de Noronha, DVM, professor of virology in the Department of Microbiology and Immunology, has devoted much of his career at the college to studying infectious diseases in cats. In 1964 de Noronha joined the Feline Leukemia Studies Laboratory, where he worked closely with the late Dr. Charles G. Rickard, former associate dean and professor of pathology.

Among de Noronha's accomplishments are the demonstration of the viral etiology of feline leukemia, which helped clarify how the disease is transmitted; development of serologic tests to diagnose feline leukemia virus infection; and significant contributions to the knowledge base that has led to methods of control and prevention of the disease by vaccination.

In recent years de Noronha's research has focused on feline immunodeficiency virus (FIV). His work has led to improved methods for detecting FIV infection and preventing transmittal of the disease. He is a contributor to the college's hepatitis research program, which has been responsible for development of the eastern woodchuck as an animal model for hepatitis B virus research.

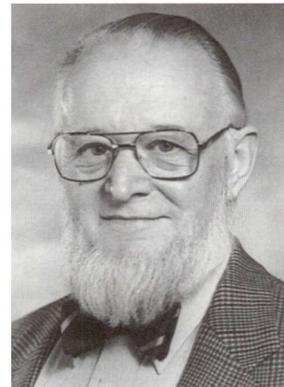


Dr. Fernando de Noronha

During the sixties and seventies, **Alan Dobson, MA, PhD, ScD**, professor of physiology, focused his research on the gastrointestinal physiology of the ruminant, particularly the absorption and flow of blood in the rumen. His laboratory developed and validated a method for measuring blood flow based on ultrasonic transit time, which became the gold standard for cuff-type liquid flow measurement.

Subsequently Dobson turned his attention to the distribution of pulmonary blood flow to the equine lung. His work was the first to cast serious doubt on the accepted theory that gravity is a major determinant of the distribution of blood flow in the lung. It spawned investigations that gave rise to several possible treatments for hypoxia caused by the mismatch of ventilation to perfusion within the lung.

Recent findings confirming that pulmonary capillary pressure in horses rises substantially during exercise have engendered investigations on whether this increase is sufficient to produce additional water in the lungs. Such an increase could impair diffusion across the lung and explain hypoxia, which is usually observed in exercising horses. Dobson is currently engaged in developing techniques for the measurement of lung water and other cardiovascular parameters in the galloping horse. The goal is to establish robust techniques that could be applied to the human patient.

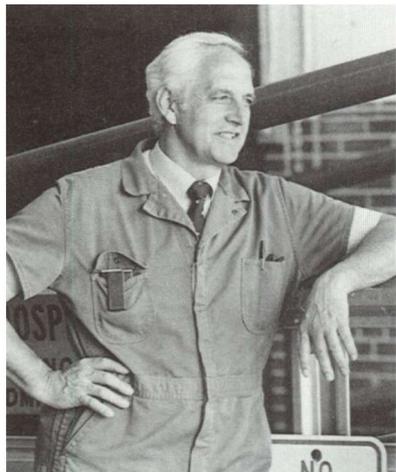


Dr. Alan Dobson

Robert B. Hillman, DVM '55, MS '61, Dipl ACT, has been appointed senior clinician emeritus in the Department of Clinical Sciences. Internationally, Hillman is among the best known American theriogenologists. His contributions to a scientifically based approach to animal reproductive physiology and pathology span a range of species, including horses, sheep, goats, and even llamas. For many years he was a consultant to the American and international bovine artificial insemination industry.

For 34 years Hillman has been known to veterinary students as a dedicated teacher, winning the coveted Norden Distinguished Teacher Award in 1974. Nor does his concern for his students stop upon their graduation. At the end of each day's clinical work he can be found returning phone calls from veterinarians around the world—from new graduates facing common problems, other academic clinicians with unusual cases, or health regulators from overseas posing questions of the most intricate and vexing kind.

Hillman also is known for his outreach service as the "Fair Vet" for the past 21 years at the annual New York State Fair. And, he is a highly sought-after speaker by those interested in animal health in general and animal breeding in particular.



Dr. Robert Hillman

Lennart P. Krook, DVM, PhD, professor of pathology, is internationally known for his expertise in the pathology of nutritional diseases, especially metabolic skeletal diseases. Krook introduced Nutritional Secondary Hyperparathyroidism as a disease entity. His spontaneous and experimental studies in calcium metabolism and bone disease in a variety of species, including horses, chickens, pigs, dogs, and cats, found that the hierarchy of bone loss begins in the jawbones and moves through the body, affecting the long bones last. The same sequences occur in humans, and Krook thus postulated that human periodontal disease is the forerunner to a clinically more severe vertebral and long bone osteoporosis.

Krook's studies of fractures sustained by race horses concluded that they were pathological, in contrast to the conventional opinion that they were traumatic; the use and abuse of corticosteroids, he concluded, were responsible for half of the fracture cases, the other half caused by overfeeding calcium.

Krook joined the faculty in 1959. For 16 years he served as editor of *The Cornell Veterinarian*, a contribution of note both to the college and the veterinary profession worldwide. Since the 1970s he also has had joint appointments in the Division of Nutritional Sciences at Cornell and Cornell University Medical College in New York City.

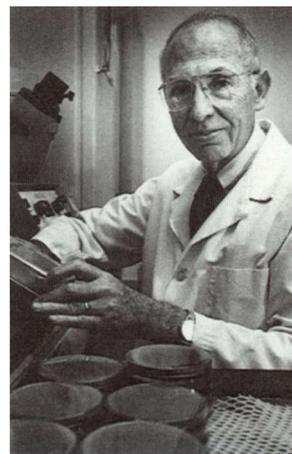


Dr. Lennart P. Krook

Alexander J. Winter, DVM, MS, PhD, Dipl ACVM, the James Law Professor of Veterinary Microbiology, is widely recognized for his work on bacteriological diseases of the bovine reproductive system, most particularly *Campylobacter fetus* and *Brucella abortus*.

His research on campylobacteriosis, which primarily manifests itself in cows as chronic infertility, led to the development of a fluorescent antibody test for diagnosing infected bulls; the achievement contributed to eradicating what was then a widespread disease in artificial insemination centers. In recent years Winter has focused on *Brucella abortus*. He's performed extensive studies on the outer membrane proteins of *B. abortus* and has characterized the nature of antibody-mediated and cell-mediated immunity to this pathogen.

In addition to his love of research, Winter has enjoyed teaching and has been a highly regarded presence in the classroom. "Both graduate and undergraduate teaching have been extremely satisfying things to do," he said in an interview at the time of his appointment as a James Law Professor. "I enjoy thinking of the students whose lives I may have influenced." Winter has been a member of the college faculty for 32 years. ■



Dr. Alexander J. Winter

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The Companion Animal Hospital's surgery wing is located back-to-back with the surgical suites (now near completion) for horses and farm animals. This allows clinicians and technicians to share access to a central supply unit for sterile clothing, instruments, linens, and reprocessing. There are six aseptic small animal surgery rooms, including three that have been

specifically designed and equipped for soft tissue, orthopedic, and ophthalmic operations. Another two surgery rooms are set aside for dentistry and endoscopy procedures.

The small animal Radiology Department is also adjacent to the facilities for large animals. This allows one staff of radiologists and technicians to serve the Companion Animal, Farm Animal, and Equine Hospitals. Cornell's Radiol-

ogy Department is equipped to provide services typically not available in most private veterinary practices, including ultrasonography, echocardiology, nuclear medical imaging, and computerized tomography (CT) scans. ■

(Photos by Adriana Rovers, University Photography)



In the small animal induction and recovery room, fourth-year DVM student Linda Treglia (left) and Dr. Victoria Lukasik, anesthesia resident, prepare a miniature Schnauzer for ophthalmic surgery to repair a detached retina.

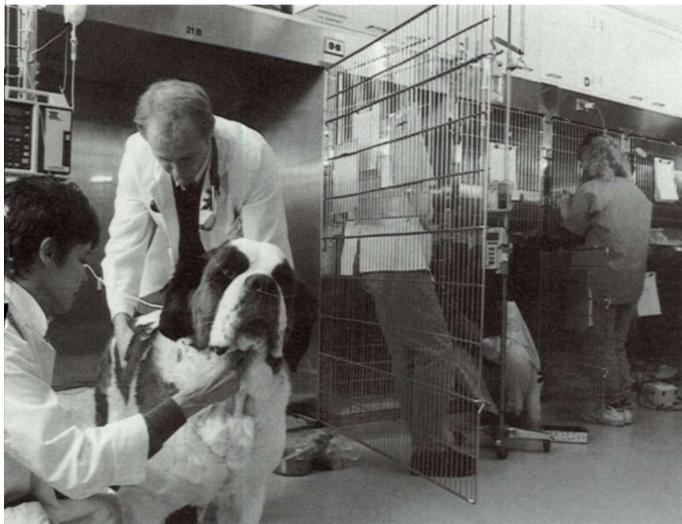


Fourth-year DVM students Robin O'Neal (left) and Karen Fessler monitor the progress of a dog recovering from surgery.



Working with a Zeiss OpMiCS/XY2 dual-headed operating microscope specially designed for teaching in ophthalmic surgery, Dr. Ronald Riis, associate professor of ophthalmology, aided by fourth-year DVM student Kathleen Congel, undertakes the delicate task of reattaching the miniature Schnauzer's retina. In the background, anesthesia resident Victoria Lukasik monitors the dog's heart rate, oxygen level, and other vital signs. The image seen through the microscope can be transmitted to video monitors or recorders in the surgical suite or other areas of the hospital.





In the small animal Intensive Care Unit, Margaret Gioseffi, a fourth-year DVM student, and Dr. Kenneth Simpson, assistant professor of medicine, check the progress of a St. Bernard with severe renal disease. The dog is receiving total parenteral nutrition, continuously administered intravenously by the infusion pumps on the stand. In the background, DVM students and animal health technicians minister to other patients.



In the treatment area of the ICU, fourth-year DVM student Elizabeth Daut uses a pulse oxymeter to measure blood oxygen saturation in a Norfolk terrier being treated for severe pulmonary disease. Initially, the dog had been housed for 24 hours a day in one of the unit's special oxygen cages, but his condition had improved enough to enable him to tolerate room air for several hours over the course of a day.

While construction is completed in the new Equine and Farm Animal Hospitals, it's business as usual for clinicians and staff handling a normal caseload of surgical and medical patients in the existing Large Animal Clinic. In November, orthopedic surgeons performed an unusual bilateral hock arthroscopy on a two-year-old thoroughbred filly.

(Photos below by John Reis)



It takes five people to move the horse onto the padded operating table and into the sterile surgery suite.



The surgery is performed with a fiber optic arthroscope attached to a tiny video camera that projects the image to a video monitor. Two surgeons, each with a team of technicians and students, work simultaneously on this case, repairing both of the filly's rear hocks while watching separate monitors. (L to R) Dr. Alan Nixon, associate professor of orthopedics, fourth-year DVM student Tracy Fischer, and Dr. Patrick Todhunter, resident in large animal surgery.

Research and Service Notes

River Otter Project

Veterinary students have the opportunity to work with river otters—a species rarely seen in veterinary practices—thanks to the River Otter Project, a population restoration program sponsored by the college, the state Department of Environmental Conservation, and the nonprofit New York River Otter Project Inc.

“We don’t know nearly enough about the biology and health problems of river otters, so this is a chance to learn a great deal that may help maintain healthy populations,” notes George V. Kollias, DVM, PhD, Dipl ACZM, the Jay Hyman Professor of Wildlife Medicine, who supervises the river otters’ stay here between their capture in the Adirondack and Catskill mountains and release in central and western New York river systems.

Students and wildlife medicine technicians give the animals complete physical examinations, checking for parasites and evidence of infectious diseases and treating any that are detected. The otters all receive microchip identification devices, implanted beneath their fur, and some get miniature radio transmitters so their whereabouts can be monitored after the release.

Twenty-three young otters were released throughout October and



A river otter is released in central New York as part of the repopulation project sponsored by the college, the state Department of Environmental Conservation, and the nonprofit New York River Otter Project.

November at four sites in the Finger Lakes region, adjacent to the Montezuma National Wildlife Refuge. Although the animals were once abundant throughout New York, loss of habitat, degradation of water quality, and unregulated trapping in the late 1800s has led to near extinction of the river otter population outside the Adirondack and Catskill mountain regions. With the help of the Veterinary College, the volunteer-based project hopes to release 30 to 40 otters annually in central and western New York over a 10-year period.

New Vaccine for Lyme Disease in Dogs

With support from the Morris Animal Foundation, college researchers have developed a potentially safer and more effective vaccine to prevent dogs from becoming infected with Lyme disease. This recombinant outer surface protein-A-type vaccine was developed by a team of scientists under the leadership of Yung-Fu Chang, DVM, MS, PhD, Dipl ACVM, assistant professor of microbiology in the Diagnostic Laboratory.

During his studies on the effectiveness of the vaccine, Chang found that Lyme disease can hide in some areas of the body, such as joint tissues, peritoneum, pericardium, and meninges, where antibodies may not easily reach. This may explain why the organisms can persist in animals for a long period of time. He also found that infection occurs in some dogs that have antibodies to both the vaccine and natural infection. If an animal already has an undetected case of Lyme disease before vaccination, the vaccine will probably not be able to initiate an antibody response to prevent the disease from progressing. Only about 5 percent of dogs infected with Lyme disease show signs of the disease.

Lyme disease is on the rise in both human and animal populations. The Centers for Disease Control and Prevention recently reported a 58 percent rise in diagnosed cases in humans in 1994. New York State alone had more than 5,000 cases that year. One proposed reason for the larger number of cases in humans is an increase in the number of ticks. If this is true, despite the lack of data on incidence in dogs, it is logical to assume there’s been an increase in the number of canine cases as well.

Repairing Cartilage Defects in Animals and People

Damaged cartilage has a limited ability to repair itself, the repairs lack durability, and the surface has inferior mechanical properties. Research in the Comparative Orthopedics Laboratory conducted under the supervision of Alan J. Nixon, BVSc, MS, associate professor of surgery, has developed a practical technique for growing cartilage cells and then using them to resurface extensive articular cartilage defects in horses.

Nixon’s technique involves growing chondrocytes in the laboratory and stimulating their function with potent growth factors before arthroscopic injection to the target sites in a damaged joint. Fibrin, the tissue “glue” that forms a blood clot, is used to secure the cells in cartilage defects and also to provide a slow-release pool of the growth factors to the newly transplanted cells. The success of this technique in the laboratory proves that cells grown and stimulated to new levels of activity can be implanted in the joint of an affected horse. The graft results in a much improved cartilage surface whose properties closely resemble those of normal tissue.

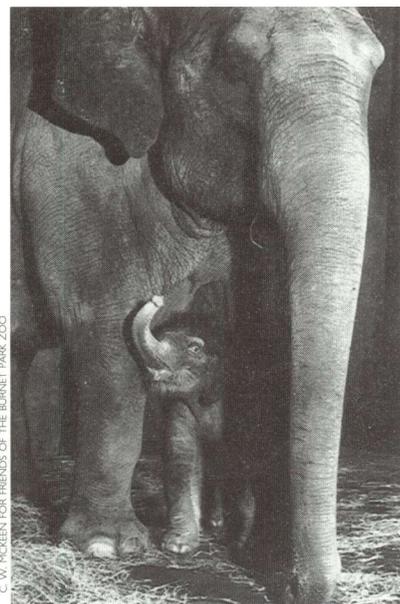
Similar research in human medicine is equally encouraging. According to a report published in the

New England Journal of Medicine, researchers in Sweden have effectively treated deep cartilage defects in human knees using cartilage cells that have been harvested from the patients themselves, cultured, then injected directly into the area of damage.

Zoo Elephants Aided

This past year, members of the college faculty have twice been on the scene when zoo elephants needed help. Last spring, George V. Kollias, DVM, PhD, Dipl ACZM, the Jay Hyman Professor of Wildlife Medicine, and Edward J. Gentz, MS, DVM, an instructor in wildlife medicine, were part of a team of 20 people who anesthetized and extracted an infected tusk from a 12-year-old African elephant at the Pittsburgh Zoo. Anesthetizing the 4,700-lb. female was the trickiest part of the job, but the tusk was extracted in less than an hour, a significant decrease from the four hours it took when the procedure was first developed. Over the past seven years, the team has performed similar procedures on 25 different elephants.

In June, Barry A. Ball, DVM, PhD, Dipl ACT, associate professor



C. W. MCKEN FOR FRIENDS OF THE BURNET PARK ZOO

College faculty assisted at the birth of an Asian elephant calf at the Burnet Park Zoo in Syracuse. Baby Kirina and her mom, Romani, are doing fine.

of theriogenology, and Dietrich Volkmann, BVSc, MMedVet, visiting professor of theriogenology from the University of Pretoria, assisted the veterinarian at Syracuse's Burnet Park Zoo in the birth of a live 315-pound female calf named Kirina. Labor was induced in the 18-year-old Asian elephant, Romani, using a relatively low dose (20 international units) of oxytocin. Delivery occurred within five minutes after induction. The use of oxytocin is now becoming more common in captive elephants because delayed parturition appears to be a problem. Zoo officials believe that Romani is only the fifth elephant in the world to have had an induced labor.

Baby Kirina is healthy and adjusting well to life in the zoo's herd. She's been gaining weight at a rate of about 2.8 pounds daily, and by year's end it is estimated she'll weigh about 700 pounds. Hers is the third elephant birth at the zoo in which Dr. Ball consulted.

Halting Rabies at the Canadian Border

The largest raccoon rabies vaccination program in the country, in terms of geographic area, began this fall at two critical points on the United States–Canada border in an attempt to prevent the fatal wildlife disease from crossing from New York State into Ontario and proceeding northward along the St. Lawrence Seaway. In October, wildlife biologists from the college Diagnostic Laboratory joined forces with wildlife biologists and pilots from the Ontario Ministry of Natural Resources to air-drop thousands of vaccine-filled baits in New York State. The areas included the Niagara frontier and the St. Lawrence Seaway, extending 15 miles from the St. Lawrence River to the Adirondack Mountains.

The oral vaccine—vaccinia-rabies glycoprotein (or V-RG)—recently received conditional approval from the United States Department of Agriculture to be used only in government-mandated

programs. Two baits are being studied, the fishmeal polymer and the Ontario raccoon tallow bait.

Raccoon rabies has been moving northward along the eastern seaboard of the United States at the rate of about 25 miles a year. The disease has reached Niagara County but is not believed to have crossed over into Ontario. The vaccination program should demonstrate the effectiveness of the oral vaccine in keeping raccoon rabies out of an area where it has not been reported and in helping to control or eliminate the disease where it already exists. It should also show whether this infectious disease can be stopped at a specific border by vaccinating raccoons, the vector species.

Cases Sought for Equine Motor Neuron Disease Study

New cases are still sought for an ongoing five-year observational epidemiological study, funded by the National Institutes of Health, to identify factors associated with or that predispose horses to develop equine motor neuron disease (EMND). The goal is to understand the etiology of EMND so as to shed light on the cause(s) of the human motor neuron disease known as amyotrophic lateral sclerosis (ALS) or Lou Gehrig's disease.

Additional support from the Zweig Memorial Fund for Equine Research has enabled Hussni O. Mohammed, BVSc, MVSc, MPVM, PhD, associate professor of epidemiology (and collaborators Dr. John F. Cummings and Dr. Thomas J. Divers) to study a population of cavalry horses in São Paulo, Brazil, that comprises the world's first cluster of increased incidence of EMND. Findings among all horses studied to date indicate that horses affected with EMND have significantly lower levels of two antioxidants—vitamin E and the enzyme

CONTINUED ON NEXT PAGE



Dr. Hussni Mohammed

CONTINUED FROM PAGE 11

super oxide dismutase (SOD1)—in comparison to nonaffected horses. Thus they hypothesize that oxidative stress may be involved in the pathogenesis of this debilitating disease.

As their studies continue, Mohammed and his colleagues will analyze blood and central nervous system tissue levels of vitamin E and SOD1 activity. In addition, blood levels of vitamin A and selenium will be analyzed to determine the horses' antioxidant status. The researchers will also monitor the demographics, management, environment, and health of the horses.

Practitioners who suspect cases of EMND in their patients should contact Dr. Cummings in the Department of Anatomy at 607-253-3540 or Drs. Mohammed or Divers in the Department of Clinical Sciences at 607-253-3570.

Richards Addresses AVMA on Feline Vaccines

James R. Richards, DVM, assistant director of the Cornell Feline Health Center, spoke at AVMA's Sixth Annual Animal Welfare Forum on a variety of approaches veterinarians can use to address the problem of vaccine-associated tumors in cats. His talk came in response to a concern among practitioners that the incidence of post-vaccinal allergic reactions and vaccine-associated sarcomas seems to be on the rise.

To date, studies have pointed to inactivated or "killed" vaccines, especially adjuvanted feline leukemia and rabies virus vaccines, as those most commonly associated with these developments. Granuloma formation is common after vaccination with either of these vaccine types, and though most resolve within a few months, a very small percentage progress to sarcomas. Regrowth of such sarcomas after attempts at surgical removal is common.

"There will be more and more pressure placed upon veterinarians and vaccine manufacturers to administer and develop vaccines that minimize this risk of sarcoma development," Richards says. "Much research is being conducted to understand why and how these tumors develop, but there are several other approaches that veterinarians must explore in order to best serve their feline patients."

These other approaches include developing adjuvants that stimulate a satisfactory immune response while minimizing postvaccinal inflammation; increasing the number of vaccines that are administered orally or topically rather than via injection; developing safe vaccine strains of feline leukemia virus and rabies virus; and vaccinating with a recombinant product.

Another concern with feline vaccines is the duration of immunity, which, according to Richards, has not been adequately studied in cats. "What is really needed are good *in vitro* tests for determining the degree of protection against agents for which cell-mediated in addition to antibody-mediated immune responses are necessary for protection," Richards says. "We need to have practical ways of determining what constitutes an adequate cell-mediated immune response. Clearly, biotechnology will continue to play a major role in expanding our understanding of the feline immune system, and future vaccine development will likely depend heavily on the knowledge gained."

Survey on Canine Cesareans

Paula Moon, DVM, Dipl ACVA, assistant professor of anesthesiology, has initiated a survey of veterinary practices to assess risk factors and determine the mortality of dams and their newborn puppies delivered by cesarean surgery.

Anesthesia for cesarean section in the dog is a common topic at education conferences. Although it is likely that the outcome for dam and neonates is largely determined by anesthetic management, the last study reporting mortality data for cesarean section in the dog was published in 1979, and no study has compared anesthetic protocols since the 1960s. Furthermore, no study has evaluated neonatal survival more than 24 hours after cesarean surgery. Important changes have occurred since these studies, including the introduction of newer anesthetics (ketamine, propofol, and isoflurane) and the increased use of intraoperative support. The Cornell study will cover the perioperative period and follow-up at seven days after surgery. Results will provide veterinarians with information based on data instead of on clinical impressions and opinions.

Veterinary practitioners are asked to help in this study. Cornell is looking for practices that perform at least three to four cesarean surgeries per year and willing to complete a five-minute survey after each surgery. Interested veterinarians should contact Dr. Paula Moon by telephone (607-253-3095), e-mail (pfm4@cornell.edu), or fax (607-253-3055).

New Grants

- **Janet Scarlett, DVM, MPH, PhD**, associate professor of epidemiology, has received a grant from the National Council on Pet Population Study and Policy to conduct a descriptive study aimed at eventually reducing the number of cats and dogs that are relinquished to animal shelters.

Her first objective is to discover the variety and prevalence of rea-

sons that owners give for relinquishing animals. This information can help determine the characteristics of pets that place them at higher risk of being given up by owners. Her second objective is to gather information about owners (such as age, education, and degree of knowledge about animals and their care) to see if any particular owner characteristics seem to predict a pet eventually being surrendered to a shelter.

The Cornell study is part of a national research project aimed at reducing pet overpopulation. In the past, population control was centered on neutering programs. Dr. Scarlett's work broadens the approach to this complex issue by examining why owners who acquire pets do not keep them.

- **James N. MacLeod, VMD, PhD**, assistant professor of molecular genetics in the college's James A. Baker Institute for Animal Health, has received grants from the Morris Animal Foundation and the Collie Club of America Foundation for research seeking to develop an improved therapy for dogs that develop anemia secondary to chronic renal failure.

Dr. MacLeod's research is focused on erythropoietin, a hormone made in the kidney that stimulates red blood cell production. Recombinant human erythropoietin has been used to treat some dogs that have anemia, but the therapy presents immunogenicity problems and is also costly. MacLeod and his laboratory colleagues have successfully cloned the gene that encodes canine erythropoietin. This has enabled them to produce in tissue culture recombinant canine erythropoietin (rcEPO) in amounts sufficient for therapeutic use. The protein works well in mice, and studies have now been started in collaboration with Dr. John Randolph, associate professor of medicine, to assess the safety and efficacy of rcEPO in dogs. A second objective is to develop a quantitative serum test for canine erythropoietin. The test would allow the identification of anemic dogs that are not producing appropriate amounts of the hor-



A ceremony was held during reunion weekend this past June to formally dedicate the Irving W. Wiswall Learning Laboratory in the Veterinary Education Center. The two-year-old laboratory was named in recognition of Dr. Wiswall's generous unrestricted gift to the Cornell Campaign for the College of Veterinary Medicine. Pictured above at one of the laboratory workstations are Dr. Wiswall and his grandsons, Matthew and Devon.

Last year, Irv Wiswall '48, DVM '54, a retired equine and racetrack veterinarian, decided to mark the fortieth reunion of his veterinary class with a major gift. Using appreciated stocks and securities, he established a charitable remainder unitrust with Cornell. Of his motivation for making the gift, he wrote, "I was always proud and happy about my general practice experience. It gave me the ability to advise and help people with their other animals and made me a better racetrack veterinarian... I feel fortunate that I have had such a rewarding and interesting life. I am grateful to Cornell and the Veterinary College for this opportunity."

mon on their own, suggesting that they may benefit from erythropoietin replacement therapy. Anemic dogs that have an elevated level of erythropoietin could also be identified, which would allow veterinarians to focus on other causes for low red blood cell numbers. Finally, the test could be used to monitor dogs receiving rcEPO therapy, thus allowing dosages to be optimized.

- **Gustavo D. Aguirre, VMD, PhD**, the Alfred H. Caspary Professor of Ophthalmology in the Baker Institute for Animal Health, has received a grant from the American Miniature Schnauzer Club to study photoreceptor dysplasia (*pd*). The goals of the study are to identify the *pd* gene, characterize the mutation responsible for the disease, and develop a blood-based DNA test that can be used unequivocally to

identify affected, normal, and carrier individuals.

Aguirre and his colleagues in the institute's Inherited Eye Disease Studies unit will use two approaches in his molecular studies of photoreceptor dysplasia: candidate gene studies and subtractive cloning. The candidate gene studies involve the examination of retina-specific genes using canine probes already available in his laboratory. In addition, he will be cloning other canine-specific probes that may be candidates for the *pd* abnormality. Aguirre's group previously developed sensitive sequence scanning techniques that allow for the identification of single nucleotide changes in retinal messenger RNA (mRNA) and the determination of whether the changes observed are significant to the disease. ■

Construction Update

Clients who have small animals are the first to enjoy the new Veterinary Medical Center (VMC). The Companion Animal Hospital, formerly known as the Small Animal Clinic, made the historic move into the new building the weekend of September 23 and 24.

Just east of the circular drive leading to the Companion Animal Hospital is the entrance to the Equine Hospital. The Equine Hospital, along with the Farm Animal Hospital—both of which previously made up the Large Animal Clinic—will move into their new facilities in the spring.

In the meantime, academic departments will begin to relocate into the upper levels of the VMC in early January. The Department of Microbiology and Immunology will be the first, followed by Pharmacology, Clinical Sciences, Pathology, and a small section of the Diagnostic Laboratory. Laboratory Animal Services will move into the basement level of the building once the necessary tests are completed to

verify that their special ventilation and other support systems are in good working order.

Once the new Companion Animal Hospital was fully operational, the walls between the former Small Animal Clinic waiting room, reception desk, pharmacy, and several examination rooms were removed to form the space to be occupied by the new Centennial Room. Located at the intersection of the VMC and the Veterinary Education Center, this room will be an informal meeting place for faculty and their guests, as well as a place for small seminars and receptions. The Centennial Room is slated to have a university "club" atmosphere, and the furnishings will be partially funded by gifts from the College Alumni Association, the New York State Veterinary Medical Society, and the Auxiliary to the NYSVMS.

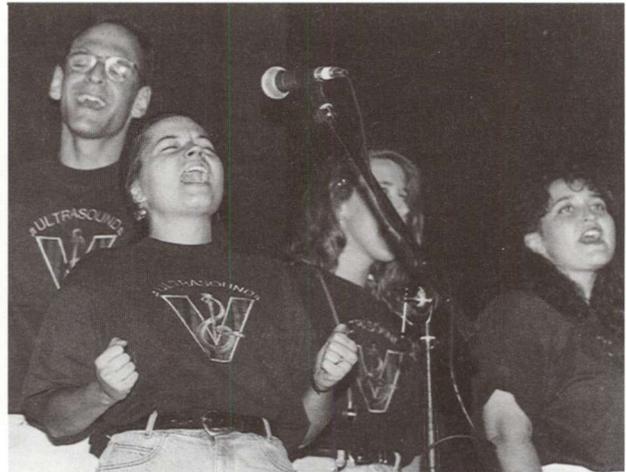
On the teaching side, 81 second-year DVM students had their first class in the brand new Learning Laboratory II (the "wet" lab) on October 2. The 5,000-square-foot laboratory has two instructors' work

stations and 16 lab benches that can accommodate up to 90 students working with dual-headed microscopes, networked computers, and advanced equipment used in microbiology and molecular biology courses.

Looking ahead, once the Veterinary Medical Center is fully occupied, the third phase of the \$90 million construction and renovation project will begin. A former teaching laboratory in Schurman Hall will be refurbished to become the central administration office suite, and eventually most administrative offices will move into Schurman from their present far-flung locations. The former teaching hospital will be renovated as a new instructional center with facilities for courses that cover physical examination, theriogenology, and surgery, as well as office space for some faculty in the Department of Clinical Sciences. Research space will then be concentrated in the Veterinary Research Tower and the new Veterinary Medical Center. ■



Cornell's new president, Hunter R. Rawlings, and his wife, Elizabeth, visited the college soon after he took office this summer. On a tour of the Irving W. Wiswall Learning Laboratory, they met students and faculty who were working on new multimedia materials for first- and second-year DVM courses. In this photo, President Rawlings is looking at the projected image of the same slide second-year student Amy Sachs is viewing under the microscope. The Wiswall Laboratory features interactive computer, video, and other teaching materials used in the new academic program.



The inaugural festivities for President Rawlings included "Cirque de Cornell," an evening of entertainment featuring performances by groups of students, faculty, and staff from across the campus. Among the diverse acts was "Ultrasound," the a capella veterinary student singing group. Third-year DVM student Trish Ernst (center) solos, with backup from (L to R) Stefan Wielandy, Kate Donis, and Michelle Argersinger.

State Imposes Midyear Budget Cut

After already weathering a 5 percent reduction in its allocation from the State University of New York (SUNY) for fiscal year 1995–96, the college must now return an additional 1 percent of its operating support to the state.

The same midyear reduction has been imposed on the other three statutory schools at Cornell, as well as on all state-supported colleges and universities in New York. Earlier this year, the college dealt with the 5 percent budget cut by significantly cutting back central administrative functions and services but sparing academic departments as much as possible. Tuition for DVM students, however, was increased by almost \$1,000 for state residents and by more than \$1,700 for non-residents. Because a midyear cut was anticipated, the Veterinary College and other statutory colleges at Cornell planned their spending conservatively.

Although the college should be able to absorb the new reduction this year without additional personnel layoffs or program cuts, next year, according to Dean Franklin M. Loew, the college expects to further tighten its belt. "Governor Pataki's proposed budget for 1996–97 calls for a 4.5 percent reduction in funding for SUNY, over \$71 million less than this year," he says. "At this point, we don't have much room to maneuver. Unless the legislature restores funding to at least this year's level, we'll have to look at cutting programs in all departments throughout the college. There is the potential for loss of faculty as well as staff positions, and of course we would have to institute austerity spending policies across the board. This year's tuition increase was substantial, and I hate to think that our students would have to manage another major increase. We've already seen accepted students choosing other veterinary schools over Cornell because our tuition is so high."

This year's state budget also

mandated that the SUNY system prepare a restructuring plan, taking into account the cuts that have already occurred, as well as likely future reductions. Released December 1, the plan, titled "Rethinking SUNY," notes that "the percentage of the SUNY state appropriation which is dedicated to the statutory colleges on a 'pass-through' basis has increased significantly in recent years. . . . The meaning and implication of these numbers are viewed differently by the Board [SUNY Board of Trustees] and Cornell. We have initiated discussions with Cornell University. . . in order to clarify the issue and to work toward financial solutions which are sustainable in the operating and capital budgets of both the state-operated and the statutory campuses."

Although university officials found much of interest among the other suggestions in the report, they expressed dismay at the specific language regarding the state-supported colleges at Cornell. The statutory colleges have received approximately the same portion of SUNY funds annually over the past seven years. In addition, Cornell has shared budget cuts equally in proportion to other SUNY units. Since July 1988 the Veterinary College has absorbed a total loss of \$3.3 million in its base operating support from SUNY. During the same period, the college has given back \$900,000 in one-time rescissions and has had to increase tuition for state resident DVM students by more than \$4,600. In three of the past seven years, faculty and staff salaries have not increased, cumulatively saving the state more than \$1.5 million annually. The base allocation to the College of Veterinary Medicine in 1988–89 was \$14.9 million. In constant dollars, the base allocation in the current fiscal year is approximately \$11.3 million.

Dean Loew notes that Cornell's land-grant mission imposes unique public service responsibilities on the university and the statutory

schools in particular. "The College of Veterinary Medicine operates a teaching hospital, diagnostic laboratory, several satellite animal health laboratories, and provides a multitude of continuing education and extension services to veterinarians as well as the agricultural community," he says. "Our research and service activities are not funded by tuition, and it is the cost of these programs that has required a shift in funding patterns over recent years. Cornell is reviewing this issue in detail with SUNY's central administration and trustees." ■

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Veterinary Medicine

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1996 Calendar of Events

(unless otherwise noted, all events are at Cornell)

January

14 Alumni Reception, Orlando, Florida, at the North American Veterinary Conference

March

22-24 Cornell Annual Conference for Veterinarians*

April

13 Open House at the College

June

6-9 Cornell Reunion Weekend

7 Dedication of new Veterinary Medical Center

23-25 International BVD Virus Symposium*

July

23 Alumni Reception, Louisville, Kentucky, at the AVMA Annual Meeting

26-29 Cornell Eighth Annual Feline Practitioners Seminar*

August

7-11 Frontiers in Fetal, Maternal, and Neonatal Health*

*For more information about continuing education programs, call 607-253-3200.



A production team from WEDU-TV in Florida filmed an Ambulatory Clinic visit to a local farm in November. The story they taped highlights both the college's veterinary services and the philanthropic work of farm owner Marianne Alexander, who breeds and raises miniature Shetland ponies to give to children who have disabilities or terminal illnesses. The segment will be aired in March as part of the PBS series, "The Gentle Doctor." In the photo, Dr. Maurice ("Pete") White and Ms. Alexander watch as fourth-year DVM student Maura Westerdahl (left) and ambulatory resident Dr. Sandra Fatone examine one of the ponies.

ELIZABETH E. FONTANA