

C O R N E L L

Veterinary Medicine

SPRING 1999

Cancer Program Integrates Research and Medicine

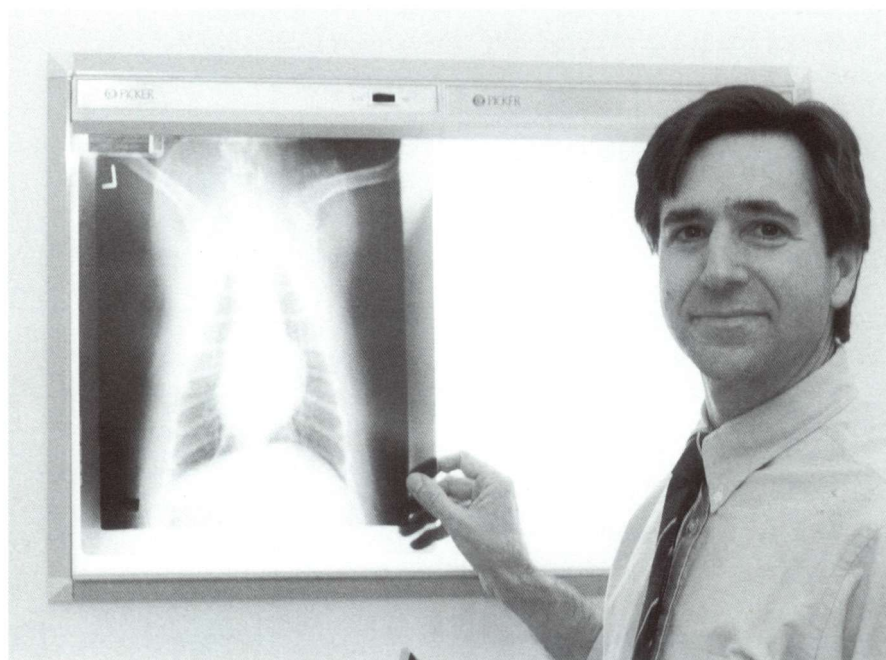
Cornell's Companion Animal Hospital treats a large number of cancer patients — nearly 70 percent of its soft-tissue surgery caseload. To provide the best care for its animal patients, the college needs a strong program in clinical oncology.

To ultimately affect animal and human cancer, we need to find not just treatments but the causes of cancer and ways of prevention.

Since mid 1997, an oncology development committee, supported by the college's Advisory Council, alumni, and referring veterinarians, has been working to formulate a plan to expand oncology services at the college.

The college recently announced the results of the committee's efforts: the establishment of the Cornell Cancer Program for Animals, a program that will integrate basic science and biomedical science with the clinical practice of medicine. The program is supported by a combination of public and private funding.

The first phase of the college's cancer program, now underway, includes hiring a program director, two board-certified medical oncologists (one of whom may also be



James Flanders, DVM, examining radiographs of a dog's chest to determine if there are any metastases present in the lungs.

board certified in radiation oncology), as well as support technicians trained in chemotherapy protocols and basic anesthesia techniques. Together these personnel will provide a comprehensive oncology service in the Companion Animal Hospital that will become the public face of the Cornell Cancer Program for Animals.

"The aim of clinical side of the cancer program is to make animals live longer and be more comfortable while they are alive," says Jay Harvey, DVM, diplomate of the American College of Veterinary Surgery, medical director of the college's Companion Animal Hospital.

Once in full swing, he explains, the program will strengthen the level and pace of cancer research and clinical application so that animal patients brought to Cornell can benefit from new technologies and treatments for this still-too-often-fatal disease.

With a comprehensive cancer treatment program in place, the oncology caseload at Cornell is expected to increase by one-third, Harvey says, providing a greater diversity of animals with spontaneous cancers. Tissue specimens from the tumors in these animals could potentially lead researchers

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Translational Biology

Planning for the Cornell Cancer Program for Animals began in earnest 20 months ago. From the outset, we envisioned a program that would foster meaningful collaboration between clinicians and basic scientists. As beneficial as a primary clinical center supplemented by clinical trials of the latest therapeutic and other intervention strategies might be for the treatment and relief of animals afflicted with cancer, we felt we could do more to advance the art and science of medicine.

To have maximal impact on the prevention and treatment of cancer in animals, we resolved to integrate medicine and basic biology. We planned to develop a program dedicated to an integrated understanding of the fundamental mechanisms by which cancer develops and spreads and to translate these

Translational biology requires meaningful integration of clinical faculty with their basic-science colleagues in a true partnership

understandings directly into the clinical setting for both immediate and long-term benefit to the animal population.

Our goal requires unyielding commitment to *translational biology*, that branch of science that merges basic biology with biomedical science and connects biomedical science to clinical medicine.

Translational biology requires meaningful integration of clinical faculty with their basic-science colleagues in a true partnership, where each member of the team is valued for individual intellectual contributions. Rather than accepting a uni-directional flow of information from the bench to the hospital floor, we are insisting on the bi-directional flow of information back and forth between the basic research enterprise and the clinical environment.

The roles of the modern academic teaching hospital and contemporary academic clinicians are critical to our successful outcome. Not only will they provide the avenue to the testing of new therapeutic regimes but also provide the intellectual seed-germ for translational and basic biologists to understand true biological characteristics of cancers.

At the college, we are fortunate to have a substantial cadre of basic biomedical scientists already working on cellular and molecular mechanisms of cancer. Our initiative

will focus on the addition of several professorial and clinical track faculty to develop a world-class clinical program for cancer in animals.

We will complement the initiative with a clinical infrastructure sufficient to assure full diagnostic capabilities and comprehensive clinical care involving radiation therapy, chemotherapy, and surgery.

The Cornell Cancer Program for Animals also will serve as an important biomedical presence for a number of research programs throughout the university campus, including chemical and structural biology, and genomics.

Funding for this oncology initiative will draw from a partnership of New York state funds, hospital revenue, and — importantly — gifts from friends and colleagues. Several friends of the college and several grateful clients of our teaching hospital already have begun to lay the foundation for private support of this worthwhile venture. We welcome others to join these pioneers!

The Cornell Cancer Program for Animals is destined to become one of the college's most valued and influential programs. To that end, I personally invite you to become engaged with the program, participate in its development, and support it as you are able.



Donald F. Smith, dean



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Cornell's Canine DNA Files Go International

A valuable collection of canine genetic information, developed by a research group at Cornell's College of Veterinary Medicine, will soon be available to the international genetics community.

DNA from 16 extensive, highly informative dog pedigrees is on its way to Ralston-Purina, where it will constitute the principal resource of the newly established Canine Reference Family DNA Distribution Center. Ralston-Purina's offer to broker the exchange of information among the world's geneticists caps a four-year effort by the Cornell group and colleagues from several other research laboratories to foster collaboration among canine genetics researchers.

The idea for the canine DNA center grew out of informal discussions begun more than five years ago among Gustavo Aguirre and Gregory Acland of Cornell, Jasper Rine and Elaine Ostrander of the University of California at Berkeley, and Linda Cork and Emmanuel Mignot of Stanford University. At the time, Ostrander was a postdoctoral associate in Rine's Berkeley laboratory; she now heads a gene-mapping group at the Fred Hutchinson Cancer Research Center in Seattle. Aguirre and Acland run the canine genetics program at the James Baker Institute for Animal Health at the Cornell College of Veterinary Medicine.

Members of the three groups began in 1995 to lay out the ground rules for future mapping efforts, beginning with the principle that standard reference families would be

used to validate the map or additions to it.

"Two things determine which are the best pedigrees," explains Acland. "The first is how dissimilar the parents are genetically, and the second is the number of siblings in the family. Dogs, with their large litters, are especially useful for genetic mapping."

The arrangement between Ralston-Purina and Cornell is modeled on that of the Center for the Study of Human Polymorphism (CEPH), a genetic clearinghouse maintained at Généthon in Evry, France, which has supplied the information used by scientists worldwide to map the human genome. Access to the genetic data stored at Ralston-Purina, and to the mapping information it yields, is similarly intended to coordinate international efforts and speed the development of the canine map.

To date, more than 300 highly informative markers have been placed on the canine map. For the core group of scientists who have collaborated to construct this framework, the hope is that other laboratories will soon start filling it in with additional markers.

"The collaborations that have led to the recent rapid progress in mapping the canine genome have been a very encouraging example of synergistic science," says Acland. "Our laboratory is very pleased and proud to have been part of this effort. The support of Ralston-Purina will now enable this synergism to involve many more laboratories throughout the world." ■

April Workshop: Human-Animal Bond and Grief

The second in a series of workshops about pet loss and bereavement counseling, entitled *The Human-Animal Bond and Grief*, will be held on Saturday, April 3 from 8:45 am to 3:30 pm at Cornell's College of Veterinary Medicine.

Featured speaker is Carolyn Butler, MS, director of the Changes program at Colorado State University's Veterinary Teaching Hospital, and a specialist in bond-centered veterinary practice, an approach that helps veterinarians respond simultaneously to the medical needs of animals and emotional needs of clients.

The workshop will address: bond-centered veterinary practice, normal and complicated grief, euthanasia with the client present, facilitation of decisions about euthanasia and treatment options, after-death issues, intervention in special situations, self-care for the practitioner.

"The nature of this material crosses the disciplines of veterinary medicine, human psychology, animal behavior, and professional counseling," says Jane Shaw, DVM, instructor in the college's department of molecular medicine and faculty supervisor for the Pet Loss Support Hotline program, workshop series coordinators.

For information or to register, contact Julie Keene, DVM Class of 2001, jck4@cornell.edu or (607) 277-8324.

Workshop sponsors include the Ithaca Mental Health Association, the Ralston Purina Company, and Waltham Brand Partnerships. ■

Institute Works To Improve Welfare of Animals

The Cornell Institute for Animal Welfare, established by the college in 1997, promotes interest in the well-being of all animals, whether in agriculture, laboratories, the wild, or as beloved companions to humans. The institute holds the distinction of being one of the first university-based programs in the country to provide grants for animal welfare research.

Katherine Houpt, VMD, PhD, professor of physiology at the College of Veterinary Medicine co-chairs the Cornell Institute for Animal Welfare with John Parks, PhD, associate professor of reproductive physiology at Cornell's College of Agriculture and Life Sciences. Houpt, a veterinarian for 35 years, has spent the last 26 years of her career studying animal behavior; she serves as director of the Cornell Animal Behavior Clinic. Parks is an expert in the basic and applied aspects of reproduction biology in domestic animals; he is also director of the Cornell Raptor Program, promoting wildlife conservation.

Currently, there are 13 research projects under the auspices of the institute that focus on improvements in animal welfare.

Alleviating Pain

Charles Short DVM, MS, PhD, professor of anesthesiology at the College of Veterinary Medicine, is conducting research to develop nontraumatic, nondamaging approaches for using animal models to test the effectiveness of pain medications. He recently was presented the first Merial International Prize for Management of Animal Pain; the prize is given for career achievement in

service, teaching, and research with an emphasis on pain in horses and companion animals.

Options for Antibody Production

Fred Quimby, VMD, PhD, professor of pathology at the College of Veterinary Medicine, has made available to the Cornell community an instrument that can manufacture certain types of antibodies. His continuing work points the way toward developing economical *in vitro*, or test tube, methods for antibody production that will eventually greatly reduce the use of animals. Antibodies have become important everyday tools in scientific research and diagnostic testing. Yet few people know that they are manufactured inside the bodies of live mice. The standard technique requires giving these animals cancer so they will produce antibodies in large quantities; after they have done their job, the mice are killed to harvest the antibodies.

"The manufacture of antibodies is a huge issue that has rightly been targeted by the National Institutes of Health as well as humane organizations," says Houpt.

Improving Animal Treatment

Mice aren't the only animals used as biological manufacturing plants. Today, more than 15,000 horses produce estrogen for the ever-growing number of women in the Baby Boom generation reaching menopause. Horses are kept in straight stalls for two consecutive weeks during which time their estrogen-rich urine is collected. Horses tend not to lie down in this type of stall even

though there is room to do so. Houpt is currently conducting research to determine whether this situation deprives horses of daily periods of REM sleep, thought to be essential to their health. While it is yet to be determined whether the horses can fall into REM sleep on their feet, preliminary studies show that they seem to become neither physiologically nor behaviorally stressed as long as they have hay in front of them, available for eating at all times.

Assuring Humane Housing

Several studies by Houpt focus on devising more humane housing for rabbits and dogs that are used in research studies. Traditionally, rabbits have been kept in individual cages. "They would much prefer to be housed, with hay, in the company of other rabbits," explains Houpt, "where they might socialize." A major deterrent to group housing has been aggressive behavior among males, even littermates, but research has helped find a solution: when male rabbits are castrated before puberty, they exhibit less aggressive behavior and are able to live peaceably as part of separate groups of male and female rabbits. Dogs used in research studies traditionally have been kept in cages or runs or have been tethered outside, either with or without bedding. Houpt is investigating how different types of housing affect the behavior of dogs kept in confinement, to develop more comfortable environs for animals in research settings.

Cows housed in the large-animal teaching and research unit in Cornell's College of

Researchers Identify Cancer-Causing Virus in Breeding-Stock Salmon

Researchers in Cornell's College of Veterinary Medicine, working with federal fisheries personnel, have made the first identification of a virus believed responsible for cancerous tumors in Atlantic salmon in the New England region.

The name given to the newly characterized virus is salmon swimbladder sarcoma virus (SSSV). It is not seen as a human health hazard.

The virus was identified by a team of researchers at the college: James W. Casey, PhD, associate professor of microbiology and immunology and a specialist in molecular virology; Paul R. Bowser, MS, PhD, professor of microbiology and immunology and a specialist in fish pathology; and Sandra L. Quackenbush, a molecular virologist then working in Casey's laboratory. (She is now an assistant professor at University of Kansas.) The Cornell scientists worked in cooperation with the US Fish and Wildlife Service.

The researchers used polymerase chain reaction (PCR) cloning and gene-sequencing techniques developed at Cornell to make the first positive identification of the virus, believed responsible for tumors that killed breeding-stock Atlantic salmon in the US Fish and Wildlife Service hatchery in North Attleboro, Massachusetts. The infected fish originally were collected from the Pleasant River in Maine and were part of a breeding program to restock Atlantic salmon in the river.

To date, this disease has not been seen in any commercially

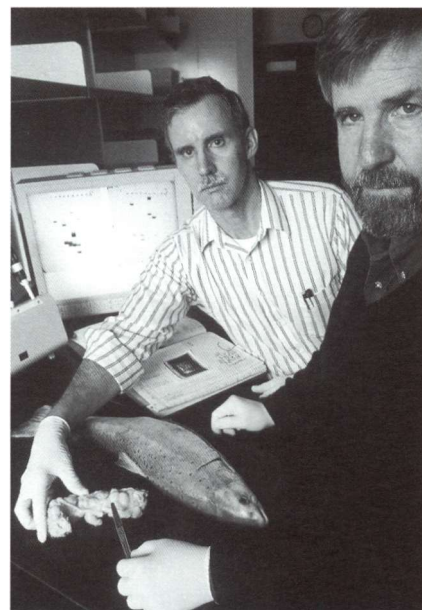
raised Atlantic salmon in the United States.

"We don't yet know how this virus is transmitted from one fish to another," Casey says. "This could occur through vertical transmission in reproductive products, the eggs and sperm of breeding salmon. Or perhaps through horizontal transmission, with the virus entering the bodies through the skin or gills, in water they ingest or on food they eat. Our concern is that the virus is in the environment; the levels of infection need to be determined."

"These viruses are generally species-specific, meaning that they only infect and cause disease in a single species. There is absolutely no evidence that this virus is a human pathogen," says Bowser. "But infection is a real problem for Atlantic salmon. The tumors are fatal, and it also appears that viral infection alone reduces vitality and reproductive success."

The salmon tumors are similar to viral tumors seen on the skin of a freshwater fish, the walleye, Casey says. His laboratory has identified five different retroviruses associated with tumors in walleye and perch in lakes in upstate New York. The walleye tumors usually do not kill the fish but rather seem to disappear spontaneously. Such regression of tumors is of interest to Casey, Bowser, and other researchers because an explanation for the phenomenon could lead to better treatment or prevention of human cancers.

SSSV is classified as a retrovirus, Casey says, because it contains hallmark sequence



UNIVERSITY PHOTOGRAPHY/CHARLES HARRINGTON

[left to right] Paul Bowser, PhD, and James Casey, PhD, in their laboratory, examining a swimbladder tumor from a 3-year-old Atlantic salmon.

similarities to other members of this group. There are many well-studied retroviruses that cause cancers in chickens, mice, cats, and humans, but SSSV is the first retrovirus of salmon that has been identified. "As natural habitats decline and investigators more intensively monitor aquatic animal health, additional tumors like these will be found," Casey says.

The Cornell scientists next plan to investigate virus transmission and examine various wild populations of Atlantic salmon. They hope to develop a rapid diagnostic test for SSSV that could help eliminate infected fish before the disease is transmitted to others.

"In the long term, this fish disease will be an excellent model to study the process of tumorigenesis and provide information relevant to the prevention of all cancers, whether human or animal," Casey says. ■



UNIVERSITY PHOTOGRAPHY/CHARLES HARRINGTON

[left to right] Faculty advisor Janet Scarlett, DVM, MPH, PhD; Mary Bean, DVM Class of 2002; and Anne Richards, DVM Class of 2001, examine a German shepherd during a VSPCA clinic.

Helping Shelter Animals

The Cornell veterinary students who make outreach visits to the Tompkins County SPCA have many stories to tell.

There's the story of the couple visiting the shelter who had been attracted immediately to the Rottweiler mix; he was a bear hug of a dog. But he displayed a condition called eyes-on-fire, and they worried he wouldn't be a healthy pet. They weren't sure they could adopt him.

And the story about the thin white kitten that had a chronic diarrhea problem. She was sickly and not attractive to potential adopting families; chances were that soon she would need to be euthanized.

The dog and the kitten, it turns out, are glad they met those veterinary students. While conducting a weekly clinic at the SPCA, the students examined the dog and the kitten, among other animals. They recommended the couple be told that the problem with the dog's eyes, known as bilateral entropion, is treatable with

surgery. With that, the couple reconsidered, and the odds improved considerably for the future of the big black-and-brown dog. After examining the kitten, the veterinary students changed her diet to a prescription diet for enteric problems; in a short while, she was a frisky kitten again, ready for a family.

The students are members of a veterinary student organization at Cornell, VSPCA, or Veterinary Society for the Protection of Cruelty to Animals, which currently provides a weekly physical exam clinic at the SPCA, to help get the animals there ready for adoption.

Veterinary students Rachel Meyer, Class of 2001 and organization president, and Jason Pintar, Class of 2001, vice-president, started the club for a two-fold purpose. "We wanted to give veterinary students exposure to shelters and education about sheltering issues," explains Meyer. "And we also wanted to give veterinary students, especially first- and second-years, more hands-on experience with animal physical

examinations," says Pintar.

Approximately 25 percent of the college's first- and second-year veterinary students are participating in the VSPCA outreach clinic (40+ students). "It's on a totally volunteer basis," explains Meyer. "It's educational as well as service-oriented. All participants are required to complete an orientation program that includes an introduction to sheltering issues and features faculty and professional speakers."

Janet Scarlett, DVM, MPH, PhD, associate professor of epidemiology at Cornell's College of Veterinary Medicine, serves as the group's faculty advisor. The student leaders coordinated plans with the SPCA's animal issues committee (earlier they had participated in the committee as part of their involvement in the college's Feline Club), and with SPCA executive director, John Spence.

Currently, students visit the shelter weekly to conduct the clinic: physical examinations, basic vaccines, antibiotic treatment, treatment for fleas and ear mites, diet modifications, deworming. They are accompanied by veterinarians from the college who volunteer their time to help supervise during each clinic.

"It's a good chance for first- and second-year students to get out of the classroom and gain some hands-on experience with dogs and cats," says Todd Deppe, DVM, one of the volunteer clinicians from the college.

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HELPING ANIMALS IN SHELTERS
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"It's a great program, the result of the students' efforts, enthusiasm, and dedication to the issues. And everyone benefits: our students, the SPCA, and the animals," says Scarlett. "There is no greater health problem in this country for dogs and cats than the 'disease' euthanasia. Our veterinary students must be encouraged to think about and participate in the solution to this problem."

The club received a grant from the college Alumni Association for some of its equipment needs. Many materials and equipment for the clinic also are donated. "The SPCA has been very supportive," adds Pintar, "even including exam room space for the clinic when they made building renovations recently."

Meyer and Pintar see several potential expansions for VSPCA's outreach efforts in the future: perhaps a grooming clinic, and a behavior check that might result in explanatory signs for the cages of animals that would indicate traits such as "I respond to sit and stay" or "I walk on a leash" to potential adopting families.

If you would like to support the outreach work of the VSPCA, please contact Alison Smith, the college's associate director of development, by email at <ars1@cornell.edu> or by phone at (607) 253-3742. ■

Pregnancy Research: **Low Birth-Weight Risks Begin Early**

Recent research findings may indicate that waiting until after conception to prepare for motherhood may be waiting too long. Reviewing thousands of ultrasound scans at a Scottish hospital, pregnancy researchers found that many cases of extremely premature delivery and poor fetal growth are likely to be determined as early as the first 12 weeks of pregnancy.

Results of the ultrasound survey are reported in the *New England Journal of Medicine* (Dec. 17, 1998) by Gordon Smith, MD, of the Laboratory for Pregnancy and Newborn Research at Cornell's College of Veterinary Medicine, together with Malcolm Smith, Margaret McNay, and John Fleming, all of the department of obstetrics and gynecology at University of Glasgow. The study was supported, in part, by the Wellcome Trust.

"We used to think that variations in birth weight were determined in the second half of pregnancy," says Gordon Smith. "Now it appears that conditions quite early in gestation, or perhaps even before conception, are contributing to low birth weight and the risk of extremely premature birth."

"We don't yet have enough information to recommend first-trimester ultrasound measurement as a diagnostic tool for extremely premature birth or fetal-growth restriction," Smith cautions. "Nevertheless, this finding could help explain why programs of nutritional supplementation for expectant mothers deemed to be at high risk of a low birth-weight baby typically only increase the baby's weight by 2 or 3 ounces." Poor

fetal growth may be determined before the woman knows she is pregnant or begins to receive prenatal care, he says.

The researchers began with the medical records for more than 31,000 pregnancies at the Glasgow hospital and eliminated from consideration all with complicating factors; the analysis was then focused on the remaining 4,229 pregnancies. Electronic calipers were used with each ultrasound image to measure crown-rump length (the entire head and body, minus the legs); each pregnancy was followed through to delivery. In a statistically significant number of cases, embryos (the first eight weeks of pregnancy) and fetuses (beyond eight weeks) small for their age during the first trimester were twice as likely to be born prematurely and three times more likely to fall into the smallest five percent of babies, the study found.

"A significant proportion of low birth weight and extremely premature birth seem to be determined at a very early stage," Smith comments. "When a baby is born prematurely there is often no obvious cause. Our study suggests that inadequate transfer of nutrients to the growing fetus may explain some cases."

The finding may indicate a benefit that could result from even earlier intervention. He suggests better nutrition and health care for women of child-bearing age who are likely to become pregnant. Waiting until after conception to prepare for motherhood may be waiting too long, Smith says. ■

Collaborations Key to Cancer Program

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The cancer program will integrate the work of researchers and veterinarians, assuring comprehensive applications of modern scientific and medical resources.

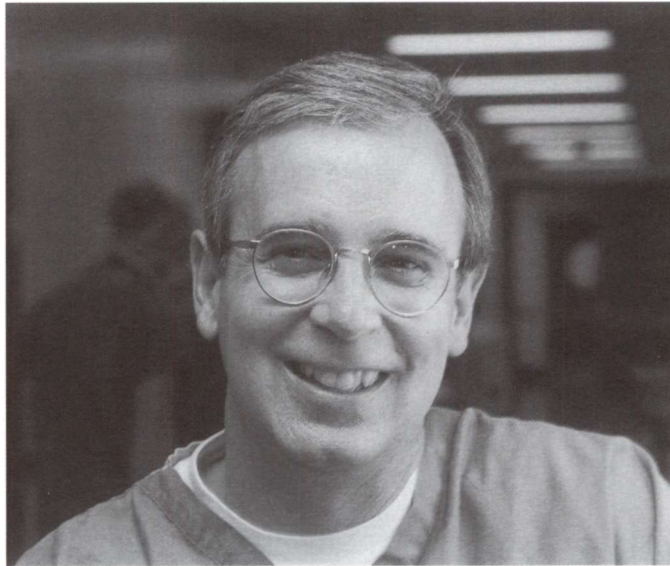
to identify a heretofore unknown enzyme or binding site leading to a new treatment. In addition, animal models, particularly cats and dogs, offer a fast translation of new discoveries from the laboratory to the clinical setting.

"If a model for human disease is found in dogs or cats," he explains, "the treatment is sometimes more meaningful to use in those species first because they are genetically diversified and living in the same environment — under the same sun, breathing the same air — as people."

The kind of care offered to animal patients in the college's Companion Animal Hospital, Harvey explains, will be informed by the research side of the program. However, no animal patients in the hospital will ever be used for experimentation. "Where there are conventional treatments that cure patients reliably, those will continue to be the treatments of choice," he says.

"But for cancers that don't have a good treatment or those that are poorly treated or managed, some innovations from the research side may benefit those cases," Harvey says, adding that it is important for clinicians to avail themselves of such opportunities because "the sad fact in oncology is that cancer usually wins eventually."

The best chance of turning



UNIVERSITY PHOTOGRAPHY/NICOLA KOUNTOUPES

Jay Harvey, DVM, medical director of the Companion Animal Hospital, during a break between surgeries.

Availability of animal models makes it possible for the college's cancer program faculty to test novel approaches that wouldn't be readily testable in a human system. And to do so rapidly.

that around, he explains, is through a flow of information among clinicians, researchers, and basic scientists across a range of disciplines.

"We have done a good job of treating cancer in a very conventional way," says Harvey. "However, our approach in the past failed to take advantage of the rich resources available at a great research university such as Cornell. The new cancer program will integrate the work of researchers and veterinarians, assuring the most comprehensive applications of modern scientific and medical resources."

Within the college itself, several faculty members are involved in biomedical research projects — ranging from cellular signaling to viral oncogenesis — whose findings are directly

applicable to cancer. [see accompanying stories in this article]

James Flanders, DVM, diplomate of the American College of Veterinary Surgery, associate professor of surgery in the department of clinical sciences, has his feet in both camps: research and clinical application. Flanders performs oncology surgery in the Companion Animal Hospital while also conducting research on therapies that focus on cell signaling in breast-cancer tumors in humans and dogs.

To promote interaction with those outside the college, as well, the plan is for biomedical researchers at the college — such as Richard Cerione, PhD, professor of pharmacology in the department of molecular medicine — to have laboratories both at the veterinary college and in the university's department of chemistry and chemical biology on the main campus. Arrangements such as this will offer students and faculty from the College of Arts and Sciences

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Research Faculty Discuss the Cancer Program

A Biomedical Researcher's Approach

The laboratory of Richard Cerione, PhD, professor of pharmacology in the college's department of molecular medicine, has been able to take advantage of the biomedical research environment within the College of Veterinary Medicine to discover a number of cellular signaling molecules that give rise to cancer. Working with the college's cancer program, he now hopes to interface this environment with the outstanding basic science that is happening elsewhere on the Cornell campus, he explains.

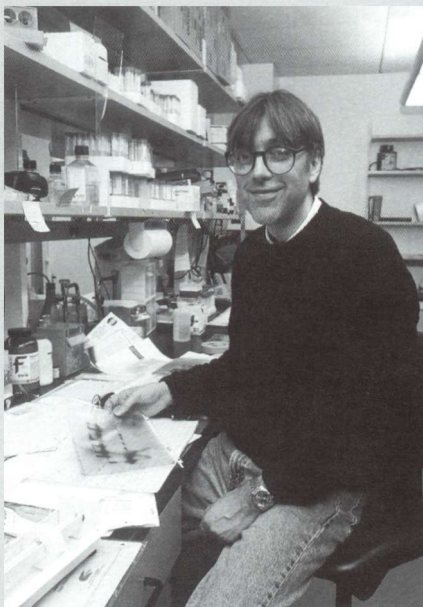
"The availability of animal models makes it possible for the college's cancer program faculty to test novel approaches that wouldn't be readily testable in a human system. And to do so rapidly. In terms of research productivity, this gives veterinary colleges a distinct advantage over human medical centers."

A veterinary college, he points out, also brings to basic researchers the advantage of a diversity of biologics — different animal species that provide a fresh look at how biology works.

"Many medical schools are, of course, geared toward traditional therapies and human trials that can take a decade or more to prepare for," Cerione says. "But because we are a veterinary college on what is truly an exceptional research campus, we have unique opportunities for implementing novel approaches that are emerging from a diversity of scientific disciplines including chemistry, physics, and engineering."

"Mixing clinical types with molecular types also helps focus the molecular types into thinking about what are the most biomedically relevant questions," Cerione says. "This kind of cross-fertilization always produces more than you dreamed possible."

Cancer researcher Richard Cerione, PhD, in his laboratory in the Veterinary Medical Center.



UNIVERSITY PHOTOGRAPHY/FRANK DIMEO

The Perspective of Basic Scientists

Jon Clardy, PhD, Horace White Professor of Chemistry in the university's department of chemistry and chemical biology, is an expert in the structure and function of biologically active small molecules. Clardy and his laboratory team have been very successful in discovering several small molecules active against cancer.

Such discoveries can happen here because Cornell is the only campus in the world that offers two critical technologies needed to determine the structure of molecules. One of these is the macromolecular X-ray crystallography facility at the Cornell High-Energy Synchrotron Source (with an X-ray beam about 1,000 times as intense as that in a laboratory), directed by Steven Ealick, PhD, professor of chemistry and chemical biology in the university's department of chemistry and chemical biology. The other is the supercomputer, one of the world's fastest, housed at Cornell's Theory Center.

These technologies make it possible to create three-dimensional structural renderings of molecules such as enzymes that, as the catalysts for chemical reactions, are critical to the survival of many disease organisms. Images can be rotated for analysis from different perspectives. Being able actually to see the structure of a specific molecule allows researchers to custom design other molecules that can interact with it in ways that subvert disease processes. Thus it is becoming possible to design molecules that will augment or turn off the function of proteins, including enzymes. Or design molecules to control the way genes are expressed in cells, thus controlling cell function. In the case of cancer, the result may be a new set of drugs targeted more precisely at tumors or even a whole new approach to the understanding of how to control cellular processes.

Essential for validating all these new ideas is the use of animal models, Clardy says. "What we are very good at is focusing on one molecule interacting with one enzyme, but real biological systems are so much more complicated than that. We can only answer the very important questions — such as, 'will the molecule interact with other enzymes?' or 'if it shuts down this one enzyme, are there alternative pathways that can circumvent the molecule's effect?' — by using a real biological system."

"Cancer is not one disease but many diseases, not just one thing gone haywire but many things," Clardy adds. "At the moment we have a very small picture of how to go about dealing with it. What needs to happen in cancer research is to throw it open to a variety of approaches. The cancer program at Cornell will do that."

Research Faculty Discuss the Cancer Program

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Cancer Cell Biologist Sees New Treatment Modalities

"The cancer initiative here will fill an important need in medicine," says Bendicht Pauli, DVM, PhD, professor of cancer cell biology in the department of molecular medicine at Cornell's College of Veterinary Medicine. "It will allow the testing of novel therapies directed to interrupt cancer progression — such as anti-angiogenic, anti-invasive, anti-adhesion, and anti-signaling treatment modalities. Such testing could be conveniently done on an outpatient basis on select canine and possibly feline cancers — such as osteosarcoma" says Pauli, who previously served for 10 years as chair of the college's former department of pathology and who established a small, experimental cancer research group in that department.

There will be intellectual stimulation, case reviews, perhaps possible seminars. This regular interaction will foster the creative exchanges we need for progressing the science.

"With our energy focused on building a clinical cancer program at the college and with the creation of adjacent laboratory facilities for both experimental and clinical oncologists," he explains, eyes lit with anticipation, "we will improve our consciousness and our awareness for each others' work for the benefit of our patients. We'll also set an intellectual environment conducive to the success of the new program." These interactions, he explains, include the offering of courses for veterinary students, residents, and graduate students in cancer biology and clinical oncology.

Pauli's own work focuses on basic cellular and molecular principles of cancer metastasis. In particular Pauli's group is interested in determining the role of endothelial cell-adhesion molecules in the colonization of select organs by malignant melanoma and breast cancers. Understanding the interaction between tumor cells and normal host cells, such as endothelial cells, may one day lead to new cancer therapies that will help stop the spread of cancer cells within the body.

It's a Paradigm Shift, Says Cancer Researcher

"It's an idea whose time has come," says Bud C. Tennant, DVM, Diplomate of the American College of Veterinary Internal Medicine, and James Law Professor of Comparative Medicine at Cornell's College of Veterinary Medicine, speaking of the college's cancer initiative.

What the cancer program represents is the integration of basic science and biomedical science with the clinical practice of medicine... This is a shift in the paradigm of the college.

"To ultimately affect animal and human cancer, we need to find not just treatments but the causes of cancer and ways of prevention," explains Tennant. "To do that, we need a sea change in our level of knowledge and understanding."

"Human models of cancer research," explains Tennant, "are limited to epidemiological studies and analyses of the responses to therapies. The cancer program here will not be constrained; we will be able to test new theories and hypotheses about cancers and to carefully control clinical studies."

Tennant, whose research focuses on cancer pathogenesis, studies the oncogenic capacity and process of the hepatitis B virus that causes liver cancer: how the virus produces chronic hepatitis and why and how specific genes are involved in cancer onset.

His research has the potential to lead to strategies, including rational drug design, for treating the chronic infection of hepatitis and perhaps even for effecting the cancer-causing nature of the virus.

"What the cancer program represents is the integration of basic science and biomedical science with the clinical practice of medicine," he says. "This is a shift in the paradigm of the college. If comprehensive integration works in the cancer program, it will be a template for all college activities."

An Integrated Cancer Program

CONTINUED FROM PAGE 8

space to set up shop in the Veterinary Medical Center, as well as the chance for clinically trained veterinarians and DVM/PhD students to mix with students in chemistry and chemical biology who are using the most current technologies in basic structural biology and chemistry. Cerione will be the first to extend his laboratory; other faculty laboratories will follow in the years ahead.

"What sets the Cornell Cancer Program for Animals apart from other cancer centers in the country," says Donald Smith, dean of Cornell's College of Veterinary Medicine, "is the physical proximity of a premier veterinary hospital to some of the most brilliant minds in both biomedical and basic research." Within less than a 10-minute stroll, he explains, cell biologists, pharmacologists, and surgeons in the college can be rubbing shoulders with faculty in one of the world's foremost departments of chemistry and chemical biology, all bringing their varying viewpoints to bear on a common problem.

And when faculty from various departments work closely together, so do their students. DVM and graduate students, as well as recipients of new residencies and fellowships in oncology, will be exposed to students from the basic sciences and given opportunities to trade ideas and techniques. Everyone benefits when veterinary students who know what a tumor really looks like in an animal offer this clinical perspective to chemistry students; in turn, chemistry students expose veterinary students to an up-to-the-minute understanding on

What needs to happen in cancer research is to throw it open to a variety of approaches. The cancer program at Cornell will do that.

the molecular level of how tumor cells go awry.

As a result of the college's cancer initiative, curriculum offerings within the college also will expand. In the past there has been no oncology course, per se, for veterinary students; now a formal course will be developed and added into the academic program. In addition, explain cancer program faculty, the framework of existing courses will be modified to become more relevant to studying and treating cancer. For example, the comprehensiveness of the graduate-level course in cancer cell biology will be expanded to include imaging capabilities and therapeutic capabilities. And the currently offered course in cell signaling will be tailored to include those aberrations in signaling that can lead to cancer.

In addition to the cancer program's fostering of collaborations between Cornell's research scientists and clinical veterinarians, and between science and veterinary students, other broad partnerships are anticipated.

"The cancer program," says Flanders, "will encourage collaborations between Cornell scientists and those doing oncology research in institutes and medical schools across the country." He anticipates that, as the word gets out about how

rapidly researchers here can translate their ideas into therapies for animals, others in the field will be inspired to take advantage of the spontaneous cancers found in animals.

"A surprising number of cancer researchers don't realize that companion animals have many cancers similar to those in humans," he explains. "Our tight affiliation with research will bring that to light."

The college's cancer initiative needs support from those outside the veterinary community if it is to develop into a clinical oncology program — in both curative and biological therapies for animals — strong enough to qualify for National Cancer Institute accreditation as a comprehensive cancer center.

The cancer program will encourage collaborations between Cornell scientists and those doing oncology research in institutes and medical schools across the country.

Speaking of the interrelatedness of animal medicine and human medicine, cancer program faculty suggest there is great potential for collaborations between the college's cancer program and human comprehensive cancer centers, such as University of Rochester Cancer Center and Memorial Sloan-Kettering Cancer Center in New York City.

Such collaborations stand to benefit both animal medicine and human medicine. ■

Toxicology Study: Common Lead-Poisoning Therapy Might Alter Immune System

A commonly used drug for reducing the toxicological effects of lead poisoning might alter immune function, according to recent findings by Rodney R. Dietert, PhD, professor of immunology and genetics in Cornell's College of Veterinary Medicine, who led the study.

The drug is Meso-2,3-dimercaptosuccinic acid (DMSA), also known as succimer, and is currently the only approved medication in the United States for children with high levels of lead.

Reporting in the current issue of the journal *Toxicology* (Vol. 132, No. 1, pages 67-79), the researchers say it is not known if the therapy has the same side effects in humans as was observed in rats. "Our study and previous studies prove that DMSA can do what it's supposed to. It chemically binds with lead in the recipient and gets that poison out of the body," says Dietert.

"We knew that lead harms the immune systems of rats, humans, and other animals, but no one had ever looked at DMSA's effects on the fetal immune system. This study provides the first evidence suggesting that DMSA chelation therapy could have problematic side effects for the developing immune system."

One cause for the immune system impairment, Dietert said, could be DMSA's effect on the availability of essential minerals in the pregnant rats and fetuses. A candidate mineral could be zinc, which is

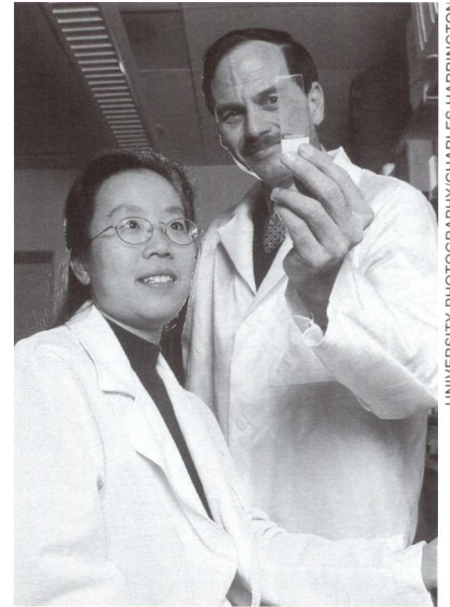
crucial for both development and maintenance of the immune system.

"This raises the question of whether supplementation (with zinc or other minerals) during DMSA treatment might protect against DMSA-induced immune alteration," the Cornell researchers wrote in their *Toxicology* report. "The identification of effective strategies to minimize DMSA-induced immunomodulation requires further study."

The Cornell study, conducted through the university's Institute for Comparative and Environmental Toxicology and the College of Veterinary Medicine, examined the effects of DMSA on pregnant rats, nursing rats and their offspring through three months of age.

DMSA was found effective in reducing the amount of lead reaching the rat embryos (through the placenta) and in young, nursing rats (through mother's milk). The chelation therapy for rats also reversed several harmful effects of lead exposure, such as altered body weight and spleen weight in rat pups and increased levels of tumor necrosis factor (TNF) and interleukin-4 (IL-4). Elevated levels of TNF and IL-4 are generally regarded as signs of a malfunctioning immune system.

But the offspring whose mothers had received chelation treatment during pregnancy displayed other persistent impairments to their immune systems — including suppressed delayed-type hypersensitivity and increased



UNIVERSITY PHOTOGRAPHY/CHARLES HARRINGTON

[left to right] Toxicology graduate student Suping Chen and Rodney Dietert, professor of immunotoxicology, in the laboratory.

interleukin-2 levels that, as adults, could leave them susceptible to infections or tumors.

Further study might help explain some of the immunotoxicological effects of lead. In some cases, lead exposure enhances certain immune responses, such as those associated with allergies and asthma.

"We still have a lot to learn," Dietert said. "Certainly we are not suggesting that a life-saving treatment like DMSA be abandoned. But a more complete understanding of all the factors involved should make this DMSA more beneficial for recipients of this treatment."

Funding support was provided by the National Institute of Environmental Health Science and the Environmental Protection Agency. Joining Dietert in the *Toxicology* report were Suping Chen, Cornell graduate student; Karen Golmemboski, postdoctoral associate at the time of the study; and Forrest Sanders, laboratory technician. ■

Book Fund Endowed

DuBois Jenkins, DVM '43, has ties with James Baker, PhD '38, DVM '40, the first director of the college's Institute for Animal Health that now bears his name — they were roommates in military service during World War II. Jenkins and Baker were two of six officers of the US Army Veterinary Corps assigned to a then-top-secret project on Grosse Isle, an island in the St. Lawrence River, to help develop a vaccine to protect cattle from rinderpest, a devastating disease caused by one of the morbilliviruses; such a vaccine would protect the North American livestock industry from the threat of biological warfare at the hands of Nazi Germany. The team succeeded in developing the vaccine. Results of their work, which significantly advanced the field of veterinary virology, was declassified and published in 1946.

Jenkins's wife, Doris Holmes Jenkins, BS '43 [College of Human Ecology], is also a proud Cornell alumna.

So it seemed only natural, they explain, for them to decide to establish a legacy that would benefit the James A. Baker Institute at Cornell's College of Veterinary Medicine.

The Jenkinse's gift funds a permanent endowment, the Doris and DuBois Jenkins Book Fund; proceeds from the fund will be used to support the acquisition or annual renewal of subscriptions to scholarly journals for the communal library at the Baker Institute. ■

People, Honors, and Awards

Several faculty members, residents, and graduate students of Cornell's College of Veterinary Medicine made presentations at the annual symposium of the American College of Veterinary Surgeons in October 1998, showcasing the college's clinical and research programs in large-animal surgery. They include: **John Bertram, Linda Dahlgren, Normand Ducharme, Lisa Fortier, Laurie Goodrich, George Lust, Hussni Mohammed, Alan Nixon, and Stacy Semevolos.**

Topics included "the effects of insulin-like growth factor 1 on the healing of collagenase-induced tendinitis in the horse," "polymerized fibrin IGF-1 composites for repair of full-thickness articular defects," "use of dynamic compression plate to repair medial condylar fractures that propagate proximally in the third metacarpal and metatarsal bones in horses," "scapulo-humeral luxation in large animals," "complications of surgery for laryngeal hemi-plagia in the horse," "growth factors in cartilage healing," and "cartilage resurfacing techniques," among others.

Robert E. Clark, DVM '52, has been named recipient of the Distinguished Life Service Award from the New York State Veterinary Medical Society. The award, which is the highest honor the NYS Veterinary Medical Society can award a member, recognizes membership of at least 35 years in the society and distinguished service to the profession.

Clark, who has been affiliated with the Miller-Clark

Animal Hospital in Mamaroneck for 46 years, was one of the youngest veterinarians to be named Veterinarian of the Year by the NYS Veterinary Medical Society in 1969. He has served as regional president and a member of the executive board of the Westchester/Rockland Veterinary Medical Association; he also has served as president of the NYS Association of the Professions. He was elected to the NYS Veterinary Medical Society's executive board in 1978 and quickly made his mark as an energetic and productive leader, serving as state society president in 1980.

A strong supporter of Cornell University and its College of Veterinary Medicine, Clark is a member of the university council, past chairman of the college development committee and annual fund, and past president of the college Alumni Association. He also has received the college's Daniel Elmer Salmon Award for Distinguished Alumni Service.



IMAGE LAB/ALEXIS WENSKI-ROBERTS

Corine Farewell, DVM '89, BS '83, has been appointed director of career development in the college's office of student services and admissions.

People, Honors, and Awards

CONTINUED FROM PAGE 13

Farewell, who was most recently manager of training and development for Iams Pet Food International in the Netherlands, has a strong veterinary professional background and corporate and international educational experience.

In her new position at the college, she is responsible for developing, managing, and seeking funding for career development programs to better prepare veterinary students for job searches and interviews, salary negotiation, practice ownership and organization, financial planning, and lifetime career development. She will coordinate formal and informal placement activities with alumni and also will develop and maintain databases of career placement opportunities available to graduates of the college. She also will maintain information on internships, externships, and other educational opportunities.

L. William Goodman, DVM '53, was named 1998 Veterinarian of the Year by the New York State Veterinary Medical Society. Following a tour of duty in the US Army Veterinary Corps, he joined his father, Lawrence W. Goodman, in private practice in Manhasset, NY, in 1956. In 1978 he sold the Long Island practice and opened a small-animal practice in Millbrook, NY, in rural northeastern Dutchess County, which he continues to own and operate. During his career he has been a member of three regional associations: Long Island, New York City, and Hudson Valley; he made his mark as a tireless, enthusiastic,

and results-oriented leader, serving elective offices in each organization. In 1987 he served as president of the NYS Veterinary Medical Society.

Goodman was honored as a mentor and a role model "whose philosophy of practice, commitment to organized veterinary medicine, and dedication to the animal kingdom symbolize what the award was created to recognize."

Margaret A. Hendricks, the college's director of development since July 1998, has been appointed to the position of the college's assistant dean for public affairs. She will be responsible for all college public relations and advancement activities, including development, alumni affairs, communications, and marketing.

Hendricks has a substantial background in the administration of higher education, having served at The Ohio State University and, most recently, Cornell's College of Human Ecology. She will report to Donald Smith, dean of the college, and will serve as a member of the college's executive committee.

Thomas J. Kern, DVM, associate professor of ophthalmology at Cornell's College of Veterinary Medicine, and **George V. Kollias, Jr., DVM, PhD**, Jay Hyman Professor of Wildlife Medicine at Cornell's College of Veterinary Medicine, along with Patrick Reynolds, a licensed African wildlife guide, will escort a tour titled "Kenya Under Canvas." The tented

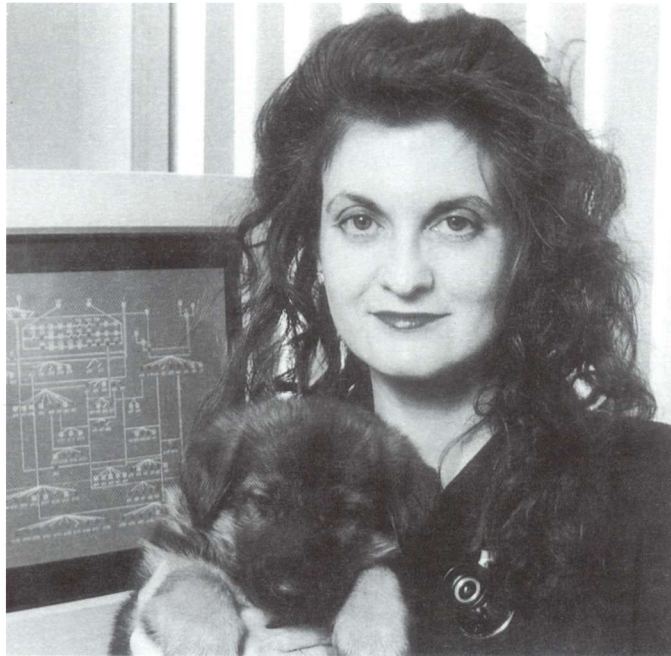
safari, a continuing education program that will be held from August 12 through 25, will highlight current developments and issues in clinical ophthalmology and wildlife and zoological medicine; veterinarians will receive 22 hours of continuing education credit for participation in the program.

For information, contact Kern at (607) 253-3032.

David A. Morrow, III, PhD '67, DVM '60, recently was honored as a 1998 Alumni Fellow by the Alumni Association of Pennsylvania State University, where he earned a BS in dairy science in 1956. He is a member of Penn State's board of trustees, past president of the Alumni Association, and a distinguished alumnus of the university's dairy and animal science department. A former faculty member at both Cornell and Michigan State, he has published more than 200 professional and technical articles. He is a charter diplomate of the American College of Theriogenologists, a member of the Society of Theriogenology, the American Veterinary Medical Association, and the American Association of Bovine Practitioners.

Sydney Moise, DVM, professor of cardiology at Cornell's College of Veterinary Medicine, has been selected by the American Veterinary Medical Association's Council on Research for the 1999 American Kennel Club Excellence in Canine Research Award.

Moise was one of the first persons to establish echo-



Sydney Moise,
DVM

cardiography as a useful diagnostic and research tool in veterinary medicine. Her research in various canine heart diseases led to the application of echocardiography for the diagnosis of congenital heart disease and improved the use of electrocardiography for the diagnosis of cardiac arrhythmias in dogs. The award will be presented by the American Veterinary Medical Foundation in June at the meeting of the American College of Veterinary Internal Medicine.



Kathleen M. Quinlan, PhD

Kathleen M. Quinlan, PhD, has been appointed director of the college's office of educational development. She brings an extensive background and expertise in faculty development, curriculum, and teaching in higher education.

She earned her doctorate in education from Stanford University and a bachelor degree in psychology from the University of Maine. She formerly served as lecturer and faculty development specialist at the Australian University Centre for Educational Development and Academic Methods in Canberra.

In her new position, Quinlan's primary responsibilities are to provide ongoing faculty development activities and support for the academic program through seminars, workshops, and individual meetings with faculty. In addition to offering programs and

IMAGE LAB/ALEXIS WENSKI-ROBERTS

activities to promote faculty development and stimulate teaching scholarship, she will work with faculty, curriculum design groups, course leaders, and courseware developers to develop curricular materials, provide guidance for the continued improvement of the entire curriculum, and help evaluate the academic program. Quinlan also will serve as an ex-officio member of the college curriculum committee, provide tutor training workshops, and assist with new student orientations.

Stephen J. Roberts, DVM '38, has been recognized by the New York State Veterinary Medical Society for Outstanding Service in veterinary medicine.

During his 30-year tenure in teaching, research, and administration at Cornell's College of Veterinary Medicine, he authored many articles on the health and diseases of horses and cattle and published two editions of his text, *Veterinary Obstetrics and Genital Diseases, Theriogenology*. In 1965 he won a national award for his research contributions to the control of dairy cattle diseases.

Roberts retired from Cornell as professor emeritus in 1972. Known as Mr. Polo, he coached the Cornell polo team for 25 years and recently completed a book on the history of polo at Cornell.

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People, Honors, and Awards

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Karel Schat, DVM, PhD, professor of avian medicine at Cornell's College of Veterinary Medicine, has been selected by the American Veterinary Medical Association's Council on Research to receive the 1999 Excellence in Poultry Research Award.

The award will be presented to Schat by the American Veterinary Medical Foundation in July at the American Association of Avian Pathologists luncheon during the AVMA annual meeting.

Ernest K. Smith, DVM '66, has been named the new Charlie Bild VIP at the University of Florida College of Veterinary Medicine.

The Bild VIP program provides unique learning experiences for practitioners, students, and staff; a select group of private veterinary practitioners visit the college for two to three months, participating in all aspects of teaching, lectures, clinical rounds, and conferences.

Smith, a small-animal practitioner and industry consultant, has worked in private practice in West Palm Beach, FL, for nearly 30 years.



COURTESY JAI SWEET

Jai Rajagopalan Sweet, PhD '96, has been appointed director of student services and multicultural affairs in the college's office of student services and admissions. She formerly served as director of student support services at the State University of New York College at Potsdam. He holds a PhD from Cornell University and master of science and bachelor of science degrees from the University of Delhi, India.

In her new position, Sweet will provide leadership, advocacy, and initiative for academic and counseling support programs that support the intellectual growth and psychological health of veterinary students. Additionally, she is responsible for developing strategies for recruitment and retention of minority students and will develop special programs aimed at fostering diversity in the student body. She will

manage and oversee student services programs within the college, oversee the development of placement and career planning programs, and provide guidance to student organizations. She also is responsible for advising senior administrative staff on issues related to minority affairs and student services, assist in policy decisions, obtain external funding for special programs, and supervise student services staff and other support staff.

Charles E. Short, DVM, PhD, professor of anesthesiology and pain management at Cornell's College of Veterinary Medicine, recently received the first Merial International Prize for Management of Animal Pain. The prize is given for career achievement in service, teaching, and research, with an emphasis on pain in horses and companion animals. Short is a founding diplomate of the American College of Veterinary Anesthesiologists and a diplomate of the European College of Veterinary Anaesthesia. He is co-editor of the textbook, *Animal Pain*, and has more than 300 scientific publications. The presentation was made during the opening ceremony of the Congress National Des Veterinaris Specialises En Petits Animaux in Nice, France.

Bonita S. Voiland has assumed full-time responsibilities as the college's assistant dean for hospital operations. She has held this position on an interim basis since July 1, 1998, during which time she also served the college as assistant dean for public affairs.

Voiland, whose background includes 15 years of experience in human hospital administration, is especially skilled in customer service issues. As assistant dean for hospital operations, she will report to Robert Gilbert, associate dean for clinical programs and professional service; she also will continue to serve as a member of the college's executive committee.

Michael J. Wildenstein, farrier at the Equine Hospital at Cornell's College of Veterinary Medicine, has produced an instructional video for draft horse owners; the video is entitled "Fundamentals of Draft Horse Shoeing."

Topics covered in the video include mechanical procedures, proper methods, theories, and rationale. The *American Farriers Journal* rates the video with "five stars in the horse owner category."

For more information, contact Wildenstein via telephone at (607) 253-3127, or via email at mjw25@cornell.edu. ■

Planning Your Legacy

by Chip Bryce, director of planned giving for Cornell University, (800) 481-1865

What is your reaction to the phrase *financial and estate planning*? What is your reaction to the word *legacy*? I trust the latter elicits a more palatable response than the former. However, they are inextricably intertwined. Legacies come in many forms: a legacy to yourself through a comfortable, worry-free retirement; a legacy to your children through guidance and the need and desire to intervene meaningfully in their financial lives or those of their children, or a philanthropic legacy to a church, charity, college, or other institution.

Prudent financial and estate planning allows you to maximize your personal legacies while minimizing your legacy to the United States Treasury. It is not illegal to pay less tax; in fact, the tax code is structured to allow individuals to supplant taxes with directed charitable gifts. Cornell's Office of Planned Giving assists alumni and friends of the university as they traverse the intersection of planning, taxes, and legacy. Planned gifts do more than facilitate a philanthropic legacy — they also can provide retirement income, annual financial support to heirs, and generational wealth transfers, all with significant tax advantages.

Knowing you care for animals and the people who love them, and that you also might be a Cornell graduate, I hope you will look to future columns for specific ideas on structuring individual legacies. ■

Saturday, April 10: Community Invited to Open House 1999

Back by popular demand: Open House at the College of Veterinary Medicine, scheduled for Saturday, April 10, 1999 from 10am to 4pm.

Each spring, veterinary students in Cornell's Doctor of Veterinary Medicine program invite families to visit the campus; this year's event will be the 33rd annual open house at the college.

All are invited to visit during Open House and speak with future animal doctors and other participants in this family-education event. Veterinary students will be on hand to provide assistance and answer questions during the self-guided tours.

Exhibits popular with children are *Teddy Bear ER* — where children can bring injured stuffed animals for repair by Cornell's own veterinary students; and *Surgeon Dress-Up*, where children gown-up in surgical scrubs and have photographs taken as they pretend to be veterinary surgeons.

Other exhibits include milking cows, veterinary dentistry, poisonous plants, a petting zoo, a parrot exhibit, a bird-of-prey exhibit, an anatomically painted horse and cow, examples of modern technology in veterinary medicine, and much much more.

For those interested in applying to Cornell's College of Veterinary Medicine, there also will be admissions information sessions throughout the day.

Admission to Open House is free. Families and children are encouraged to attend. ■

In Memoriam

Mendell Bartlett, DVM '56, of Madrid, NY, died on January 10. He is survived by his wife, Irma B. Bartlett.

Arthur S. Charles, DVM '41, of Lauderdale, FL, died on January 10. He is survived by his wife, Lila June Charles.

Jack Mindell, DVM '35, of Bradenton, FL, died on November 11, 1998. He was the founder of Colonie Animal Hospital in Colonie (near Albany), NY. He is survived by a daughter, Susan Mindell Blum of New York City and a son, Alan Mindell of Evergreen, CO.

Kenneth Palmer, DVM '59, of Eaton, NY, died on December 21, 1998.

Gerald J. Sacks, DVM '55, died on December 27, 1998.

Richard A. Smith, DVM '51, of Honeoye Falls, NY, died on December 20, 1998, while visiting family in Alaska. He owned the Honeoye Falls Veterinary Hospital until his retirement in 1985. He served as deputy examiner for the NYS Board of Veterinary Medicine. He was very involved in his community and his local church.

Smith was a retired member of the Genesee Valley Veterinary Medical Association and past president of the Western New York and Genesee Valley VMAs. He was a member of both the Advisory Council and development committee at Cornell's College of Veterinary Medicine. He was a proud recipient in 1994 of the Daniel E. Salmon Award for distinguished alumni service.

He is survived by his wife Anna Smith; a son Paul Smith of Rochester, NY; a son Neil Smith of Chicago, IL, and a daughter Joan Miller of Soldotna, Alaska.

Frederic B. Thomson, DVM '36, of Robeson, PA, died on October 22, 1998. He is survived by his wife Madelaine Thomson.

College Mourns Loss of Distinguished Faculty: **William C. Rebhun, DVM**

Services were Saturday, March 27, in Raymertown (Troy), NY, for William C. Rebhun, DVM '71. The professor of internal medicine and ophthalmology at the Cornell University College of Veterinary Medicine died March 24, 1999, in Ithaca, at 51 years of age.

Rebhun was born in Troy, the son of Margaret (Mrs. John) Maxwell of Eagle Mills, NY, and the late Charles Rebhun. He was a graduate of Cornell's College of Agriculture and Life Sciences (1967) and its College of Veterinary Medicine (1971). He was a diplomate of the American College of Veterinary Ophthalmology and American College of Veterinary Internal Medicine. For more than 28 years Rebhun was in active veterinary practice in both the Troy and Ithaca areas. He joined the faculty of the College of Veterinary Medicine in 1977 and served as head of the Large Animal Hospital from 1985 to 1988. In 1987 he received the Presidential Award of the New York State Veterinary Medical Association. He recently had received the Outstanding Service Award from the Southern Tier Veterinary Association, for which he served as president. Rebhun was the author or co-

author of more than 100 scientific articles in his specialties, veterinary ophthalmology and internal medicine, and was the author of a widely used text, *Diseases of Dairy Cattle* (Williams and Wilkins, 1995).

A frequently invited guest speaker at national and international conferences, Rebhun also was a popular lecturer at the veterinary college. But, as he often explained, he believed he was most effective as a teacher in a clinical setting, supervising students during rotations in the college's teaching hospital. He will be remembered by thousands of colleagues and clients as a warm and caring individual who touched the lives of many people and their animals.

He was a member of the American Veterinary Medical Association, American Society of Veterinary Ophthalmology, American Association of Bovine Practitioners, American College of Veterinary Ophthalmology, American College of Veterinary Internal Medicine, New York State Veterinary Medical Association, and Southern Tier Veterinary Medical Society.

He is survived by his wife, Bridget M. Barry, Cornell DVM '91; a son, Robert B. Rebhun, Cornell DVM Class of 2002; a daughter, April E. Rebhun; a brother, Robert Rebhun; and a sister, Susan Quinn. A memorial service is being planned for later in the year at the college.

Contributions may be made to the William C. Rebhun Memorial Fund, which supports veterinary residents in ophthalmology and bovine medicine at Cornell's Veterinary Medical Teaching Hospital. Contributions may be sent to the fund c/o Office of Public Affairs, Box 39, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853-6401.

ANIMAL WELFARE

CONTINUED FROM PAGE 4

Agriculture and Life Sciences are frequently used in studies related to both animal and human nutrition. Historically they have been kept isolated in tie stalls for the duration of experiments, perhaps weeks at a time. Through studies conducted by Txema Peralta, DVM, a veterinarian with Cornell's Center for Research Animal Resources, strategies are being developed to house the cows in groups of five or six per box stall, where they can get regular exercise and move about freely without compromising the integrity of the research.

One of the two research projects currently funded by the institute examines alternative ways to enrich the environment of Monk parakeets so as to alleviate their boredom when confined in cages, for research purposes or as pets. The research is being conducted by Donna Muscarella, PhD, senior research associate in the department of microbiology and immunology at the College of Veterinary Medicine.

Addressing the Needs of Companion Animals

In the past it has been thought that puppies that had received very little socialization with people — as with many research dogs — could not become well-adjusted pets. Studies by Houpt have shown that, with exception of a few breeds, control animals from research studies that are adopted by six months of age adapt to family life quite well.

One of the major animal welfare issues in this country is cat overpopulation. Houpt also is researching the temperament-testing of kittens at the local SPCA animal shelter to deter-

mine whether reliable predictors of successful adoptees can be developed to aid in the adoption of shelter cats.

It is an all-too-customary practice, explains Houpt, for ginger to be placed in the anuses of Arabian show horses to make them hold their tails up straight, a behavior thought to indicate alertness and excitability. Houpt is conducting studies to identify behavioral and physiological differences between gingered and nongingered horses. Results will be used to develop a field test reliable enough for detecting and eliminating gingered horses from competitions.

Lead is an environmental toxin to which companion animals are exposed, often during unregulated renovations of their owners' homes. Traditional chelating agents used to treat lead exposure are expensive and require that a pet be hospitalized. Studies are underway by Barbara Strupp, PhD, associate professor in the Division of Nutritional Sciences, to examine a new, highly specific chelating agent that is less toxic and less painful; owners will be able to administer it to their pets orally at home.

Improving Treatment of Food-Producing Animals

One of the concerns about which animal rights activists are most vocal is whether the highly intensive husbandry methods necessary for the dairy industry to be profitable also make cows sick. Studies conducted during the last decade by Yrjo Grohn DVM, PhD, an epidemiologist at the College of Veterinary Medicine, show that high milk yield does predispose cows to certain diseases, particularly mastitis. Grohn also

found that the highest (and lowest) yielding cows are the least likely to conceive. However, these findings do not necessarily imply that high milk yield, per se, causes disease and decreases conception. Management almost certainly plays a role in these findings.

The second study, by Quimby, involves devising a humane method to cause chickens to molt their feathers and stop laying eggs for a period so that they will begin a new cycle of high egg production. The customary method, withdrawing food, results in hungry, highly irritable birds that are inclined to fight with each other and injure themselves. Quimby has formulated a high-carbohydrate feed; on this feed, chickens can eat their fill and still molt and begin a new laying cycle.

Helping To Safeguard Native Wildlife

The institute has provided funding for a project that addresses the ever-increasing problem of population control of wild animals, specifically deer living in urban areas. The researchers are Paul Curtis, PhD, extension wildlife specialist in Cornell's department of natural resources, and Milo Richmond, PhD, associate professor in that department. Two antibodies used as contraceptive vaccines that are currently being tested show an impressive 90 percent decrease in fawning rate. To be effective, however, the vaccines contain an adjuvant. The most common, Freund's adjuvant, is highly irritating to deer. Curtis and Richmond are testing the effectiveness of a new phosphazene adjuvant that will not produce these unpleasant side effects. ■

CORNELL
Veterinary Medicine

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Calendar of Events

Events are at Cornell's College of Veterinary Medicine unless otherwise noted. Call 607-253-3200 with questions about continuing education programs. For a month-by-month listing of events at the college, check the college website: <http://www.vet.cornell.edu/calendar/>

April

10 33rd Annual Open House
16-18 Special Species Symposium

May

29 DVM Hooding Ceremony
30 Cornell Commencement

June

10-13 American College of
Veterinary Internal Medicine
conference, Chicago



UNIVERSITY PHOTOGRAPHY/FRANK DIMEO

Outreach Program Recognized

Dwight Bowman, MS, PhD, associate professor of parasitology at Cornell's College of Veterinary Medicine, during the university's Faculty Service-Learning Symposium in January, discussing the college's Healthy Pet Clinic at Southside Community Center, for which he is one of the faculty advisors. The Healthy Pet Clinic was one of five university outreach projects awarded financial support by the Faculty Fellows in Service Program of the Cornell Public Service Center.