



C O R N E L L

Veterinary Medicine

SUMMER 1998

Reorganization at the College: Teaching Hospital

Change is in the air at the college's Veterinary Medical Teaching Hospital. As part of the overall reorganization effort to better position the college as a leader in veterinary medicine and biomedicine, many departments and units are planning for improvements.

One change in the teaching hospital is that clinical faculty will report to the chair of the clinical sciences department for both academic and clinical service. Maurice (Pete) White, DVM '75, currently serves as department chair; his term expires July 1, and he plans to devote full attention to his academic duties as a professor of ambulatory and production medicine. A search committee has been formed to begin the search for a new chair of clinical sciences. Hospital staff will report to Assistant Dean Bonita Voiland, MS, who will be responsible for hospital operations on an interim basis beginning July 1. Voiland, who will retain her current responsibilities as assistant dean of resources, marketing, development, and public affairs at the college, has 15 years of experience in hospital administration at Crouse Irving Memorial Hospital in Syracuse, NY, and Park Ridge Health System in Rochester, NY. Francis Kallfelz,

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Carrot Chemical Blocks Cancer's Cell Division: How Is the Surprise

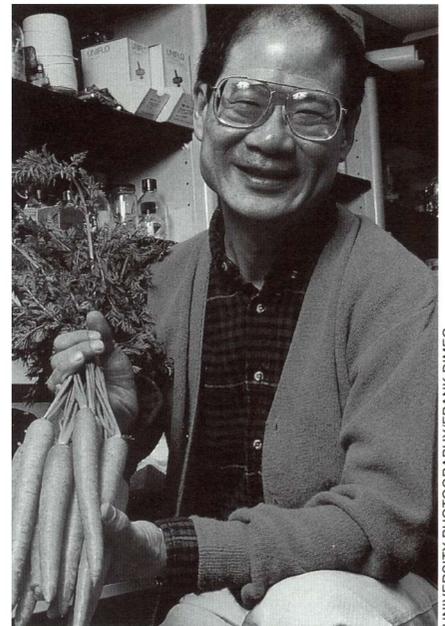
A common chemical derivative of vegetables has been used by college researchers studying leukemia to block the uncontrolled cell division associated with cancer.

The chemical is retinoic acid, a product of vitamin A, which the body manufactures from carotenes, the compounds found in a wide assortment of yellow-orange vegetables and fruits, from carrots and sweet potatoes to pumpkins and apricots.

Retinoic acid reverses the growth-promoting effects of oncogenes, the mutated genetic material that induces cancer, says Andrew Yen, MS, PhD, a professor of pathology and director of one of the cancer cell biology laboratories in Cornell University's College of Veterinary Medicine.

The finding, which to date has been restricted to the test tube level, could lead to enhanced therapies for those cancers, including leukemia, which seem to respond to retinoic acid. The research also highlights the cancer-prevention role of carotenes.

Yen reported the cell growth-arresting function of retinoic acid March 30 in New Orleans at the annual meeting of the American Association for



UNIVERSITY PHOTOGRAPHY/FRANK DIMEO

Andrew Yen, cancer cell biologist

Cancer Research. More details are in an article prepared for the association's journal, *Cancer Research*. Previously, progress by Yen's laboratory in explaining the role of retinoic acid was reported in a series of articles in several journals, including *Blood*, *European Journal of Cell Biology*, and *Experimental Cell Research*.

Retinoic acid is a metabolic product of retinol, the active form of vitamin A. The compound had been shown by other researchers to regulate normal cell growth and differentiation. The surprising news

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Beyond Conventional Wisdom

Convention dictates that deans provide the vision for the college's future. Rather than attempting a blueprint, I suggest we capitalize on the powerful challenges and opportunities already facing our profession.

The college's foremost responsibility is to provide leadership to the profession in this time of great change. For those in the practicing community, change is manifested by increasing specialization of animal health delivery and an increased emphasis on maintaining health as compared to diagnosing and treating disease. There is greater emphasis on large facilities, sharing of resources among practices, and of involving non-veterinarians in practice ownership and management. The latter probes at the very heart of professional identity and has penetrating sociologic and medical implications.

As in other industries, alliances, liaisons, and joint ventures among segments of the veterinary profession have replaced more traditional growth by acquisition and merger. Business commitments are more fluid, dynamic, and responsive to financial pressures. Global markets for veterinary products, diagnostic services, and biologicals create additional opportunities for the vigilant, as well as pressures for those content with the status quo.

Cornell is proud of the quality of its veterinary education. We have a faculty that accepts teaching as a scholarly activity. We have an innovative, case-based curriculum that focuses on learning as well as teaching.



IMAGE LAB/ALEXIS WENSKI-ROBERTS

We have outstanding students, motivated to accept shared responsibility for their learning. And we have a program in educational development that provides support and opportunities for growth for faculty in their role as educators.

Recent advances in our understanding of the nature and development of professional knowledge have the potential to influence the way we approach experiential learning. To characterize the ways students develop professional expertise requires that teachers understand the advantages and limitations of the type of learning that now occurs in our teaching hospitals. Outsourcing more of our clinical education to specialized practices in non-university settings must be coupled with development of rigorous assessment criteria for student learning and development of professional expertise in these environments.

Veterinarians and veterinary researchers are qualified uniquely to contribute to the understanding of both human

as well as animal biology. To capitalize on this potential will require that veterinarians not be constrained to engage solely in research that has an identifiable and immediate impact on animals. Inasmuch as boundaries dividing some disciplines are disappearing, veterinary researchers must forge meaningful partnerships with scientists engaged in biomedical and basic biological research. As positions of full partnership are created within this broader scientific community, veterinarians will recognize the unique strengths and rich resources of our animal-based environment. To have the greatest impact, veterinary scientists must extend their research programs all the way from the most basic to the clinical application.

Although it is not possible to predict accurately which fields are likely to dominate research in the next decade, we believe that three areas hold special promise for veterinarians; these are target areas for growth at Cornell: genomics and medical genetics, clinical oncology and cancer biology, and bacterial infectious diseases. We are focusing our energies and making investments in these areas.

As a college, we are committed to expand beyond convention and create structures that will encourage us to be fluid, dynamic, and responsive — as veterinarians, as scientists, and as educators.

A handwritten signature in cursive script that reads "Donald F. Smith".

Donald F. Smith, dean

Answering Questions about Fertility and Infertility

Thanks to television we have indelible images of the instant before fertilization takes place — of all those gyrating sperm swarming that solitary egg. The videotapes in Susan Suarez's laboratory show quite a different picture. While their flagella are valiantly beating away, these sperm aren't going anywhere. They're stuck. By the head. Absolutely.

This entrapment of sperm in a reservoir just inside the oviduct has been seen in horses, pigs, cattle, sheep, mice, rabbits, and hamsters. It most likely occurs in humans, as well. Just before ovulation, a small number of sperm are released to swim upward toward the awaiting egg. If they all were freed, so studies in the pig show, the egg would be fertilized by more than one and fail to develop. It seems, then, that a stop at this waystation is essential for fertilization.

But what is it that traps sperm at the base of the oviduct? And what lets only some of them go?

Answering these questions is a current phase in the life work of Susan S. Suarez, '71, MS, PhD, an associate professor of anatomy at the College of Veterinary Medicine. She has been studying sperm motility since she was a postdoctoral associate in the early '80s.

"I began with rabbits, flushing out their oviducts at the time of ovulation to see where the sperm were, what they looked like, what they were



UNIVERSITY PHOTOGRAPHY/CHARLES HARRINGTON

Susan Suarez in her laboratory, explaining a detail about calcium signals

doing," Suarez recalls.

This visually descriptive approach is novel in a field where a biochemical approach is usually the first tack. Right from the start Suarez stood out. And her work has attracted consistent support from the National Science Foundation (NSF), United States Department of Agriculture (USDA), and National Institutes of Health (NIH).

She's currently engaged in two distinct but interrelated research projects. One, sponsored by the NIH, looks at how sperm change in their movement patterns as they make their way through the reproductive tract. She's found that, at the site of fertilization, sperm change from moving straight to

moving in a circle, a process called hyperactivation. And that hyperactivation is "switched on" by calcium.

To make this discovery 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.

"We now know calcium is the messenger that signals the sperm's change in direction," Suarez says. "But we're still a long way from understanding the entire pathway that causes the calcium levels to rise inside the cell."

Her other project has recently received \$280,000 in support from the USDA. It examines the waystation question: the mechanisms governing the reservoir of sperm just inside the oviduct.

The buildup occurs, she says, when thousands of sperm become attached to the cilia on the oviduct's epithelium. They do so, she's found, because of a lectin-like molecule on the sperm itself. This molecule sticks to fucose in a specific configuration with other sugars that are part of glycoproteins on the surface of the oviduct wall.

Throughout the reproductive cycle these sugars remain on the oviduct's epithelium, Suarez says, so it can only be a change in the sperm that would account

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FERTILITY CONTINUED FROM PAGE 3

for their release. She's currently studying the chemical characteristics of the lectin in order to find out how.

"For 40 years scientists have known about capacitation — when sperm first come out of the male they cannot fertilize until they have undergone changes in the female tract," Suarez explains. "When we mimic that change in a petri dish using bull sperm, they no longer stick to the epithelium. We have preliminary data indicating that at about the time of ovulation something is secreted down the oviduct that capacitates the sperm — they become unstuck and are ready to fertilize."

As to why only a small number are released, Suarez speculates that if the substance that changes the lectin on the sperm is produced by the egg at the top of the oviduct and diffused gradually downward, it might only affect those sperm at the uppermost part of the reservoir.

An offshoot of Suarez's work on this aspect of sperm motility has immediate application for promoting the efficiency of artificial insemination of cattle. It is known that during artificial insemination there is some inadvertent sticking of sperm to the wall of the uterus. Genex Cooperative, Inc., is currently fieldtesting an additive — for which Suarez recently applied for a patent — that, when mixed with bull semen, minimizes such sticking.

"Bulls are very valuable," Suarez notes. "If you could double the number of cows that could be inseminated from one bull that would be very useful."

The same principle could

someday support the development of a uterine flush to increase the efficiency of natural mating among thoroughbred horses.

In the long run, Suarez's work also may result in new treatments for human infertility. In cases where sperm count is low, her research could lead to development of a carbohydrate that would boost the ability of sperm to move up the fallopian tube. Conventional treatments for infertility requiring laboratory manipulations — *in vitro* fertilization and intracytoplasmic sperm injection — cost upwards of \$10,000 per pregnancy. Many insurance companies won't cover such costs. Suarez's *in vivo* technique would, potentially, be simpler and much less expensive.

On the diagnostic side, when fertility is unexplained yet sperm look good, perhaps it's their lectin that is abnormal. If so, a test could be developed to detect this.

The same scientific knowledge, flipped around, could lead to effective means of contraception. For example, a cervical cap made of a polymer with the appropriate carbohydrate, Suarez explains, would trap sperm on its surface as absolutely as they are trapped in the oviduct's reservoir. ■

CARROT CHEMICAL CONTINUED FROM PAGE 1

in his research studies, explains Yen, is not that retinoic acid acts as an anti-carcinogen, but rather *how* it does so.

"Retinoic acid has the capability to reverse the outcome of oncogenes," says Yen. "In science, all things are never what you expect."

Retinoic acid, Yen explains, describing his experiments with cell cultures, can use the same chemical-signaling cascades as a carcinogen does. However, a carcinogen aids the growth of cancer cells; retinoic acid somehow switches the expected signal and arrests the growth of cancer cells.

"Now we need a deeper understanding of how retinoic acid causes these changes — and exactly which molecules are affected. In my dreams there is a single effector, but it's more likely there are several."

Ongoing studies in the Yen laboratory, supported in part by the National Cancer Institute and the USDA's Program in Human Nutrition, aim to explain exactly how retinoic acid works on oncogenes and whether other, related compounds would be more effective in chemotherapy. As a result, oncologists might be able to fine-tune the chemotherapy cocktails given not only to leukemia patients but to patients with other types of cancer, as well, Yen suggests.

"In the meantime," he says, "I think we're adding evidence that an adequate supply of carotene in the diet is obviously beneficial for anyone who wishes to stay healthy and avoid cancer. This is one more reason," Yen smiles, "to listen to your mother and eat your vegetables." ■

Genetic Link Found to Blindness in Dogs: Possible Application to the Disease in Humans

The most widespread cause of inherited blindness in dogs and a similar human disease spring from mutations in corresponding genes, according to researchers at the College of Veterinary Medicine's James A. Baker Institute for Animal Health and the Fred Hutchinson Cancer Research Center in Seattle.

The discovery of the probable genetic correlation, made by the two groups of scientists who are collaborating on a map of the canine genome, is reported in *Proceedings of the National Academy of Sciences* (March 17, 1998).

The researchers say that the genetic defect responsible for progressive rod-cone degeneration, called *prcd*, a form of progressive retinal atrophy known to cause blindness in at least five dog breeds, appears to be the canine version of the human gene defect producing RP17, one of numerous forms of retinitis pigmentosa, a leading cause of familial blindness.

Before this latest research, no association had been suspected between RP17 and *prcd*. Now the researchers consider it likely that RP17 and *prcd* spring from mutations in corresponding genes in humans and dogs.

"If this is true, the identification of the *prcd* gene may lead to an unequivocal diagnostic test for dogs and also to gene therapy methods for *prcd* in dogs — which eventually may be applicable to human RP17 patients," says veterinary ophthalmologist and geneticist Gregory Acland, BVSc, the lead author of the report and a senior



IMAGE LAB/LEXIS WENSKI-ROBERTS

research associate in the laboratory of Gustavo Aguirre, VMD, PhD, the university's Alfred H. Caspary Professor of Ophthalmology.

"This is an important finding for the field of canine genetics since it represents the first use of the map for identifying a disease locus," says Elaine Ostrander, a molecular biologist in Hutchinson's clinical research division and a co-author of the report.

Recent advances in genetic therapy may allow doctors to treat retinitis pigmentosa (as well as rod-cone degeneration in dogs) by cloning the normal gene, inserting a copy into a transfer vector such as a harmless virus and injecting the gene-carrying vector into the back of the eye. The transfer of the normal gene to diseased retinal cells might prevent or reverse the disease.

Gregory Acland (left) and Gustavo Aguirre (right), examining a Portugese water dog

Aguirre, Acland, and Kunal Ray, MS, PhD, a molecular geneticist, form the core of the Cornell team that has been responsible for most of the research to date on the underlying causes of canine progressive retinal atrophy (PRA), a group of at least seven clinically similar but separately inherited retinal diseases that Aguirre has studied since 1972. Most of the 60 or more breeds that can develop PRA are suspected of having *prcd*, a disease that causes dogs born with normal vision to develop to night blindness and then total blindness. The disease only becomes evident after dogs reach reproductive age.

"It is exciting that we now

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People, Honors, and Awards

Gustavo Aguirre, VMD, PhD, Alfred H. Caspary Professor of Ophthalmology at the college, and **Joanne Bicknese**, DVM '78, veterinary professional services manager for North American operations at Merial, Ltd. in Iselin, New Jersey, have been elected to the board of trustees for The Seeing Eye, Inc. in Morristown, New Jersey.

Lewis Berman, DVM '57, was named Veterinarian of the Year by the Veterinary Medical Association of New York City for the many years he has served the association and the veterinary profession in an exemplary and distinguished manner.

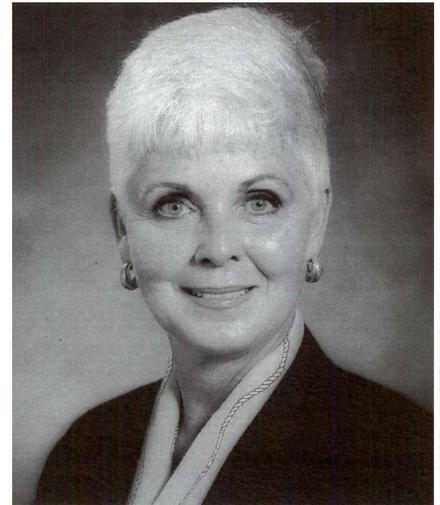
Carol Cardona, DVM, PhD, postdoctoral research associate in the college's department of microbiology and immunology, has been announced as a recipient of a Ford Foundation Postdoctoral Fellowship for Minorities award, the first such award at the college. The program is administered by the National Research Council. The fellowship includes a \$25,000 stipend, cost-of-research allowance, and institution allowance. Cardona is working in the laboratory of Karel Schat, DVM, PhD, professor of avian medicine, conducting research studies based on chicken infectious anemia virus.

An article entitled "Concept Mapping To Facilitate Veterinary Students' Understanding of Fluid and Electrolyte Disorders," co-authored by **Katherine Edmondson**, PhD, the college's assistant dean for learning and instruction, and **Donald Smith**, DVM, dean, was

published in *Teaching and Learning in Medicine* 1998 (Vol. 10, No. 1).

Patricia O'Connor Halloran, DVM '39, was honored recently by the Mud Lane Society for the Renaissance of Stapleton for her years of service to the Staten Island community. Halloran, a founder of the society, began veterinary practice in 1940 in her father-in-law's Halloran Animal Hospital in Stapleton, where her late husband John Halloran, Jr., and her late son Jack, also practiced (she is now retired). In 1942, she began a 28-year career as the Staten Island Zoo's resident veterinarian, the only woman zoo veterinarian in the nation at that time. She gained international reputation in the field through her articles, lectures, and attendance at zoological seminars around the world.

Margaret Hendricks, MA, BS, has joined the College of Veterinary Medicine as director of development. In this position, she is responsible for development programs to secure private support for the college, including individual giving, planned giving, and corporate and foundation relations. Most recently director of the 1998 National Conference on Volunteerism, a special project of Cornell's College of Human Ecology, Hendricks brings the college a wealth of experience in development and major gifts work. She formerly served at The Ohio State University at Marion as director of external affairs and expansion and associate director of the regional campus; while at the university,



Margaret Hendricks

she also held positions including founder and director of The National Council of Ohio State Women, and development officer for *The Critical Difference for Women Initiative*, a project of the Office of the President. Her background also includes more than 20 years of experience in teaching and educational administration.

Patricia Thomson Herr, DVM '60, recently published a book entitled *The Amish Arts of Lancaster County*, in which she explores the development and use of the arts, design, and style within the Amish home, based on a private collection of objects associated with Amish culture. The collection will be on exhibit at the Heritage Center Museum of Lancaster County from April 24 through December 31 of this year. (Books are available from the museum at 1-717-299-6440.)

Peter Nathanielsz, MB, PhD, ScD, MD, James Law Professor of Reproductive Physiology, and director of the Laboratory for Pregnancy and Newborn Research at the college, has been elected by England's Royal

College of Obstetricians as a Fellow *ad eundem*, an honorary title given in recognition of a colleague whose work was done outside England.

David Robertshaw, BVMS, PhD, professor of physiology at the college, was the speaker at the Cornell Club of Mid America's April meeting at the Kansas City Zoo, a part of the Cornell Alumni Federation Speaker Series. His talk was entitled "The Lions in Winter: How Big Cats Keep Warm."

Rory Todhunter, BVSc, MS, PhD, assistant professor of surgery in the college's department of clinical sciences, and recipient of the 1997 Pfizer Animal Health Award for Research Excellence, presented the Pfizer Award for Research Excellence Seminar at the college in late March. His talk was entitled, "Canine Hip Dysplasia: Linking the Phenotype with the Genotype." The annual Pfizer Animal Health Award for Research Excellence recognizes outstanding research effort and productivity and the advancement of knowledge in veterinary medicine.

In Memoriam

Paul Kahl, DVM '40, died in January in Norwalk, Connecticut. Semi-retired in 1980, he was a partner in the Norwalk Veterinary Hospital. He had been a member of the executive board of the Connecticut State Veterinary Medical Association, the American Veterinary Medical Association, the American Association of Retired Veterinarians, and the Cornell Club of Fairfield County. He is survived by his wife, Julia B. Kahl, a son, three daughters, and two sisters.

Robert C. Morris, DVM '78, died on March 28 in Highland, Illinois. He was a veterinarian with Veterinarian Services Ltd. of Breese, Illinois, and a member of the Southern Illinois Veterinary Medical Association, Illinois State Veterinary Medical Association, American Veterinary Medical Association, American Association of Bovine Practitioners, and American Embryo Transfer Association. He was an avid long-distance runner. He is survived by his wife, Wanda Hemker Hoerchler Morris; a son, Stephen Morris; two stepdaughters, Blair Hoerchler and Ann Hoerchler; and his mother, Jean Morris.

Ralph Povar, DVM '35, died on February 12 in Scottsdale, Arizona, where he lived. Before he retired, he had been in private, mixed veterinary practice for 55 years. He was a member of the Rhode Island Veterinary Medical Association, for which he had served as president; the Massachusetts Veterinary Medical Association; the Arizona Veterinary Medical Association; and the Northeast Veterinary Medical Association, for which he also had served as president. In 1995, he established a gift annuity to the College of Veterinary Medicine at Cornell University for the Dr. Ralph and Molly Povar Memorial Scholarship, in tribute to his wife.

Wilma Elise Spomer, MS '67, PhD '69, died on January 23 in Urbana, Illinois. She had served as a research specialist on the faculty at the University of Illinois.

John Richard Tweddle, DVM '43, died on April 23 in Pine Bush, New York, where he had been a veterinarian in private

practice. He was a member of the Hudson Valley Veterinary Medical Society and the New York State Veterinary Medical Society, which had awarded him Honor Roll status. He is survived by three daughters and one son; his brother, Harry V. Tweddle, of Florida, is a Cornell DVM '55. ■

REORGANIZATION CONTINUED FROM PAGE 1

DVM '62, PhD, James Law Professor of Medicine, and current director of the Veterinary Medical Teaching Hospital, will begin a research sabbatical in July at Johns Hopkins University College of Medicine in Maryland to conduct studies in molecular biological techniques and applications to nutritional problems; on his return to Cornell, he plans to devote full attention to his professorial duties.

The chair of the clinical sciences department and the assistant dean of hospital operations will report to the college's new associate dean for clinical programs and professional service, Robert Gilbert, BVSc, MMedVet, who assumed his official duties as associate dean on January 1 of this year.

"We'll be assessing the teaching hospital's current structure, procedures, and practices and looking for ways to strengthen effectiveness, efficiency, and customer service," says Gilbert. "Together with the clinical faculty and hospital staff, we hope to make substantive changes that everyone agrees are beneficial." ■

How To Examine an Elephant:

Cornell's Wildlife Health Program

Turtles (painted, Eastern box, wood, snapping), snakes (Northern milk, garter, rattle), lizards, iguanas, bald eagles, Canada geese, owls (barred screech, great-horned), hawks (red-tailed, Cooper's), robins, crows, grouse, cardinals, great blue heron, cormorants, ducks (mallard, wood, ruddy), yellow warblers, pigeons, goldfinches, wild turkeys, barn swallows, turkey vultures, killdeer, squirrels (grey, red), porcupines, opossums, white-tailed deer, chipmunks, woodchucks, cotton-tailed rabbits, mink, bobcats, black bears, foxes (grey, red), snow leopards, Asian elephants.

During the past year, the wildlife health program at the College of Veterinary Medicine has provided care for all these and more. The program provides a multidisciplinary approach to medical and surgical care for privately owned, nondomestic reptiles, birds, and small mammals, as well as for zoo animals and native wildlife.

Cornell's wildlife health program is one of only a handful in the country; it was founded in 1992 with the arrival of George Kollias, DVM, PhD, at the College of Veterinary Medicine. As the university's Jay Hyman Professor of Wildlife Medicine, Kollias holds the only endowed chair of wildlife medicine in the world. Today, Kollias directs the program and its education, research, and public service activities with nondomesticated companion animals, native wildlife, and zoo animals.



Noha Abou-Madi, examining Siri, an Asian elephant at Burnet Park Zoo

Kollias; clinical instructor Noha Abou-Madi, DVM; and Marsha Zgola, veterinary technician, currently juggle the clinical and service work of the program during a search for a postdoctoral associate to share the caseload.

Native Wildlife in the Hospital

More than 400 wounded and sick native wild animals — birds, small mammals, and reptiles — are brought to the Veterinary Medical Teaching Hospital for care each year. Most are treated in the clinic of the hospital's wildlife and exotic medicine service, then released, sent to rehabilitators, or placed in zoos or programs.

"Many of the animals have been hit by cars, or have been shot, or have flown into buildings," Kollias says. "One of the biggest problems is animals

wounded by cats and dogs."

One of the most challenging cases this year was a bald eagle that had been shot last October in Richford, New York. Thirty-six shot pellets were identified in its wing. The eagle required two surgeries and intensive care for three months. Unable to ever fly again, it found a hospitable home in the Cornell University Raptor Program.

Veterinary students participate in daily rounds in the wildlife clinic. They learn by watching and questioning each case and developing familiarity with various species; once they have gained experience, they have the opportunity to act as student supervisors in the clinic. "In addition to being a clinical service, our care of native wildlife is an invaluable teach-

ing and learning opportunity," says Kollias.

Exotic Animals in the Hospital

Nondomesticated companion animals, such as tropical birds, tortoises, iguanas, and snakes, and other small reptiles, also are included in the group of patients cared for by the wildlife health program through the teaching hospital's wildlife and exotic medicine service.

Native Wildlife: Fieldwork

As a complement to working with individual wild animals from a humane perspective, the program is currently engaged in three population-related projects: two species-reintroduction projects, and a study of an emergent, highly contagious



A golden eagle during an eye examination at the teaching hospital

disease among Eastern house finches. The projects are a focus of research pursuits for graduate students in the program and also provide teaching-learning environments for veterinary students.

TURTLES. The Blanding's Turtle Head Start Program began in 1994 as a collaborative effort with The Nature Conservancy and the New York State



A hatchling Blanding's turtle in the Head Start program

Department of Environmental Conservation. The Blanding's turtle (*Emydoidea blandingii*) is listed as threatened in New York State with only two known populations. Once the female lays eggs in the nest, the predation rate by raccoons and rodents is between 98 and 100 percent. Young turtles are threatened by blue herons, snapping turtles, raccoons, and skunks. The project's goal is to give the turtles a head start — hatchlings are collected at a preserve in late summer and brought to Cornell; wildlife health program veterinary students and staff rear the hatchlings in a disease-free environment to a size where predation is limited and then release them back into the wild. "The project also provides us an opportunity to study the relationship between rapid growth and reproduction," Kollias says. So far, 44 four- to five-inch turtles (half their adult size) have been released in a wildlife preserve in the southwestern part of the state. From all the signs, Kollias is optimistic that their survival rate is high.

OTTERS. More than a century ago, fur trapping and environmental factors decimated the North American river otter (*Lontra canadensis*) in central and western New York.

The nonprofit New York River Otter Project aims to bring it back within a decade. By 2004, the partnership among the college, the Department of Environmental Conservation, private businesses, and specially trained and licensed trappers aims to release 300 otters in nine locations including Letchworth State Park and Montezuma National Wildlife Refuge. Critical to the success of the \$300,000 project is the otters' health. Candidates for relocation (captured in parts of the region where otters are plentiful) spend 15 days at Cornell's College of Veterinary Medicine for physical examinations, injections of antibiotics and vitamins, and a gourmet diet of 2 pounds of lake trout per day, which bulks up their body weight by 15 percent. Many people from the wildlife health program work with the otter project — Kollias; Abou-Madi; two graduate students in the program — Barry Hartup, DVM, and Almira Hoogesteyn, DVM; and several veterinary students.

"Otters are compelling, intriguing animals," Kollias says. "I've worked with everything from shrews to elephants. The three species that stand out in my mind as being the most interesting are otters, tigers, and elephants... It's a real privilege to work with the otter."

The total tab for the reintroduction project, paid for largely by private donations, is \$1,000 per otter, including capture, transport, medical care, food, housing, and re-release. Ninety-four otters have been reintroduced thus far in the project, and data from a post-release monitoring program show

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WILDLIFE HEALTH CONTINUED FROM PAGE 9

they're doing just fine. "The project has allowed us to acquire a tremendous amount of valuable biomedical information on river otters," says Kollias, "which we are beginning to publish in scientific journals."

FINCHES. The Eastern house finch study was initiated three years ago through a collaboration between Kollias and Andre Dhount, director of bird population studies at the Cornell Laboratory of Ornithology. Prompting the project was a report by Dhount which noted that a disease causing house finches to have runny, crusty eyes (a disease which had suddenly appeared in Virginia and Maryland in 1993) was inexorably spreading north and west. During the second year of the project, the Ornithology Laboratory's citizen-based Project FeederWatch reported that 5 percent of the house finches it observed in New York had the disease, and it's estimated that thousands of finches have died from it.

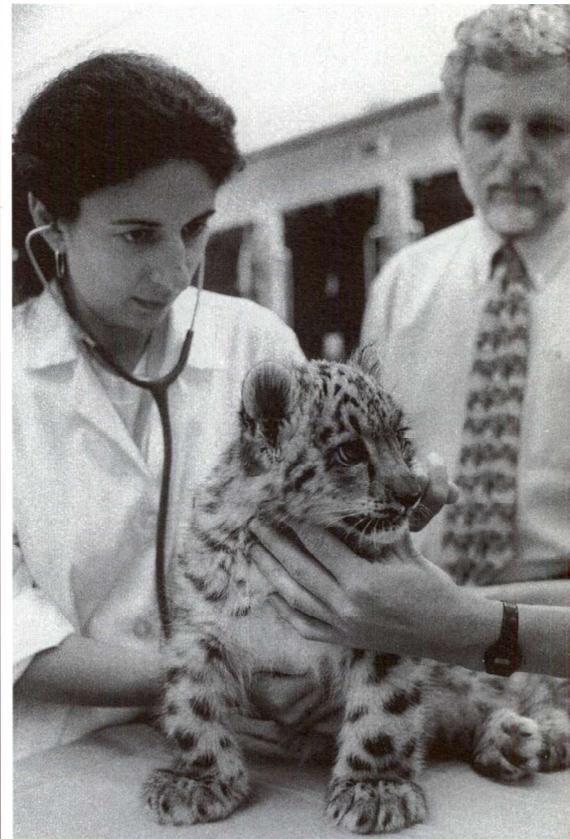
Mycoplasma gallisepticum is the only organism that has consistently been isolated from affected birds. Among the questions being pursued by graduate student and wildlife veterinarian Hartrup in the collaborative project of house finch eggs and nestlings are: What strains of *M. gallisepticum* are responsible for the infection? Has the disease-causing agent been present in the finch population all along and did some environmental factor induce the outbreak? Does the limited genetic diversity of these birds make them more susceptible to the disease?

Zoo Animals

Two to three days each week, Kollias, Abou-Madi, and several students travel to Syracuse's Burnet Park Zoo to provide full-service health care to the 125 species who reside there. The more than 500 animals in the collection are a mixture of endangered species (including snow leopards and Asian elephants) and North American native wildlife, among them bison, musk ox, Peregrine falcons, and lynx. The zoo is known for its breeding and conservation programs as well as its educational activities. Kollias and Abou-Madi oversee preventive medical programs, offer medical and surgical treatments, and consult on questions of conservation, husbandry, diet, and nutrition.

Kollias describes a case at the zoo: a first, which had never been done before, a surgery to correct an umbilical hernia in a 3-month-old baby female Asian elephant. The case, he says, is an example of the differences between zoological medicine and traditional veterinary medicine. "The surgery only took 59 minutes from anesthesia to finish," he recalls proudly. "The behavior management and anesthetic aspects of the surgery were particularly challenging. We had to separate the calf from the mother (the two had never been apart before), sedate the mother elephant, perform surgery on the baby elephant, reintroduce the elephants to each other, and then figure out how to keep both of them from opening the baby's surgical wound. The elephants were apart only about 4 hours; we knew it was critical to keep this timeframe short."

A team of 14 people was



Noha Abou-Madi (left) and George Kollias, examining Ruka, a young snow leopard from Burnet Park Zoo

needed for the elephant surgery, adds Abou-Madi. "Often, students become interested in wildlife medicine erroneously thinking they don't have to deal with people much in this specialty. The opposite is true," she says. "Care providers at the zoo are very committed to their animals; they are much like a client for whom we are the veterinarians. You really need to like people and know how to work effectively with groups to be a zoo veterinarian."

"We are thrilled to have Noha and George's skills and breadth of experiences," says Anne Baker, PhD, the zoo's director. "In zoo medicine, you are very often treating without initially knowing for sure what you're dealing with. Noha and George bring a scientifically systematic approach to the diagnosis and

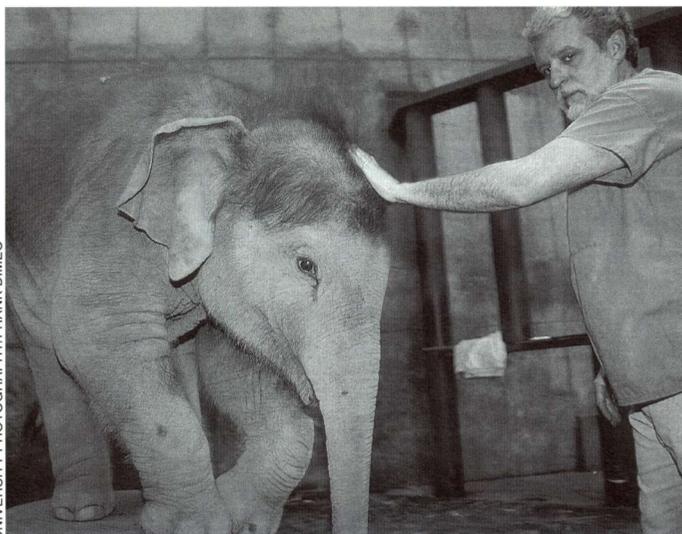
treatment of problems identified in our animals."

Educational Activities and Staff

Abou-Madi and Kollias teach six specialty courses for DVM students at the college, from Veterinary Aspects of Captive Wildlife Management, to Avian Medicine and Surgery, with each course averaging between 30 and 65 students. Veterinary students who want to concentrate or specialize in wildlife or zoological medicine need a strong background in wildlife ecology, zoology, and basic biology.

"Today, veterinary graduates, even if they intend to go into companion animal practice, are expected to have experience with alternative species," Abou-Madi notes. "Our students work with all kinds of animals, from red pandas at the zoo to raptors in the wildlife and exotic animal clinic, so they have a real edge compared to other veterinary graduates who may not have this experience."

Students participating in the wildlife health program's courses and clinical opportunities have had considerably more exposure to alternative species than most veterinarians in practice, explains Kollias. And their accomplishments merit international recognition. In 1996 at the International Conference of the American Association of Zoo Veterinarians in Puerto Vallarta, Mexico, then fourth-year student Eric Linnetz was selected as the recipient of the Student Manuscript Award for his paper and presentation entitled, "High Prevalence of Gout at Necropsy in Giant Day Geckoes (*Phelsuma madagascariensis*) at the National



Kollias examining Mali, a young Asian elephant at Burnet Park Zoo

Zoological Park."

"One of the things we have to impress upon our students is that often in life you make your own opportunities," says Kollias. "You can't expect to graduate and have someone come up to you and say: 'How about being a vet for the World Wildlife Fund?' That's not going to happen. If you have that goal, you need to work toward it and create opportunities to get the training you need."

Since she was a child in Montreal, Quebec, Abou-Madi has longed to work with exotic species, she says. She has been a Cornell postdoctoral associate in zoological and wildlife medicine and a part of the wildlife health program at the college since 1996. A specialist in anesthesiology who particularly enjoys emergency medicine and working with elephants, Abou-Madi spent five years as a veterinarian at Busch Gardens in Florida. She is a DVM graduate of the University of Montreal College of Veterinary Medicine and also holds a master of science in veterinary clinical sciences from University of Montreal. She has completed residencies in both veterinary

anesthesiology and zoological and wildlife medicine at the University of Florida College of Veterinary Medicine. She serves as co-chair of the infectious diseases committee of the American Association of Zoo Veterinarians; she is an active member of many professional associations; and she has published numerous professional papers.

It was the reputation for excellence that drew the wildlife health program's two graduate students, Barry K. Hartup, DVM, and Almira L. Hoogesteyn, DVM. Hartup, a Midwesterner with 12 academic publications already under his belt, chose a PhD program here after spending three years as the staff veterinarian at a wildlife rehabilitation and education facility, the Willowbrook Wildlife Center in DuPage County, Illinois. Treating 4,000 cases of backyard wildlife each year whetted Hartup's interest in the larger epidemiological patterns of wildlife diseases, especially those of birds. He spends much of his time involved with the Eastern house finch study. "The key to coming here was Dr. Kollias's support for my doing a

CONTINUED ON PAGE 12

WILDLIFE HEALTH CONTINUED FROM PAGE 11

blend of research in avian diseases and epidemiology," Hartup says. "I have specialists from three diverse fields on my committee — which is not your usual mix!"

Hoogesteyn, a native of Venezuela, was attracted to Cornell by the flexibility to build a program of courses, clinical experience, and research to meet her eventual career goals. She hopes to return as a faculty member to Universidad Central de Venezuela, her alma mater. "Venezuela is very developed in its environmental protection and conservation efforts, with 16 percent of the country designated as national park and another 12 percent under special administration," Hoogesteyn says. Unlike some other countries in the world, the voice of the average citizen counts in matters of conservation, she explains. "Still, the incredible resource of wildlife could be managed in a more effective way," she says. Not only is veterinary care unavailable for parrots, turtles, monkeys, and other indigenous species, which are commonly kept as pets, but there also have been few nationwide wildlife population studies, which are needed to form the basis for managing both common and endangered species. "In South America it is very difficult to get in touch with the mainstream of the field, so being here has been a very great opportunity," Hoogesteyn says. "I am able to take back the North American and European perspectives most useful in Venezuela." Both conducting research and training new veterinarians appeals to Hoogesteyn. Her current PhD work is the capstone of her

international training, which includes English and German veterinary schools as well as externships at the Bronx Zoo (now the Wildlife Conservation Society).

And Kollias is the right person to tailor programs for graduate students and residents. In 1974, he persuaded M. E. Fowler, a pioneer in the field of zoo and wildlife medicine at the University of California, Davis, to create postgraduate programs in wildlife and zoological medicine for him. Kollias, a DVM graduate of the University of Missouri College of Veterinary Medicine, then completed a residency and PhD in wildlife diseases at UC Davis and has gone on to become preeminent in the field of avian, wild mammal, and reptile biomedicine. Before coming to Cornell, Kollias served the University of Florida as chief of wildlife and zoological medicine in its Veterinary Medical Teaching Hospital and as director of its Laboratory for Studies in Zoological Medicine. He is a charter member and current president of the American College of Zoological Medicine (one of 20 veterinary specialties) with professional contributions to 22 national and international zoos, wildlife, and research facilities. His international consulting work has included projects assessing the impact of disease on the survival of endangered and threatened species including the Florida panther, sandhill crane, and Puerto Rican parrot.

Instead of talking about his accomplishments, however, Kollias would rather tell stories such as how he and Abou-Madi



Afternoon rounds in the wildlife and exotic animal medicine service, with Strawberry Face, an iguana

spent an entire morning working with Burnet Park Zoo staff to safely catch one of the zoo's Andean condors so they could X-ray a swelling on the bird's face. A new species to him, the bird is exceedingly rare and has a 12-foot wingspan.

"It's the challenge of dealing with animals not accustomed to humans and the risk involved when doing this, which makes the field continually interesting," Kollias admits. "A lot of people are deterred from entering wildlife and zoological medicine because they don't have it in their personality to meet such challenges."

"I have a lot of books in my office on wildlife medicine, but we often do things here at the college that are a first, that simply have never been done before. And we do them successfully. I'm very proud of that."

Donations to support the work of the wildlife health program are encouraged. Please contact Alison Smith, associate director of alumni affairs and annual giving, at 607-253-3742 or via email at ars1@cornell.edu. ■

Recent Gifts to the College

Jack E. Lowe '59 Equine Health Fund

An anonymous donor recently made a \$500,000 endowment to the college, establishing the Jack Lowe Equine Health Fund to support equine medicine within the College of Veterinary Medicine. The fund is named in honor of John (Jack) E. Lowe, DVM '59, MS, professor emeritus of surgery.

"The donor is a magical person who wishes no acclaim, only that the fund benefit the clinical health and welfare of horses at the college," explains Lowe. "This desire is beautiful and will be quite meaningful to the Equine Hospital. We are indebted to the donor for the opportunity to use these funds as needed each year."

Plans for use of the funds are broad, will vary from year to year, and may include support for a resident or a graduate student, a research project, equipment purchase, and library needs. Decisions on projects and programs to be funded will be made by Lowe, with assistance from a committee of three faculty members from the college's Equine Hospital.

S. Gordon Campbell Annual Lecture Fund

The fund for the S. Gordon Campbell Annual Lecture, established by Cornell veterinary students who are members of Veterinarians Interested in Developing Areas, now totals \$20,000; VIDA members hope to raise \$25,000 to endow the annual lecture in perpetuity. The lecture series will honor the memory of Gordon Campbell,

BVMS, MRCVS, MVSc, PhD, former professor of microbiology and associate dean who died in September 1997, and his initiation and development of Cornell's Expanding Horizons program in international veterinary medicine. Contributions are being solicited from alumni who were students of Dr. Campbell, from corporations and organizations with which Campbell worked, and from organizations that have supported student group activities in the past. (A donor list will be published in the next issue of Cornell Veterinary Medicine.)

Harry M. Glass '35 Memorial Scholarship

Family members have announced the establishment of a fund for the Harry Glass '35 Memorial Scholarship in memory of **Harry M. Glass**, DVM '35, who died in December 1997. A fixture at Cornell veterinary reunions, the Annual Conference, and Homecoming, Glass was a staunch supporter of the college and a man who placed high value on a strong veterinary education. He was a member of the college's development committee from 1983-88, and he was a long-time supporter of the Flower-Sprecher Library who donated many books. The family hopes to raise \$25,000 to endow the scholarship in perpetuity. Contributions to the scholarship are encouraged and may be sent directly to the office of public affairs, Box 39, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853-6401.

Irwin Foundation Gift

Support totaling \$50,000 from The Irwin Foundation to the college's Veterinary Medical Teaching Hospital will enable the hospital to fund a two-year cardiology resident, to be called the Irwin Foundation Cardiology Residency, to support this growing service. The cardiology service provides state-of-the-art diagnosis of cardiac abnormalities such as arrhythmias, implantation of cardiac pacemakers, and repair of cardiac defects (surgically and by internal cardiac catheterization). The Irwin Foundation, based in Michigan, is dedicated to the advancement of veterinary research and education. The foundation is a legacy to Drs. James and Claire Irwin and their love of animals and dedication to the promotion of higher education for veterinary students.

Maddie Fund

The Maddie Fund was established at the Cornell College of Veterinary Medicine by the Duffield Family Foundation in memory of David and Cheryl Duffield's beloved miniature schnauzer, Maddie, who died in 1997 at 10 years of age. The \$20,000 fund, under the supervision of John Randolph, DVM, and Eric Trotter, DVM, MS, will be used for patient assistance in the college's Companion Animal Hospital.

Dr. Ralph and Molly Povar Memorial Scholarship

The Dr. Ralph and Molly Povar Memorial Scholarship Fund has been established with a gift annuity originated by Dr. Povar

with the intent that the gift would pay tribute to his wife. He designated his gift for a scholarship, without stipulations, in order to benefit the greatest number of students at the College of Veterinary Medicine, citing that he attributed his 55 years of veterinary practice to his own strong education. After Dr. Povar's death in February of this year, the Povar Scholarship was created with \$100,000. ■

The phone number for the Cornell University Office of Planned Giving is 1-800-481-1865. (The number in the college's 1997 *Report of Private Support* was printed in error.)

Alumni News

Class of 1951

Arizona is a great place for a late-winter vacation! That's what DVM Class of '51 organizers thought. They persuaded 18 members of the class, out of a total of 47, to meet in Tucson for a mini-reunion this past March. The gathering was organized by Bill Abel, Chuck Allen, Peter Malnati, and John Weeks. "Maybe it will start a whole new trend among alumni," said Malnati.

Alumni Forum

All alumni of the College of Veterinary Medicine are encouraged to participate in the college's Alumni Forum, a place where alumni can talk with each other on the Internet. The forum can be found on the World Wide Web at <http://www.vet.cornell.edu/alumni/alumni.asp>.

Cummings Memorial Fund Directed to Scholarship

The John F. Cummings Memorial Fund has been designated by the family to be used for a scholarship. The memorial fund was established to honor John F. Cummings, DVM '62, MS '63, PhD '66, James Law Professor of Anatomy at the college, who died in November 1996. There are now more than 100 donors to the memorial fund; contributions have come from faculty, staff, alumni, and friends. The names listed below are those donors who have given gifts to the scholarship or other funds in Dr. Cummings' memory. (College alumni are listed with year of graduation.)

Amy J. Adler, DVM '92
Bruce D. Allen, DVM '73
Alumni Association, Cornell College of Veterinary Medicine
Wayne I. Anderson
John A. Angelos, DVM '92
Judith A. Appleton
Prema Arasukavalar, DVM '94
Eugene G. Arnold, BS '64, MBA '66 and Laurie Arnold
Roberto P. Barcala, DVM '92
Claire A. Berian, DVM '92
Julia T. Blue
Silke E. Bogart, DVM '92
Trudy Borden
Suzanne Botts
Tracey L. Brant, BS '85
Susan L. Bregman, DVM '92
Mary Ely Brennan
George J. and Joann Broadwell, BS '53, PhD '69
Marjory Brooks, BS '77, DVM '81
Thomas F. Brown, DVM '62
Michael P. Bukowski-Thau, DVM '92
Barbara J. Burde, DVM '76
Gilbert Burns, DVM '87, PhD '92 and Marilyn Burns
William P. Cadwallader, Jr., DVM '62
Bruce W. Calnek, DVM '55 and Mary Calnek
*S. Gordon Campbell, PhD '64
Dorothy Carreiro
Dolores and William A. Childers
Eugenie L. Childs
Janet Cilli Christiansen, DVM '92
Deborah L. Conner, DVM '92
Gabriel D. Cook, DVM '92
Karmen I. Couret, DVM '92
Patricia and David N. Cox
Brenda Crawford, BS '61 and J. Anthony Crawford, DVM '62

Laura A. Culbert, DVM '92
Mary Ellen Cummings
Valerie L. Davis, DVM '92
Mari A. Delaney, DVM '92
Gary Demuynck, DVM '92
Mary C. Denver, DVM '92
Carol J. Deyhim, DVM '92
Jane Dieckmann
Janine M. Di Stephan, DVM '92
Thomas J. Divers
R. Dueland, DVM '56
Dee Ann Dugger, DVM '95
Chahna Y. Ekstrom, DVM '92
Linda Emmick
Michael R. Erlanger and Family
Eric R. Evans, DVM '92
Erica Evans and Howard E. Evans, BS '44, PhD '50
Rita and Thomas J. Fahey
Cornelia E. Farnum
Clare M. S. Fawcett
Elizabeth A. Fontana
Margaret P. Mostoller Fordhamer, DVM '92
Diane Forsythe, DVM '84
Frank E. Forsythe
Susan L. Fubini
Carol Gamez, DVM '91
Martha S. Gearhart, DVM '79
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Alexandra D. Giordano
Richard C. Gold, DVM '92
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Sarah Gowin
Mary E. Graham, DVM '92
Richard C. Grambow, DVM '57
Cynthia J. Gratton
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M. Susan and Richard P. Hackett
Alison M. Hazel, DVM '92
Lillian Ramos Hendrickson, DVM '92
Nathan C. Heilman, BS '93, DVM '97
Heidi M. Heinzlerling, DVM '92
John W. Hermanson
William S. Hill
Katherine D. Hodgson, DVM '92
Katherine A. Houpt
T. Richard Houpt
Linda S. Hunter, DVM '92
Nita L. Irby
Sara A. Joseph, DVM '93
Francis A. Kallfelz, DVM '62 and Heidi Kallfelz
Maria P. Kaprielian, DVM '92
Michael P. Kelly, DVM '92
Michael G. and Shawn Kimberly
Lennart and Nancy Krook
Jessica D. Lallier, '00
Kathleen and Donald G. LaLonde
John A. Lambert
John Lay, PhD '86
Nancy E. Leverenz, DVM '92
Louis G. Licari, DVM '92
Franklin M. Loew, BS '61, DVM '65
Connie and George Lust
Pamela B. Luther
Kelly A. Malloy, DVM '92
Jo-Ann and Victor H. Mancini

Lisa A. Marsico, DVM '92
 Barbara and Robert A. Mavian, DVM '62
 Janet and Kenneth Mc Entee, DVM '44
 Nicholas L. Meittinis, BS '85, DVM '89
 Christine L. Miller, DVM '85
 Kathryn A. Mines
 Ronald R. and Terry Minor
 Fran Morris
 James K. Morrisey, DVM '92
 Christopher J. Murphy, DVM '83
 Janet and Robert N. Nagel
 Joel M. Nezezon, DVM '92
 Robert W. Norrdin, DVM '62
 Marilyn and William B. Norton, BS '57
 Mark S. Nowak, DVM '92
 Omega Tai Sigma
 Lauren Ostergren
 Alice Jayne Payton, DVM '82
 John T. Peters, DVM '62
 Candace K. Platz, DVM '81
 Thomas A. Polehinke, DVM '92
 Edith and George C. Poppensiek, MS '51
 Lysa P. Posner, DVM '92
 Karen A. Purcell, DVM '92
 Richard W. Reid, DVM '92
 Louis Roth
 Wolfgang O. Sack
 John and Janice Saidla
 Donald H. Schlafer, DVM '74
 Joachim A. Schneider, DVM '82
 Donna and Wayne S. Schwark
 Fredric W. Scott, DVM '62 and Lois Scott
 Alvin F. and Dorothy Sellers
 Mark H. Silbiger, DVM '92
 Alison R. Smith
 Donald F. and Doris A. Smith
 Julia M. Smith, DVM '94
 John Speciale, DVM '72
 R. Reed Stevens, '00
 John D. Strandberg, DVM '64
 Margaret R. Stummer, DVM '92
 Thomas C. Sullivan, DVM '92
 Vivien Surman, DVM '92
 Lynn Swisher
 Rory J. Todhunter
 David K. Trachtenberg, DVM '92
 Sally and Robert E. Treat, DVM '62
 Maria S. Triana, DVM '92
 Lesley A. Vannerson, DVM '92
 Bonita S. Voiland
 Dorraine Waldow, DVM '92
 Marilyn Wasserman, BS '49 and Robert H.
 Wasserman, BS '49, PhD '53
 Patricia H. Wehle
 Charette Wheelis
 Maurice White, DVM '75 and Steffi White
 Reinemarie T. Willmann, DVM '92
 Marilyn J. Wolfe, PhD '83
 John F. Wootton, BS '51, MS '53, PhD '60
 and Joyce Wootton, PhD '62
 Edgar C. and Marian Zimmermann
 Patricia R. Zolper
 The Class of 1997
 The Class of 1998
 The Class of 1999
 The Class of 2000
 The Department of Anatomy

* deceased

BLINDNESS CONTINUED FROM PAGE 5

have a road map and have identified signposts indicating where to look for the defective gene causing prcd, a possibility that did not exist before," adds Ray.

Work to develop diagnostic tests for prcd is already underway at the college. The first beneficiaries of a test will be breeders and owners of the five dog breeds that have been shown through interbreeding to inherit the same defect: Labrador retrievers, Portuguese water dogs, poodles, and English and American cocker spaniels.

"To understand the magnitude of the problem," Acland says, "consider this: With an estimated affected rate of two to three percent, about 3,200 of the nearly 160,000 Labrador retriever puppies registered with the American Kennel Club in 1997 can be expected to go blind in adulthood."

Other breeds suspected of inheriting prcd, and that stand to benefit from the discovery, include Nova Scotia duck-tolling retrievers, Australian cattle dogs, basenjis, English mastiffs, Chesapeake Bay retrievers, Italian greyhounds, papillons, and potentially many others.

Acland says: "I really think that there's a very good chance that prcd is widespread among a host of other breeds that are not even suspected at this point. We see a disease in mastiffs, for example, and Italian greyhounds that looks just like prcd."

If the disease in two such unrelated breeds turns out to be prcd, he says, that will suggest strongly that prcd is an old mutation that may have descended through hundreds of

breeds. "While some affected breeds have only separated in the past one or two hundred years, it has been a long time since mastiffs and Italian greyhounds separated into unconnected populations," Acland notes.

The prcd study at Cornell's College of Veterinary Medicine was supported by the Morris Animal Foundation, The Seeing Eye, the National Eye Institute and the Foundation for Fighting Blindness. Ostrander's work was supported by a grant from the Canine Health Foundation of the American Kennel Club.

Also reporting the findings are Cathryn Mellersh of the Hutchinson Center and Amelia Langston, formerly at the Hutchinson Center and now an assistant professor at Emory University. ■



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Veterinary Medicine

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CORNELL
UNIVERSITY

Calendar of Events

Events are at Cornell unless otherwise noted. Call 607-253-3200 with questions about continuing education programs; for other events, call 607-253-3744.

June

- 4-7 Reunion Weekend
Cornell University
- 5-7 American Association of
Veterinary Medical Colleges
15th Symposium
Purdue University
West Lafayette, Indiana

July

- 25-29 American Veterinary Medical
Association
1998 Convention
Baltimore, Maryland

August

- 17 Orientation
Class of 2002
- 17-20 DVM Academic Year
Instruction begins

Norden Distinguished Teacher Honored

Congratulations to **Dorothy M. Ainsworth**, DVM, PhD, Diplomate ACVIM, associate professor of medicine, who has been named the college's 1998 Norden Distinguished Teacher. The honor goes to a full-time member of the veterinary faculty who demonstrates excellence in teaching, as selected by members of the fourth-year DVM class. The award was presented as part of the college's Honor Day festivities during commencement week.



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