

C O R N E L L

Veterinary Medicine

WINTER 1998

Dedicated to Veterinary Medicine: Dorothy Ainsworth, DVM, MS, PhD, Dipl ACVIM

Since Dorothy Ainsworth completed her PhD at the University of Wisconsin in 1990, the burgeoning field of molecular biology has begun offering whole new ways to find in-depth answers to animal diseases. Ainsworth is an associate professor of medicine in the department of clinical sciences and section chief of large-animal medicine in the Equine and Farm Animal Hospitals.

She has only been here at the college seven years and it's already time to start retooling, she explains. The technologies that were prominent when Ainsworth began her research career in respiratory physiology and medicine just aren't enough today, she states; there is continuously more to learn.

Take her latest research project, a collaboration with immunologists Judith Appleton MS, PhD, and Douglas Antczak VMD, PhD, to understand better how pulmonary immunology is involved in a horse's predisposition to disease. The trio is examining the immune response during exercise of healthy horses, of horses when immunomodulation is superim-



UNIVERSITY PHOTOGRAPHY/NICOLA KOUNTOUPES

posed, and of horses with chronic, obstructive pulmonary disease (COPD).

"At one time we would have put the horses on the treadmill and taken a series of physiological measurements," Ainsworth says. "But it's no longer enough to report a horse with COPD has increased airway resistance and poor lung distensibility. Now you want to be able to say specifically how the cellular response alters those mechanics and how that cellular response might be manipulated at the genomic level."

Molecular biology is a clear emphasis in veterinary medi-

Dorothy Ainsworth, 1998 Norden Distinguished Teacher, with an equine patient in radiology.

cine today, with the eventual goal of developing reliable gene therapies. Now at midcareer, Ainsworth is committed to these new technologies. "For scientists my age, the decision is similar to people's response to computers — either they learned how to use them or they didn't," she explains. "If you don't get involved and learn molecular biology techniques, you'll have to take a back seat to people willing to do so."

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The Teaching Hospital:

Focus on Clinical Service and Experiential Learning

Academic teaching hospitals face increasing challenges to their economic stability and educational missions. Though fiscal pressures such as rising costs and reductions in state support are always important, even more challenging are concerns that affect everyday operations. Key among these is the need to integrate public service expectations with faculty duties that encompass academic and clinical responsibilities.

To utilize our teaching hospital's human resources to best advantage, we have established a new administrative structure as part of our college's recent reorganization. Previously faculty members with teaching and clinical responsibilities had dual reporting

channels — to their academic department chairs and to the hospital director. Today faculty members with hospital responsibilities report directly to their academic department chairs for all their scholarly activities, teaching responsibilities, and clinical services. In her new role as assistant dean for hospital operations, Bonni Voiland is responsible for all operational aspects of the hospital including supervision of all technical and clerical staff. Through these changes we can assure heightened quality of care with improved customer service.

New clinical initiatives in the teaching hospital focus on maximizing synergy between the basic sciences and the clinical programs. For example, our emerging program in clinical oncology captures our academic strengths in the biomedical sciences such as cell and molecular biology as well as being part of the university's new initiatives in chemical biology. Through these linkages we enhance clinical programs such as Dorothy Ainsworth's research in equine respiratory physiology and medicine (see article, page 1) and Alan Nixon's work in joint disease and joint resurfacing (see article, page 6).

Strengthening and expanding our primary care through the Community Practice Service in the Companion Animal Hospital supports our educational mission and service outreach. CPS provides students with opportunities to develop essential professional competence and effective interpersonal

communication skills in a framework of providing fundamental clinical care. Some of our most effective clinical teachers are engaged in primary-care clinical education.

Heightened collaboration with the private sector in veterinary medicine rests on how such partnerships can match our hospital initiatives and, more importantly, how such partnerships can maximize the experiential learning and professional development for our veterinary students. Better educational links between classroom learning and developing professional skills in the clinical environment include:

- opportunities to develop reflective judgment while acquiring broadened clinical skills and professional competency;
- skill development for retrieving information from primary sources and applying the information in clinical settings;
- integration of relevant information from various clinical disciplines with interpretation of new advances in the basic biomedical sciences in clinical settings.

We value highly the service mission of the Veterinary Medicine Teaching Hospital and remain committed to maintaining a strong teaching hospital as an essential component of our educational programs.



Donald F. Smith, dean



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AINSWORTH CONTINUED FROM PAGE 1

And Ainsworth is hardly the kind to take a back seat. Early on she showed her unwillingness to sit back and let slide a fallacious idea — albeit a novel one — that in 1993 had commanded much attention after its publication in *Science*.

The hubbub centered on the role of the respiratory muscles. The authors of the *Science* article

"If you don't get involved and learn molecular biology techniques, you'll have to take a back seat to people willing to do so."

stated that the diaphragm was essentially useless in generating breath during exercise. They contended that rather it was the gut sloshing back and forth and impacting on the diaphragm that then compressed the lungs to generate air flow. Ainsworth believed this wasn't true and set out to prove it. Along with former colleagues at the University of Wisconsin, she conducted a series of very technically difficult experiments with dogs that for the first time actually recorded the muscle activity in an animal during exercise. She found that, indeed, contractions of the diaphragm play a major role in respiration.

Later, after coming to Cornell, Ainsworth went on to debunk the idea of the visceral piston, a similar notion in which the guts are seen as the driving force underlying respiration in the running horse. The findings from these research projects with dogs and horses are significant contributions to a basic understanding of how respiratory muscles contribute to ventilatory demands during exercise. It's work in which she

takes great pride.

On the clinical side Ainsworth has focused on the impact of disease on the athletic performance of horses. As part of a multi-university collaboration she studied 115 foals that had been naturally infected at an early age with *Rhodococcus equi*, a bacterial pneumonia that causes abscesses to form. The question she set out to answer was whether — using clinical signs, laboratory work, and thoracic radiographs — it was possible to predict which foals would survive, which would make it back to the racetrack, and of those who did race how well they would do.

She found that reliable predictions were possible.

"This was very useful work," Ainsworth explains, "because we can now tell trainers and owners which foals it is worth treating and for how long. We can reassure them that by putting money into treatment the foals will go on to perform like the average population."

"We can now tell trainers and owners which foals it is worth treating and for how long."

She is currently undertaking a similar project with four other veterinary hospitals looking at adult racehorses with lung abscesses. Again the question is whether it's worth devoting a three-month layoff period to treating these horses and then bringing them back into condition — when they return to the track how will they perform?

Preliminary findings Ainsworth presented at the World Equine Airways Symposium convened by the Comparative Respiratory Society in

Guelph, Ontario, Canada, this summer suggest that the earnings of these horses are not different after illness than they were before.

Ainsworth smiles easily as she talks about how she enjoys clinical and basic research equally, particularly because the projects she chooses involve working with a fair number of students. Her treadmill studies require six people just to run each experiment. Students also exercise and bathe the horses involved.

"You have to have a small army to do the kind of work I do," Ainsworth says. "I'm very lucky to have Cornell students because they are really smart and really driven. Watching them blossom is what makes this job so satisfying."

She takes similar pleasure in the changes she sees in students during large-animal medicine clinical rotation. Ainsworth spends four months of the year as the large-animal internist in the college's Equine and Farm Animal Hospitals, where she's with students from 8:00 in the morning until 8:00 at night.

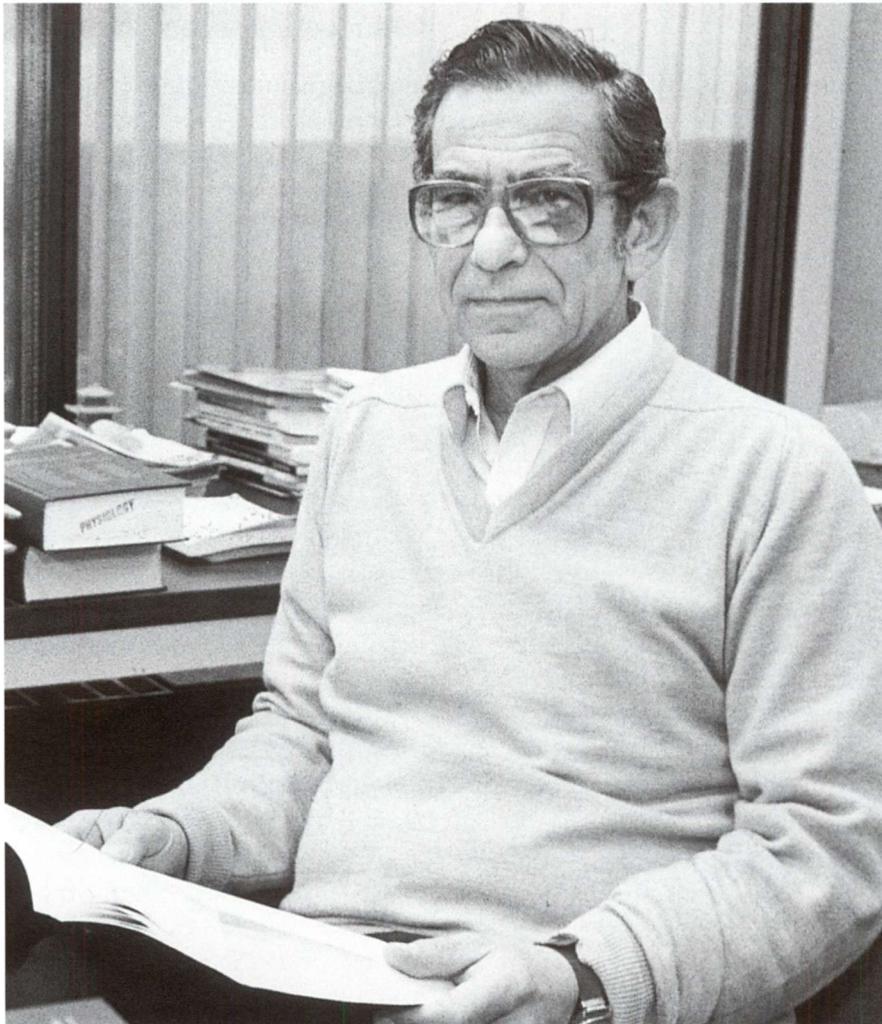
"Even if they aren't large-animal oriented, it's important to make the clinics a fun experience for them," Ainsworth says of her teaching style. "It's very rewarding to see those who come in not feeling very comfortable working around horses and cows become adept in just three weeks' time."

Ainsworth herself has always loved horses. When asked about her early career aspirations, she admitted, "I originally wanted to be a riding instructor, but my parents absolutely refused to let me go to riding instructor's

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Robert Wasserman

BS '49, MS, PhD '53, James Law Professor of Physiology Emeritus



Back in 1953, when Robert Wasserman took his first job as a research associate and associate professor at the University of Tennessee Atomic Energy Program in Oak Ridge, Americans were worrying about the health effects of fallout from testing the atomic bomb. Today, aging boomers by the millions fear their bones won't be strong enough to carry them through a vigorous old age. Then, like now, the protective factor getting the attention was calcium.

Wasserman's 45 years of

research contributed to the way scientists in the fields of animal and human medicine understand the mechanisms underlying the body's absorption of this essential element. Particularly the role played by vitamin D.

When Wasserman received his PhD in nutritional microbiology from Cornell's College of Agriculture and Life Sciences, there were no jobs in his specialty as a rumen microbiologist. But there was an opportunity to go to Oak Ridge. So he took it. He first worked with Bernard F. Trum, Cornell DVM

'35, on a thyroid problem in Thoroughbreds and then on research problems in atomic energy presented to him by Cyril L. Comar, then head of the Oak Ridge laboratory and a pioneer in the use of radioisotopes in biological research. Questions of human and animal health as a consequence of the arms race were at the forefront.

One issue of much concern at the time was the exposure of American soldiers — and the population at large — to radioactive strontium, a common fallout product from nuclear explosions.

"As it happens, strontium is the first cousin of calcium — they have very similar properties," Wasserman explains. "One idea was to see whether a large amount of calcium in the diet would depress the body's ability to absorb radioactive strontium." And this was shown to be the case.

In 1957, Comar was invited to join the Cornell faculty as the first director of the Laboratory of Radiation Biology at the College of Veterinary Medicine. Wasserman, who never expected to come back to Cornell, returned with him.

Sometime later, Wasserman and Fred W. Lengemann were hard at work trying to find out how lactose, the milk sugar, enhances calcium and strontium absorption when a casual remark by a visiting Swedish scientist, Arvid Carlsson, put Wasserman on the path that would lead to his election to the National Academy of Sciences some 20 years later.

"Carlsson had done some work on vitamin D himself and pointed out to me that while there were a dozen or so groups in the world looking at the role of vitamin D in calcium absorption, there was still much to learn," Wasserman recalls, adding parenthetically that now there are thousands of such working groups. Carlsson's comment prompted a change in research direction with the target now being the biological action of vitamin D.

Wasserman admits with a laugh that he can't remember exactly why he did the original experiment that led to the discovery of the vitamin D-induced calcium-binding protein in chick intestine. He recalled the first experiment where radio-calcium was added to tubes containing intestinal material from animals treated with vitamin D and those not so treated; further processing showed a difference due to the vitamin, and from then on they were off and running to learn what was going on.

It had been known for years that vitamin D was critical for the optimal absorption of dietary calcium in both animals and humans. The question that had eluded scientists for so long was what, exactly, was this vitamin's role?

Lining the intestine are absorbing cells through which calcium must pass to enter the bloodstream. Inside these cells, a vitamin D metabolite causes the synthesis of a unique protein which binds incoming calcium very tightly. The calcium is thought to be carried through the cell by the protein to another molecule called the calcium pump, which then transports it outside the cell into the blood. In a later series of

experiments, Wasserman showed that the synthesis of the calcium pump was also stimulated by vitamin D.

"One of the things I felt after we uncovered the calcium-binding protein was that it was going to keep a lot of graduate students busy," Wasserman recalls of the days after his finding appeared in *Science* in 1966, in a paper co-authored with Alan N. Taylor, now at Baylor College of Dentistry in Dallas. Taylor and Francis A. Kallfelz, now James Law Professor of Medicine at Cornell's College of Veterinary Medicine, were instrumental in finding a related but smaller vitamin D-dependent calcium-binding protein in mammalian intestine. For much of the rest of his career Wasserman and colleagues have investigated the biochemical and molecular properties of the vitamin D-induced calcium-binding proteins and their physiological action.

Along the way, Wasserman's steadfast commitment to animal health led him to solve a few clinical mysteries. One of the most interesting involved uncovering a toxic principle that was wreaking havoc with the cattle industry in Argentina. Cattle grazing in certain parts of the country at certain times of the year began to lose weight and eventually die. Symptoms were mineral deposits in blood vessels and kidney, and excessive mineralization in the skeleton. The responsible plant species was already known as a member of the *Solanum* family. The toxic agent was shown by the Cornell group to be identical to the hormonal form of vitamin D found in animals and humans but consumed in sufficient amounts in the plants to cause

an overabundant absorption of calcium by the cattle. Work with Lennart Krook in the pathology department at the College of Veterinary Medicine at Cornell discovered a different but related plant, shown to have the same toxic principle, causing a similar problem in animals in Florida.

In the midst of an active teaching career and while taking his turn at college administrative duties (among others, he was chair of the department and section of physiology for four years), Wasserman and his colleagues published more than 400 research papers; he traveled widely in Europe, the Middle East, and Far East to present their research. Two Guggenheim Fellowships supported sabbatical leaves in Denmark and England.

When asked what's been the most fun over the years, Wasserman answers, "Being in the laboratory, directly involved in the research."

Then in the next breath, this man who is universally known for his modesty and even temperament, added the great pleasure he's taken in developing close associations with people in his laboratory and colleagues around the world. (When a retirement party was held for him in August, colleagues from Argentina, Japan, Finland, and Austria traveled here to honor him and wish him well.)

When asked what surprised him most during his career, Wasserman spoke of the considerable enthusiasm shown by his peers of the discovery of the calcium-binding proteins and their dependency on vitamin D. ■

Diabetes Research:

Geoffrey W. G. Sharp, PhD, DSc

To Geoffrey W. G. Sharp, PhD, DSc, professor of pharmacology in the department of molecular medicine, type II diabetes (diabetes mellitus) is a compelling disease. In humans, this complex and chronic metabolic disorder caused by the body's inability to make enough — or properly use — insulin, is the sixth leading cause of death by disease in the United States. More than 17.5 million Americans have it. And as people in the US grow older, along with their tendency to be overweight and lead a sedentary lifestyle, type II diabetes nears epidemic proportions.

But prevalence is only part of the reason for Sharp's keen interest.

"Diabetes is a very, very nasty disease," he points out, adding that blindness, nerve disease, gangrene, and heart attacks are among its life-threatening complications. In fact, diabetes is the leading cause of end-stage renal disease and of new cases of blindness in people ages 20 to 74. It is the most frequent cause of nontraumatic lower limb amputations and raises the risk of heart disease and stroke two to four times.

Among animals, diabetes is often seen in older cats and dogs. Because of the need frequently to monitor blood-sugar levels, it is a disease that is particularly difficult to manage in companion animals. Although much less common, diabetes is also seen in exotic animals. Primates are particularly at risk, as are most species of birds. Chinchillas are also

susceptible to diabetes.

For animals and humans alike, there is no known cure.

Since 1973, Sharp has studied the site of insulin production: the beta cells located in the islets of Langerhans in the pancreas. In particular, he has focused on the beta-cell signaling pathways by which insulin secretion is controlled. A variety of such physiological pathways are involved. Sharp's work centers on identifying the individual pathways and then figuring out how each one of these functions on its own and in concert with one another. Armed with such knowledge, researchers can then determine which drugs most influence each pathway, hence offering novel pharmacological approaches to the treatment of the disease.

"Since in type II diabetes you have an insufficiency of insulin secretion, every signal that is working in the beta cell has the potential to be defective," Sharp explains. "So each signaling pathway and every component of each pathway could be involved in the causation of diabetes, which is why we are working in this area so vigorously."

Sharp's earliest work concentrated on two signaling messengers: cyclic AMP and calcium. He found both to be extremely important in the functioning of the normal beta cell in the body.

Sharp made one of the most startling discoveries of his career three years ago: that glucose can stimulate insulin secretion even in the absence of calcium.

"It has been thought for so long — it almost became dogma — that a rise in the calcium level in the cell was essential for glucose to stimulate insulin secretion," Sharp explains. "Over the last few years, we've broken that dogma."

The breakthrough was due to a research associate working in Sharp's laboratory.

"Normally a scientist is taught to vary just one thing at a time, but he contended that the beta cell in the body is always bombarded by multiple signals," Sharp says. "He went on to show that if you activate two signaling pathways in the cell at the same time, then glucose, even in the absence of calcium, can activate a third pathway to stimulate insulin release. This was a real turnaround for us."

Sharp's current laboratory team consists of research associates, postdoctoral fellows, and graduate students from China, Bulgaria, Germany, India, the United States, and Sharp himself from England. Their work falls into two main areas of beta-cell signaling. In the first the goal is to understand, in complete detail, the physiological mechanisms by which insulin secretion is turned off — that is, how the inhibitors of insulin secretion, for example: galanin, norepinephrine, and somatostatin, exert their effects on the human pancreatic beta cell.

Sharp is one of the few researchers who has focused on these inhibitory signaling pathways about which little, at present, is known. His unique



Pharmacologist Geoffrey Sharp and Troitza Bratanova-Tochkova, MD, PhD, molecular medicine technician in his laboratory, examine an electronmicrograph of a pancreatic beta cell. Sharp, originally an expert in ion transport and intestinal diseases, began his work with diabetes by chance. Having discovered the action of cholera toxin, he was setting out on a sabbatical leave to work with cholera patients in East Pakistan (now Bangladesh) when the India-Pakistani war broke out. Thwarted, he went instead to the famed diabetes clinic — the Institut de Biochimie Clinique in Geneva, Switzerland — for a one-year's change of direction. "It turned out that diabetes research was so very interesting that I never left it," Sharp says.

approach to experimental design allows for the study of a wide array of inhibitors and has produced novel methods to address a variety of signaling pathways.

By contrast, Sharp's second research area examines pathways that promote insulin secretion. Currently, he's concentrating on the role of glucose in activating two specific pathways known as the K_{ATP} channel-dependent and the K_{ATP} channel-independent signaling pathways. These pathways work together and are both extremely important in the control of insulin secretion.

Not long after the discovery of sulfonamide drugs (the first antibiotics) in the 1940s, it was found that they stimulated insulin secretion. And it was shown that the drugs did so

because they mimicked the effect of glucose on the beta cell. This led to the development of effective new drugs, the sulfonylureas, which have been used in the treatment of diabetes for some 50 years. Yet the question remained: If the drugs mimicked the action of glucose, why were the drugs only moderately effective? The answer came in 1992, when what was thought to be only one signaling pathway was found actually to be two.

In the case of K_{ATP} channel-dependent signaling pathway, sulfonylureas are indeed effective in stimulating insulin production. Not so in the K_{ATP} channel-independent signaling pathway. Sharp is out to understand the operation of this second pathway, with the long-term hope of finding drugs to

stimulate it effectively.

During the first 25 years of Sharp's distinguished career, he has contributed much seminal information to enrich a basic understanding of islet physiology. The potential is very high that his current work will bring forth new insights into the mechanisms of insulin secretion. His laboratory is supported by a grant from the American Diabetes Association and three grants from the National Institutes of Health, a rotating assistantship from the College of Veterinary Medicine, and, of course, the college itself. ■

Annual Conference Scheduled

Cornell's 91st Annual Conference for Veterinarians will be held March 19 to 21, 1999. The conference features lectures for small-animal, bovine, and equine practitioners.

Topics this year include wildlife parasites, external and internal parasites for small animals, genetic disorders of the dog, upper respiratory disease, surgical management of small animals, large animal vaccine protocols, mastitis, Johnes disease, esophageal disorders of horses, and more.

If you need further information, visit the website at <http://www.vet.cornell.edu/extension/conedu/> or contact the college's office of continuing education by telephone at 607-253-3200 or via email at <lra2@cornell.edu>

Gene Therapy Repairs Equine Cartilage Damage

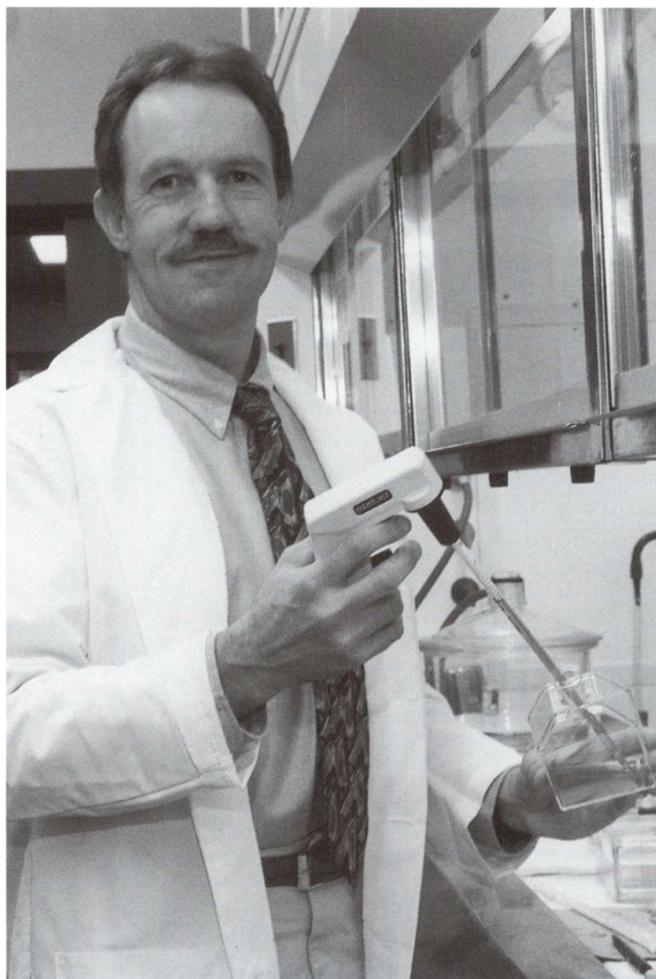
What if you could build a drug-manufacturing plant and insert it in the body, right where it's needed, so that month after month — perhaps year after year — it pumps out substances that heal? That's exactly the gene therapy approach Alan J. Nixon, BVSc, MS, associate professor of surgery, is taking to repair equine cartilage damaged by arthritis.

"Instead of injecting a steroid into a horse's knee to quell the inflammatory response for a little while, we're taking the opposite tack," Nixon explains. "We want to prevent the joint from further deterioration by stimulating the production of new cartilage over long periods of time."

Toward this end, Nixon's first task was to build the manufacturing plant by cloning IGF-I, the insulin-like growth factor that stimulates chondrocyte cells to help build a new cartilage surface inside a deteriorating joint. IGF-I is a strong growth-promoting and matrix-synthesizing stimulant and is the major factor involved in cartilage maintenance in healthy joints.

In the course of isolating and cloning the growth-factor gene, Nixon joined forces with Christopher Evans, the Henry J.

"Instead of injecting a steroid into a horse's knee to quell the inflammatory response for a little while, we're taking the opposite tack."



UNIVERSITY PHOTOGRAPHY/NICOLA KOUNTOUPES

Alan Nixon in the laboratory, extracting culture media in order to prepare cells for analysis of the gene vector

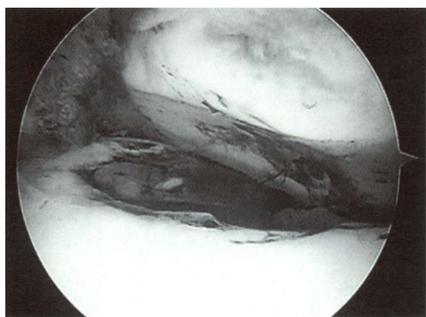
Mankin Professor of Orthopedic Surgery at the University of Pittsburgh School of Medicine. Evans has a thriving gene-therapy program for treating arthritis in humans.

"There are many small promoter areas that make the machinery of the IGF-I DNA more effective in instructing the cells to produce the proteins that build cartilage," Nixon points out. "Evans has developed several DNA enhancers that can boost this production by 10 to 20 times what you'd normally see."

Now in the early phases of an award from the Harry M. Zweig

Memorial Fund for Equine Research, Nixon is looking for the most appropriate delivery system — a vector capable of incorporating the genetically engineered IGF-I gene inside the cell nuclei. The two top candidates are modified viruses: a retrovirus and an adenovirus. In addition to evaluating their penetrating abilities, Nixon wants to be sure that these viruses, though no longer virulent, have no negative side effects inside the delicate joint area.

Using simple gene-splicing techniques Nixon will create combinations of the viruses and



COURTESY ALAN NIXON

A bone cyst in the fetlock joint of a Thoroughbred yearling, following treatment by growth factor and cartilage cell graft.

the IGF-I gene to yield a virion particle capable of penetrating living cells and deliver viral DNA and IGF-I DNA into the host-cell genome. He chose viruses because they are the best vectors for getting a large number of virions through the cell membrane without causing it any harm. He calls this process *transfection*, to distinguish it from *infection*, which implies having made a disease.

The first research phase examines which type of virus most efficiently transfects chondrocytes and synovial, or joint-lining cells, and then how much growth-promoting factor these cells produce as a result. Nixon is looking at the adenovirus first. Preliminary results show that this vector has a penetration rate of up to 90 percent.

"If we took a syringe of this material and injected it into the joint of a horse, we'd confidently expect to see a lot of transfected cells," Nixon says.

However there's a downside to the adenovirus. While the adenovirus penetrates the cell wall to put the IGF-I gene inside, it never becomes incorporated into the cell's own DNA. Hence when the cells divide, the growth-promoting factor isn't carried over to the

daughter cells. This results in strong initial therapeutic effects that are unfortunately of short duration, perhaps only a few months.

Retroviruses, on the other hand, become locked inside a cell's DNA, thus fixing the growth-promoting factor in place, potentially for years. Preliminary studies show retrovirus transfection rates of up to 24 percent.

In subsequent phases of his research, Nixon plans to use retrovirus vectors to transfect chondrocyte cells he grows for transplants being done in the college's Equine Animal Hospital. These grafted cells would thereby have an enhanced capability of synthesizing a new cartilage surface once inside the joint.

The final research phase will test the ability of both virus vectors to transfect synovial and cartilage cells in living animals and the impact transfection has on cartilage lesions as well as on several models of early osteoarthritis in horses.

This is a very exciting time in gene therapy, and Nixon is the first to use it in treating equine arthritis.

"We now know the little snippets of DNA that are essential for initiating cell function and can make them by simply turning a dial on a machine in the Biotechnology Building," Nixon says. "By joining them with the right vector, we hope not only to improve cartilage healing in acute injury, but also for the first time anticipate some reversal of the early stages of arthritis in horses and other animals." ■

James Law Society Established

The College of Veterinary Medicine has established the James Law Society as a special recognition society honoring alumni and friends who have provided staunch support to the college through gifts of \$1,000 or more in each of 10 of the past 11 consecutive years.

"With their steadfast commitment, these contributors provide invaluable support to the College and its programs," explains Robert Kirk, chair of the recognition subcommittee, a part of the college's development committee. "The committee developed this new society in order to recognize and honor longevity of giving to the college."

The society is named for veterinarian James Law, who in 1868 became the first professor of veterinary medicine at Cornell — and in the country. Law worked tirelessly to develop meaningful standards for the profession and to establish the College of Veterinary Medicine, founded in 1894.

People, Honors, and Awards

Judith A. Appleton, MS, PhD, associate professor of immunology in the department of microbiology and immunology and faculty member of the college's James A. Baker Institute for Animal Health, recently was presented with a Chancellor's Award for Excellence in Teaching for 1996-97. In informing her of this honor, SUNY Chancellor John W. Ryan wrote, "The criteria for selection are exacting and they ensure that only those university faculty members who have consistently demonstrated superb skill in teaching receive the Award. Your mastery of teaching, your dedication to your students, your adherence to the highest academic standards, and your scholarship and continued professional achievements are reflected [in] your selection for this honor. Your



Judith Appleton

nomination underscores even further the respect and esteem of your colleagues, the students, and your campus president."

Appleton served as the Cornell's director of graduate studies in immunology from 1994 through 1997. Previously, she also has received the SmithKline Beecham Award for Research Excellence, a Fogarty Center Senior International Fellowship, and appointment as an NIH study section member. She is a graduate of Indiana University and earned MS and PhD degrees in microbiology from the University of Georgia. She worked for two years as a research virologist at the US Department of Agriculture's Plum Island Animal Disease Center in Greenport (Long Island), New York, before coming to the Baker Institute in 1982 as a post-doctoral associate. Appleton's research, which is funded by the NIH, concerns host-parasite interactions in the intestines of rats infected with *Trichinella spiralis*.

Jeanne Barsanti, DVM '74, is the recipient of the 1998 Josiah Meigs Award for Excellence in Teaching from the University of Georgia. Barsanti, a professor of small-animal medicine in the university's College of Veterinary Medicine, has taught veterinary students, residents, and interns at the college for more than 20 years. She began with a residency there in 1976, was hired as an assistant professor in 1977, and promoted to associate professor in 1981 and full professor in 1986.

James Farese, DVM, former resident at Cornell's Veterinary Medical Teaching Hospital, recently shared honors with Cornell veterinary faculty co-authors Rory Todhunter, BVSc, MS, PhD; George Lust, PhD; and Nathan Dykes, DVM; and Cornell laboratory technician Alma Williams, MS. Their paper, *Dorsolateral Subluxation of Hip Joints in Dogs Measured in a Weight-Bearing Position with Radiography and Computed Tomography*, was recognized as the best clinical paper by a resident in veterinary surgery when it was presented at this year's meeting of the American College of Veterinary Surgery in Chicago.

Peter Nathanielsz, the James Law Professor of Physiology and director of the Laboratory for Pregnancy and Newborn Research at the college, has been inducted as a Fellow of England's Royal College of Obstetricians and Gynaecologists. Ceremony officials cited him as "a fetal physiologist of world renown," adding that, "He and his colleagues have made numerous contributions to our understanding of the role of the fetus in the initiation of labor, to the adaptation of the neonate to extra-uterine life, and, more recently, to the physiology of myometrial contractility and the importance of intrauterine influences upon adult diseases."

In Memoriam

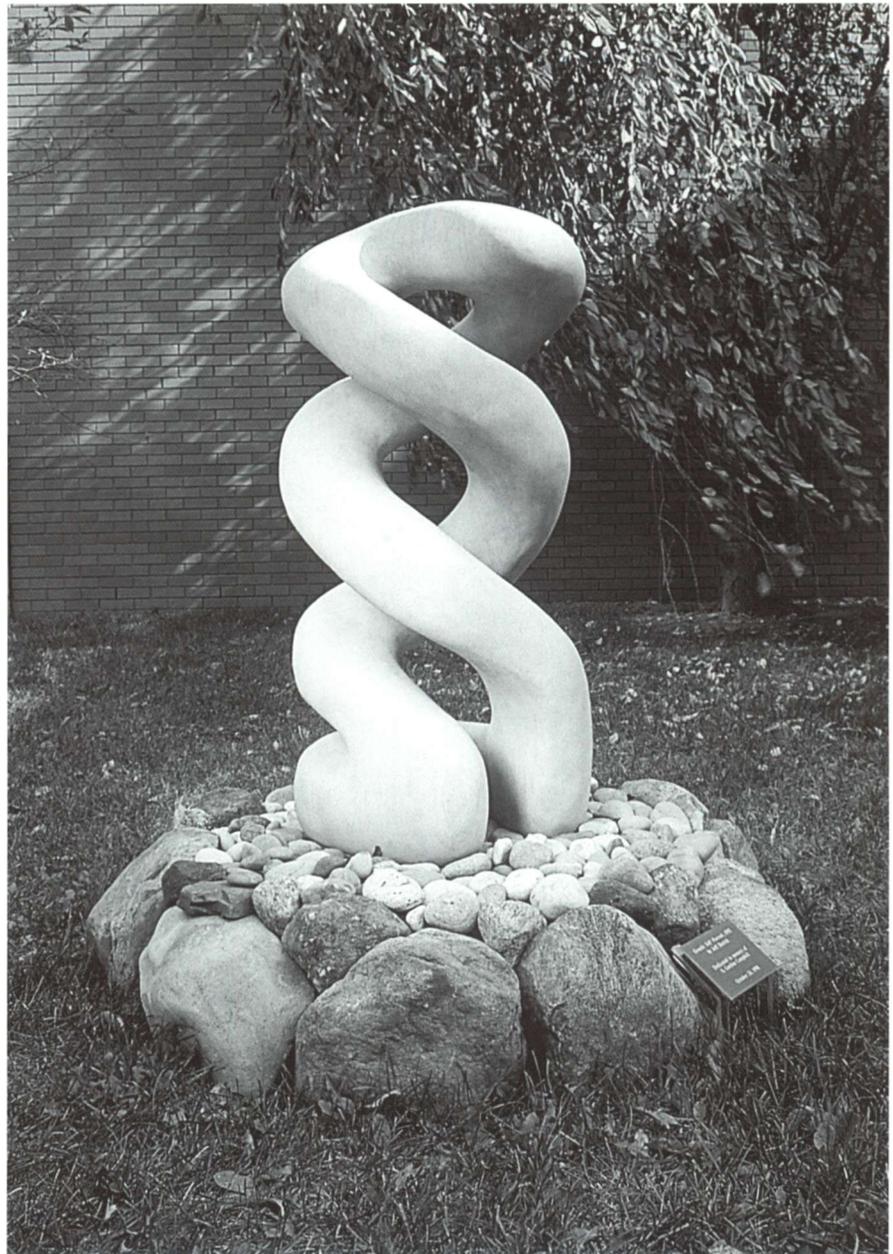
H.P.A. de Boom, former visiting professor of anatomy (1951–52, 1961–62, and 1975–76) at Cornell's College of Veterinary Medicine, died on August 29 at his daughter's home in Cullinan, Republic of South Africa. De Boom was a former head of anatomy in the Veterinary College at Onderstepoort, South Africa. He was predeceased by his wife, Sarie; he is survived by two daughters, Marcella and Karin, and a son, Jannie.

Coburn De Goosh, DVM '51, died in September. He was predeceased by his wife, Jess; he is survived by a son and a daughter.

Roger A. Laundry, DVM '59, died on October 6. He is survived by his wife, Marcia Laundry.

Muriel O. Roe, DVM '49, died on September 10. She is survived by her husband, Reverend Dr. Nathaniel C. Roe, of Washington, PA; three sons, Daniel, David, and Thomas; and two daughters, Nancy Kagarise and Martha Noftziger.

Lawrence M. Sherman, DVM '57, died in July. He is survived by his wife, Betty M. Sherman, of Plattsburgh, NY. ■



UNIVERSITY PHOTOGRAPHY/NICOLA KOUNTOUPES

Sculpture Dedicated

The sculpture titled *Genetic Self-Portrait* was dedicated on October 24 in memory of S. Gordon Campbell, BVMS, MRCVS, VSc, PhD, former professor of microbiology and associate dean who died in September 1997. Created in 1992 by Jeff Burch, an artist in Orangeburg, New York, the limestone sculpture measures 42 x 18 x 18 inches. The artwork was donated to the college by Jay Hyman, DVM '57.

Recent Gifts to the College

Equine Recovery Pool

An anonymous former client of the Veterinary Medical Teaching Hospital has given a \$90,000 gift to the college to support the construction of an equine recovery pool in the Equine Hospital. The primary purpose of the therapeutic, in-ground pool, which will cost approximately \$250,000 when complete, will be for anesthesia recovery in horses who have had long-bone surgery. Water, four times the density of air, reduces the velocity and force of a horse's flailing and thus minimizes the potential for re-injury of limbs during recovery. The water used to fill the 4-foot-wide by 8-foot-deep by 12-foot-long pool will be at the same temperature as a horse's body. While it is still asleep, an anesthetized horse on a sling (attached to an overhead railing) can be lowered into the pool. As the horse begins to awaken from the anesthesia, the hydraulic floor of the pool will rise under its feet, to the point that the horse, once recovered from the effects of the anesthesia, can walk easily out of the pool and onto the room's floor. The pool also will be equipped with whirlpool jets, to aid in muscle relaxation. The recovery pool, which will be located near the hospital's padded recovery rooms, is scheduled for a possible spring or early summer 1999 completion. It is also planned that the pool may be used for physical therapy in horses rehabilitating from severe injury, where weight-bearing is painful or horses are weak and have difficulty standing.

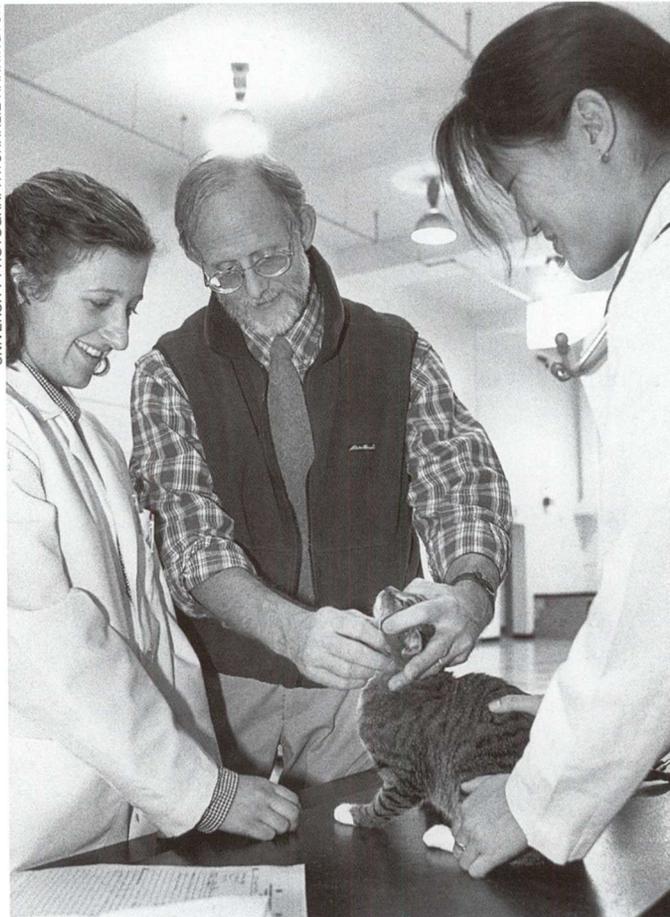
Gift for Program Innovation

An endowment has been established through a gift to the college from Paul and Linda Gould. The fund will provide support in perpetuity for information transfer between referring veterinarians and the college, with the ultimate goal being enhanced patient care. Paul Gould, '67, is a member of the college Advisory Council.

Gift Benefits Healthy Pet Clinic

The Sandra Atlas Bass Fund, through its donation to the Veterinary Medical Teaching Hospital's Community Practice Service, supports the college's Healthy Pet clinic at Ithaca's Southside Community Center. Through the program, veterinary students offer a monthly clinic at the center, where they provide basic health care for dogs and cats owned by clients without the financial resources

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(left to right) Kimberly Agnello, DVM Class of 2001; William Hornbuckle, DVM, professor of medicine and director of the CPS medicine program; and Kara Grosser, DVM Class of 2001 examine a cat during the Healthy Pet clinic in October.



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(center) Anjilla Cooley, DVM, MS, surgery lecturer and director of the CPS surgery program, checks the new pulse oximeter during canine neuter surgery in the teaching hospital.

to pay for such services. The fund will help offset the costs of physical examinations, vaccines, and spay/neuter surgical procedures for animals who are patients at the monthly clinic.

Equipment for CPS Surgery

Thanks to a long-term loan from Nellcor, a veterinary medical equipment company in Florida, the college's Veterinary Medical Teaching Hospital now has a new pulse oximeter, which will be used to support both teaching and community service programs. The equipment, which measures oxygen flow in the patient's blood during surgery, will be used by third-year veterinary students during their two-week surgical rota-

tions in the hospital's Community Practice Service, during which time they perform spay and neuter surgeries. The CPS rotation emphasizes a strong community service component: the majority of animals who are patients in CPS surgery are from the local Society for the Prevention of Cruelty to Animals, who need to be neutered prior to adoption. The Veterinary Medical Teaching Hospital does not charge the SPCA for this service. ■

Find It on the Web!

The college site on the World Wide Web at <http://www.vet.cornell.edu/> offers a wealth of resources on college activities.

For breaking news and features, check Showcase at <http://www.vet.cornell.edu/showcase>. For a listing of college events, go to <http://www.vet.cornell.edu/calendar>.

The college website is updated and expanded constantly, says Roberta Militello, web administrator. New pages include the following.

Veterinary Medical Teaching Hospital at <http://www.vet.cornell.edu/hospital>, details services and facilities, educational opportunities, appointments and directions, and giving a gift to the hospital.

Continuing Education at <http://www.vet.cornell.edu/extension/conedu>, has information and schedules for upcoming workshops and conferences for veterinarians.

AQUAVET Program at <http://www.vet.cornell.edu/public/aquavet>, offers details about Cornell's program in aquatic veterinary medicine.

Flower-Sprecher Library at <http://www.vet.cornell.edu/library>, will offer access to the veterinary library resources. Look for this page very soon!

The college's second annual Web Weeks workshops are scheduled for February 8-12, 1999, and again two weeks later, February 22-26. Hands-on workshops range from beginning to advanced levels: possibilities on the web, surfing for information, authoring web-pages, using veterinary journals on the web, preparing images for the web, creating virtual reality resources, and more.

College Active in Genomics Task Force

Within the next decade, large-scale DNA sequencing will reveal all of the genes required to encode major life forms. Recognizing that research to achieve such goals will require a synthesist approach, one year ago Cornell formed a Genomics Task Force to develop a university-wide plan for a genomics initiative that integrates molecular information for whole organisms, physiological systems, and behavior.

Faculty members from relevant fields were appointed to the task force by university deans and directors from Cornell's Boyce Thompson Institute, College of Agriculture and Life Sciences, College of Arts and Sciences, College of Engineering, College of Medicine, College of Veterinary Medicine, Division of Biological Sciences, and Division of Nutrition.

College of Veterinary Medicine faculty on the task force include: **Gustavo Aguirre**, VMD, PhD, Alfred H. Caspary Professor of Ophthalmology; **Douglas Antczak**, VMD, PhD, Dorothy Havemeyer McConville Professor of Equine Medicine; **Colin Parrish**, PhD, associate professor of virology; and **Rory Todhunter**, BVSc, MS, PhD, assistant professor of surgery.

"Cornell is uniquely strong in a broad range of sciences," explains Antczak. "Molecular and evolutionary biology, genetics, human and animal medicine, agriculture, engineering, computer science — we

have the resources crucial for breakthroughs and world-wide leadership in genomics."

The task force is charged with developing a genomics initiative guided by a long-term vision for agricultural, biological, engineering, and medical research. Specifically, the task force is working to:

- identify research areas in which Cornell could, with appropriate planning and investment, become the world leader in the next three to 10 years
- identify sets of faculty members who would develop these areas and pursue large funding sources (National Science Foundation Centers, National Institutes of Health, private donors, private industry)
- identify key faculty positions that must be filled if Cornell is to be a world leader in these research areas
- develop a plan for new faculty recruitment that would be coordinated among the relevant colleges and divisions
- formulate ideas about how such an initiative would effect existing training programs at Cornell or lead to the development of new ones

The task force has delivered an initial report to the university provost and is now developing a detailed financial plan and recommendations for action, in consultation with the deans, directors, and provost. ■

AINSWORTH CONTINUED FROM PAGE 3

school in England. They said I could do that after college. I went ahead and did my sciences and then forgot to go to riding instructor school!"

"I'm very lucky to have Cornell students because they are really smart and really driven."

Veterinary students are lucky to have her and they know it. At last spring's commencement, the graduating class voted to honor Ainsworth as the 1998–99 Norden Distinguished Teacher.

She says it's their questions that keep her sharp, along with the complexity of cases she sees in the clinics (as owners are willing to spend increasing amounts of money), and the need to retool to stay abreast of the latest scientific trends.

"I thought I would feel pretty cocky by the time I was my age," Ainsworth says, laughing at herself. "But no! There's something new to learn every day!" ■

Apologies

Roger J. Avery, PhD, professor of virology, is the chair of the college's department of microbiology and immunology. In the story *Reorganization Update: Academic Departments* on page 11 of the fall issue, his first name was stated erroneously. Our apologies.

Antonia Jameson, Class of 1999, is the 1998–99 recipient of the college's James Law Scholarship for combined DVM/PhD studies. On page 15 of the fall issue, in the story titled *Changing Lives Everyday: The Impact of Scholarships*, we misspelled her last name. We apologize for the error.



Symposium To Highlight Species Conservation

The 1999 Special Species Symposium, focusing on *The Role of Zoological Medicine in Species Conservation*, is planned to be held April 16 to 18 at the college. Speakers will include numerous key figures in zoo, wildlife, and nondomestic-animal medicine.

The student-organized event has been held every other year since its beginning in 1991; the weekend-long series of lectures and laboratories draws veterinary students, staff, and practitioners from both within Cornell and around the country.

The symposium is intended to present veterinary students with additional training in the field of zoological medicine and species conservation and offer a formal approach to strengthening professional relationships between veterinary students and eminent figures in nondomestic-animal veterinary medicine.

For more information, to register, or to offer financial support for the event, please contact the two veterinary student co-chairs: Luis R. Padilla, Class of 2000, via email at <lrp1@cornell.edu> and Eric Baitchman, Class of 2000, via email at <eb34@cornell.edu>. ■

Facility Renovations in Final Phase

Construction signs and occasional noise give away the news that significant renovations are underway in the area of the college that once housed the former teaching hospital.

The renovations, funded by the State University of New York, are a continuing construction phase that had been planned to follow the construction of the Veterinary Education Center and the Veterinary Medical Teaching Hospital.

The renovations, which will total approximately \$8 million and are anticipated to be complete in mid-year 2000, will create new facilities for several program areas — educational, clinical, and research-based, according to William Anderson, the college's director of facilities.

The two-story former small-animal clinic (east-west wing) is being renovated to provide tutorial rooms, a conference room, faculty offices, hospital administrative offices, several laboratories, and an elevator.

The single-story former large-animal clinic (north-south wing) is being remodeled to provide a teaching suite equipped for live animals, to be used in both the veterinary curriculum and continuing education, as well as a surgery suite to be used in teaching third-year veterinary students. The barns on the

opposite side of the breezeway will be renovated to accommodate locker rooms and showers for approximately 300 students; an equine lunging arena (south-east corner) equipped with collapsible bleachers so that it can be used for teaching and demonstrations; offices, a seminar room, supply space, and a four-vehicle indoor garage for the ambulatory and production animal medicine service; a research-focus reproductive studies area with embryology and semen laboratories (between former barns K and L); teaching-focus reproductive studies area with phantom laboratory (between former barns L and M); the breezeway, and K, L, and M barns will remain as they are.

Throughout the reconstructed area, the 50-year-old tile walls are being replaced with sheetrock walls to meet the current firecode; the original terrazzo floor will remain; all windows facing the courtyard are being replaced with new, energy-efficient windows.

Architect for the project is Perkins, Will Architects from New York City; Christa Construction Company, from Rochester, is general contractor. ■

C O R N E L L
Veterinary Medicine

College of Veterinary Medicine
Cornell University
Ithaca, New York 14853-6401

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. For a month-by-month listing of events at the college, check the college website at <http://www.vet.cornell.edu/>

December

6-9 American Association of Equine Practitioners conference, Baltimore

January

9-14 North American Conference, Orlando

February

14-18 Western States Conference, Las Vegas
19-20 Westminster Kennel Club Show, New York City
26-27 DVM Admissions Information Session, Cornell

Celebrating Veterinary Technicians

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Patricia Homer, LVT, prepares Chris, a five-year-old yellow Labrador retriever, for a radiograph of his front foot at the Companion Animal Hospital of Cornell's College of Veterinary Medicine, where observances of National Veterinary Technician Week, October 11 to 17, included a coloring contest and guessing games for children visiting the hospital as well as a series of lectures for veterinary students. Licensed veterinary technicians work closely with veterinarians and other members of the veterinary medical team at the college's Veterinary Medical Teaching Hospital, delivering quality animal health care.