



COVER STORY

ALL-STARS WITH ANIMALS

N.C. State University College of Veterinary Medicine

The human-animal bond and the dynamic relationship that exists between people and their pets and people and their farm animals is powerful and emotional. Since its inception in 1978, The N.C. State University College of Veterinary Medicine (CVM) has continually sought to improve the health of animals.

Twenty-five years ago, the CVM saw 12,000 patients each year. That number has risen each year to 22,000 in 2007 and a growth of specialty medicines. The Randall B. Terry Jr. Companion Animal Veterinary Medical Center is currently under construction at the CVM. When completed in late 2009, it will provide the next level of care and be one of the preeminent veterinary hospitals in the world. It is anticipated to provide care for 25,000 companion animals per year.

The demographics of veterinary schools are changing across the globe. In the U.S. and at the CVM, 80-90 percent of the students are women from suburban and urban areas. Gone are the days of the James Herriot books that included *All Creatures Great and Small* where veterinary practices were mostly men calling on farms. The U.S. is less of an agrarian society than we used to be and technology has changed that world. Most animals in this country are companions and pets in the home, not farm animals. Of the current veterinary students, 80-90 percent will go into companion care veterinary medicine.


Women's Edge had the opportunity to spend a few days at the CVM and to speak with a few faculty members who shared their vision for the field and profession, what they do and how they became involved in veterinary medicine. Meet this incredible group of women and learn how they are changing the face of our world.

Dianne Dunning, DVM, MS, DACVS

Clinical Associate Professor and Director, The Animal Welfare Ethics and Public Policy Program

"I believe that I originally went into veterinary medicine because of my interest in math and science, coupled to an interest in and love of animals," explains Dianne.

Prior to her current position, Dianne was an orthopedic surgeon for small animals. While at the University of Illinois, prior to N.C. State CVM, she ran the surgery training program that included training from all procedures to core fundamental skills. It was here that she began an interest in animal welfare as she worked with shelters in spay and neuter programs. In shelter animal medicine, Dianne saw real needs

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within the curriculum to address pet overpopulation, feral cats and animal abuse. These were all patterns of behavior that veterinarians were beginning to address.

Dianne joined the CVM in 2005 and has authored or co-authored five books in less than three years. In addition to animal welfare, Dianne's interests include the human-animal bond and exploring the connection between animal welfare and community

well-being. At N.C. State, Dianne has created one of the leading animal welfare programs in veterinary medicine in the U.S.

"Many people have inspired me and were mentors over the years," she says. "Several stand out. The first is Dr. MD (Mo) Salman, a professor of veterinary epidemiology at Colorado State. He continues to guide and influence me regarding global and population health as it relates to veterinary medicine. Dr. Sharon Kerwin is a professor of small animal surgery who is a good friend and mentor since I began in academia. She has a wonderful world view, work ethic, and strong commitment to family and teaching. Dr. Ann Johnson is also a professor of small animal surgery. She was one of the first woman board-certified surgeons within my specialty college. She has set a great example of strength and wisdom for me to follow."

"Animals are wonderful models for human health," she shares. "There is a lot of research that is effective not only for animals, but for people as well. We have had clinical trials for osteosarcoma that have created a lot of advancement for children with bone cancer. Pharmacology research sometimes finds that a drug works better on humans than it does with dogs. There has been proven efficacy in other fields as well that include orthopedic, oncology and ophthalmology."

Dianne believes that students in the CVM are the source of power. They are the future. She feels that it is important to create diversity within the student population and to focus on all of the industries within veterinary fields. There are deficits in food supply, pharmacy, toxicology, drug development and research, scientists and clinicians.

When asked what Dianne loves about her job, she shares, "I love to teach. Our students are our strongest and most pow-

erful asset. They are the future of veterinary medicine and come to us with an unbelievable array of talents and life skills. I feel fortunate to be able to come to work each day. Another important part of my job is to ensure programmatic alignment with various funding sources and communications. In my present position, I have a great deal of flexibility to create new programs and initiatives related to public health, animal welfare, disaster management and veterinary medicine in general."

Natasha Olby, VetMB, Ph.D., DACVIM

Associate Professor, Neurology

Natasha hails from the United Kingdom (U.K.) where she earned her veterinary medical degree at the University of Cambridge. She specializes in small animal neurology and neurosurgery. Natasha is very highly regarded in her field, both in the U.S. and abroad.

Animals were an early love in her life. Growing up in the U.K. she had a pony. She toyed with the idea of a mixed veterinary practice on a farm, but realized she could do so much more for companion animals. In veterinary school, Natasha became fascinated with neurology.

Natasha's work includes several research areas in addition to teaching. One is on acute spinal cord injury in dogs. "This is exciting work with surgery and transplants," she says. "We focus on quantifying injury severity, investigating mechanisms of recovery from spinal cord injuries and clinical trials that evaluate efficacy of neuroprotective drugs." She is currently the principal investigator in a clinical trial for dogs with acute disc herniations.

Several research projects are underway that Natasha is working on with brain tumors in dogs. One is to determine if a particular type of treatment is effective. The research focuses on identifying novel antigens specific to brain tumors that can be used as therapeutic targets. Another project focuses on the genomics of canine brain tumors. She looks at how dogs are bred



Dr. Natasha Olby

and for general abnormalities and hopes to identify genetic markers that will also be helpful in human medicine.

"The nervous system is hard to get to," Natasha explains. "We use imaging such as an MRI to show structural abnormalities and then follow up with neuro workups. There are many neurological diseases that are hard to figure out."

Natasha has adopted "Mickey" who is seen in the photographs with her. He had no feeling and use of his back legs and was brought in to be euthanized. Eight years later, Mickey is quite mobile with the use of his cart and is part of her animal family at home.

When asked what her favorite aspect of her work is, Natasha quickly says, "All three. I enjoy the clinics with the human contact. Teaching allows me to follow students all the way in their studies and work. My research is intellectually stimulating. I see problems in the clinics and then incorporate them into the research. All three areas rejuvenate me."

Prema Arasu, Ph.D., DVM

Associate Professor, CVM

Associate Dean, The Graduate School



Dr. Prema Arasu

Originally from Malaysia, Prema grew up around dairy animals and her father had horses and polo ponies. It was not easy to be a woman interested in veterinary in Malaysia so she came to the U.S. for her studies. Prema received her M.S. degree at the University of Wyoming, her Ph.D. from the Hahnemann University of Health Sciences in Pennsylvania, her D.V.M. from Cornell and did Post-doctoral work at Harvard Medical School.

Prema's work focuses on host/parasite interactions in animals that have a lot of intersection as a model for human disease. She wears a few hats at the university, one as a director of international programs and the other as an associate dean at the Graduate School.

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The North Carolina Veterinary Medical Foundation

Many have had experiences bringing in pets for treatments at the N.C. State College of Veterinary Medicine. They know the cutting edge treatment patients receive, they know the compassion of the clinicians and they know the vast array of specialties available for treating complex medical problems. However, the N.C. State College of Veterinary Medicine also provides revolutionary research which impacts not just animal health, but human health as well.

Animals are a crucial part of our lives. They provide companionship, they serve as food sources and they often serve as indicators of environmental process and disease. This college is ranked as one of the top five colleges of veterinary medicine in the country in *US News and World Report*. The N.C. State CVM plays a critically important role for animals and their owners, both in the state and in the nation.

In order to retain and recruit top faculty, provide student scholarships, build academic programs and continue critical research, the N.C. State CVM relies on support from the North Carolina Veterinary Medical Foundation (NCVMF). Since 1978, the Foundation has attracted funding for the college's teaching, learning, research and extension in the field of veterinary medicine.

Gifts to the NCVMF can support any of the exciting programs or research taking place at the college. Donations can also support the creation of the Randall B. Terry, Jr. Companion Animal Veterinary Medical Center (Terry Center), which will have the capacity to serve 25,000 veterinary cases annually and be a national model for excellence in companion animal medicine upon its completion in early 2010. Donations to support the Terry Center will be matched by the Terry Foundation so that your gift can have twice the impact.

When you make a gift to the CVM, you help students and faculty use their skills and scientific knowledge for the benefit of society. Your gift will help the NCVMF continue its mission to promote the well-being of animals and people through education, research, and service.

To make a donation or get more information about the CVM, please call (919) 513-6660 or visit <https://www.acs.ncsu.edu/scripts/cvm/cvm.pl>

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Faculty in the international arena engage with Prema as a focus on food as it relates to animal production. Many diseases that affect populations throughout the world begin with animals such as SARS, AIDS and the Avian Bird Flu. With proper education in safe handling, tools and care, future diseases that start with farm animals can be kept from developing and others from spreading. These global initiatives are key to public health as well.

Some of the countries that this group works with are Uruguay for public health and India for animal welfare and clinical health. They have been a part of the reconstruction in Afghanistan and Iraq and at a conference last year put together a team of U.S. board certified veterinarians who interfaced with the U.S. Army, 100 Iraqi veterinarians and other agencies for international health. The second workshop to follow through on the work that was begun will be in Damascus this year.

Prema works closely with the international office on campus and has represented the university in its initial forays into India and China. She is instrumental in positioning N.C. State in its public health and international outreach.

At the Graduate School, Prema recognizes the need for global work. She is a firm believer in building partnerships. The program has arrangements with students from all over the world to come here to the Triangle and to build stronger relationships with the university and the global health community.

Prema sees several challenges in the field of public health and feels that more veterinarians are needed in that arena. She feels that there are a lot of underserved rural areas in the U.S. as well as across the world. These are areas where food animals come from and can affect large populations.

"With our growing international partnerships, we brand ourselves as a global health mecca," she says. "The growth in the CVM is aligned with the world focus."

Lizette Hardie, DVM, DACVS Head of the Department of Clinical Sciences and Professor, General Surgery

Lizette Hardie did not set out to be a veterinarian. She did not grow up with dreams of taking care of animals. Originally she wanted to do occupational therapy or work in a research lab. As she pursued that direction she quickly found out she didn't have a lot of empathy for human patients in occupational therapy. She found it discouraging and spent her time working with people who didn't want to go on or to be alive. That was the deal breaker for Lizette. She needed a career with more satisfaction.

"The veterinary college was a good fit for me," Lizette shares. "I had many choices to decide which avenue was right for me – wildlife and conservation, small animal practice, dairy farm or international."

Lizette has been a member of the faculty at N.C. State CVM since 1985 when she started as an assistant professor of surgery. She has since moved up to a full professor in 1998 in the department of companion animal and special species medicine. Her specialty is small animal surgery and she is currently the department head of Clinical Sciences. She feels that she is fortunate to work at the CVM. "N.C. State is an easy place to attract talented faculty. We have a tremendous amount of collaboration."

Working with the students is a big interest of Lizette's. She teaches small animal surgery and coordinates clinical curriculums. Lizette explains, "Students today expect to be able to use the web and videos to learn. There has been a huge knowledge explosion in the past four years. In addition to veterinary skills, it is important for students to have strong communication abilities, biomedical experience and business skills. These are critical pieces for them when they leave the school and go out into the work world."

Seventy-five percent of courses are core curriculums and 25 percent are electives which are mostly taken in the fourth year. At the end of a semester there are two-week programs called "selectives." These programs include topics like communication and give the students extra exposure to build expertise prior to graduation. Some of the courses are taught in conjunction with the N.C. State College of Management.

There have been many changes since Lizette entered veterinary school. In 1979 only one-third of her class were women and there was not much diversity. She feels that veterinary schools today should still increase the student population to include various ethnic backgrounds.

Lizette loves what she does. She says, "veterinary medicine is a high-paced service profession." It is evident she has chosen the right field for her. She lights up just talking about her career.



Dr. Lizette Hardie

Christine McGahan, Ph.D. Research Professor in Pharmacology and Department Head, Molecular Biomedical Sciences



Dr. Christine McGahan

Imagine working on an area of focus for 29 years. Christine (Chris) McGahan has been doing just that through a National Institute of Health (NIH) grant funded by the National Eye Institute that she received as she was doing her post-doctoral training. The grant has been continually funded since.

Much of Chris' work today involves iron as it relates to cataracts, one of the major health problems worldwide. The central focus of her laboratory is on iron in the diet and free-radical reactions. Oxidated damage results from iron and the damage to the lens and the retina of the eye causes cataracts. Her areas of scientific expertise include ocular pharmacology and lens biochemistry.

This is a highly specialized field with only three to four people in the world who focus on iron and its relationship to the eyes. Treatment of cataracts is a multi-billion dollar expense and this research is critical to the reduction of the population affected.

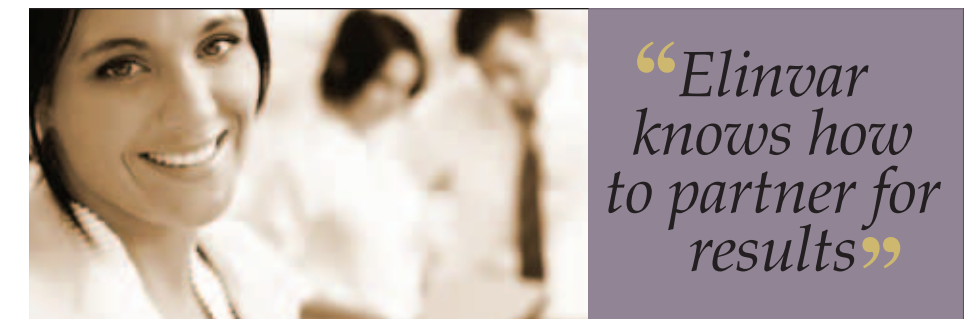
Mentors have been important to Chris as she has followed her path in her specialty. In her Ph.D. program at Mount Sinai School of Medicine, Dr. Peter Bentley was a tremendous influence. During her Post-doctoral at the Harkness Eye Institute at Columbia Uni-

versity, Dr. Laszlo Bito was her mentor. Because of those experiences, she uses mentoring in her department.

"It is important to be mentored by the right people," she says. "I review each person in my department annually and always have an open-door policy. I expect people to tell me if they have a need or don't like something. Mentor relationships should mean something to both parties. We have established a formal mentoring system within the department and all assistant professors have mentors. We work together through this system until an assistant professor becomes tenured which could be at least six years. Each is paired with a full professor."

Chris is very involved with many professional organizations within her field. As a member of the National Advisory Eye Council which looks at the scope of grants, Chris advises directors in the program. She is also the secretary of the International Society of Eye Research. Chris has participated in a number of ad hoc NIH review panels and has been very active in eye research related scientific organizations.

"If I didn't have my lab, I would go a little crazy," Chris says as she chuckles. Many days she can be found in a conference room doing research and writing. Commitment is part of her life as she makes a difference in the world of medicine.



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