

ERH Emitter

Department of Environmental & Radiological Health Sciences

College of Veterinary Medicine and Biomedical Sciences
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Colorado State University Home to First Big-Bore PET/CT Scanner

Colorado State University unveiled in November a PET/CT scanner that is the first of its kind in a veterinary teaching hospital and only the third in any hospital in the world (human or animal). The scanner is specially tailored for veterinary medicine, allowing it to be used on small and large animals.

The Gemini TruFlight Big-Bore PET/CT imaging system benefits multiple services at the Veterinary Teaching Hospital, including oncology, neurology, cardiology, and equine medicine.

“The University’s ability to remain a leader in veterinary medicine and cancer research depends upon its ability to stay on the cutting edge of technology and knowledge,” said Tony Frank, President of Colorado State University. “This new system provides another avenue for the Veterinary Teaching Hospital to offer animals the best treatment available while greatly enhancing our ability to learn more about how to treat – and save lives – of people and animals with diseases such as cancer. We’ve come a long way from radiographs.”

A PET/CT scanner combines a computed tomography – CT – scanning functionality with a positron emission tomography – PET – scanning functionality. CT provides detailed anatomic images of body



PET/CT ribbon-cutting ceremony. From left to right: Drs. Jac Nickoloff, Wayne Allard, Tony Frank, Susan Kraft, Lance Perryman, and Richard Park. Photo by Charlie Kerlee.

regions. PET allows veterinarians at the University to image blood flow to tumors and metabolically active structures. The two images can be combined to create a three-dimensional fused image of the structures.

The scanner’s big bore feature provides a patient opening 15 centimeter larger than previous generations of PET/CT systems. The larger opening gives the hospital the ability to image equine and other large animal patients more easily and provide positioning flexibility when scanning oncology veterinary patients.

The state-of-the-art scanner complements the hospital’s Varian Trilogy Linear Accelerator, which delivers radiation for cancer treatment to animals and also is the only system of its kind in any animal clin-

In This Edition:

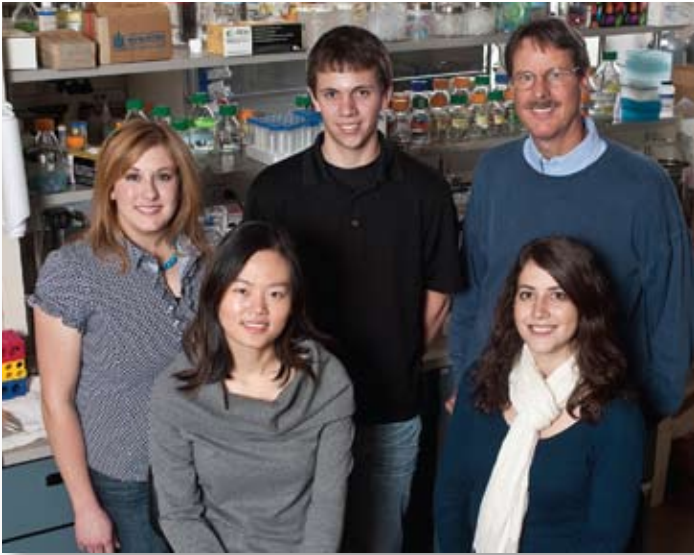
· Large-Animal Gamma Camera ·

· Roles of Telomeres in Feline Kidney Disease ·

· Professional Society Provides Scholarship Support ·

and More . . .

Welcome



Dr. Jac Nickoloff with his lab group, from left to right: Dr. Amanda Ashley, graduate student Jingyi Nie, and undergraduate students Jeff Wischhusen and Courtney Amerin.

Dear Friends,

This is an exciting time of new projects and new technology in the Department of Environmental and Radiological Health Sciences. Colorado State University is now home to two new state-of-the-art pieces of equipment that are enhancing our diagnostic imaging and radiation programs in research, teaching, and client services. Through the hard work of so many people within and outside of the Department, the Veterinary Teaching Hospital has on site a new PET/CT big-bore scanner, only the third of its kind anywhere in the world in human or animal hospitals, as well as a large-animal gamma camera.

While the technicians from Phillips Healthcare were installing the PET/CT in the recently constructed imaging suite, they commented on what a pleasure it was to work in a hospital that treated animals, and how each day they enjoyed walking through the waiting room knowing that some of the four-legged patients they saw may one day be helped by the machine they were installing. It's important to realize how the work done here will not only advance animal medicine, but have a positive impact on human health as well.

Some of the funding for our new equipment came from the National Aeronautics and Space Administration to support research into the impacts of radiation on astronauts during long space flights. Other funding came from the Health Resources and Services Administration, Colorado State University, and the College of Veterinary Medicine and Biomedical Sciences. We are very appreciative also of the efforts of former U.S. Sen. Wayne Allard on our behalf, and to the University administration for their support. You can read about the PET/CT in this edition of *Emitter* magazine, and I'm sure we'll hear more about it in the months and years to come as our investigators and clinicians explore the full range of its possibilities.

In other news, we have two researchers within the Department who have received funding from the Morris Animal Foundation for research into two important diseases affecting cats. These are kidney

failure, a leading cause of death in older cats, and oral squamous cell carcinoma, the most common type of oral cancer in cats and, for now, largely untreatable. This investment by Morris may one day lead to improved treatment for both these diseases and we look forward to watching these studies progress in the months to come.

In this edition of *Emitter* you'll meet Dr. Lesley Butler, one of our new faculty members; Dr. Russell Thomas, an alumnus of our graduate program; and Jessica Lucero, student president of the Environmental Health Student Association. You'll also read about Dr. David Gilkey, a valued voice of advice and experience to undergraduate and graduate students alike, and get an update on some changes several of our faculty members are making in their professional lives.

I hope you enjoy the Winter 2010 edition of *Emitter* magazine. I welcome your questions and comments on the magazine and its contents, as well as suggestions for articles in future editions. Please drop us a line or give us a call with your input.

Best regards,

Jac A. Nickoloff, PhD
Professor and Head
Department of Environmental and Radiological Health Sciences

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The ERHS *Emitter* is published two times annually by Colorado State's Department of Environmental and Radiological Health Sciences and produced by Communications and Creative Services. We welcome your questions, comments, and story suggestions. You can e-mail your comments to Carol Borchert, ERHS *Emitter* editor, at carol.borchert@colostate.edu. You also can visit us on the Web at www.cvmb.colostate.edu/erhs/.

Colorado State University Home to First Big Bore PET/CT Scanner

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ic or veterinary teaching hospital in the world. The accelerator and new PET/CT scanner are connected with software that allows them to share images, improving the veterinarian's ability to perform treatment planning and execute those plans with high precision.

"We're pleased to be the first veterinary hospital or clinic in the world to offer this service to our clients," said Dr. Lance Perryman, Dean of the College of Veterinary Medicine and Biomedical Sciences. "It further enhances the expertise of the University's veterinarians, who are among the best in the world at diagnosing and treating a number of diseases that are important to both the animal and human populations."

The PET/CT scanner is used for cancer treatment, detection of metastases, surgical and radiation treatment planning, and monitoring the effect of treatments such as radiation and chemotherapy on a malignant tumor. The scanner includes respiratory gating which allows sophisticated tracking of chest movement when the patient breathes to optimize imaging and radiation therapy of lung cancer. The scanner also serves the needs of specialists in orthopaedics, neurology, and cardiology, offering higher-quality imaging capability for improved diagnosis and treatment planning.

The new Philips Healthcare PET/CT scanner was funded with assistance from appropriation requests from former U.S. Sen. Wayne Allard, through NASA and the Health Resources and Services Administration. The University and College of Veterinary Medicine and Biomedical Sciences also contributed required federal match-



Drs. Alfred Fuciarelli and Susan Kraft with Winston.

ing funds and facility renovation funds. Some of those funds are expected to be recouped through services to hospital clients.

"While I was a student in the CSU veterinary college and since graduation, the College of Veterinary Medicine and Biomedical Sciences has always been among the best," said Dr. Allard, who is an alumnus of the Professional Veterinary Medical program. "I was happy to help secure the money for the new PET/CT imaging machine because I believe it will result in not only national recognition but worldwide recognition of the research and clinical services at the college."

Dr. Jac Nickoloff, head of the Department of Environmental and Radiological Health Sciences, noted that the successful installation of the PET/CT scanner at Colorado State University was due to the collective efforts of numerous faculty members within the College of Veterinary Medicine and Biomedical Sciences. Faculty members actively involved in the planning and acquisition of the PET/CT, as well as the design of the imaging suite, were Drs. Richard Park, Susan Kraft, Al Fuciarelli, Stephen Withrow, and Fred Harmon.

"Without their efforts, as well as the financial support of the College, University, and federal funding agencies, we would not have been able to bring this incredible technology to the Veterinary Teaching Hospital," said Dr. Nickoloff. "We are greatly appreciative to everyone who contributed and excited to use the new equipment to enhance our programs in animal and human health."

Alumni Group Establishes CSU Radiation Health Scholarship

The Friends of CSU Radiation Health Program, an alumni group led by Dr. Craig Little and Jan Johnson, have established the CSU Radiation Health Scholarship to benefit graduate students who are enrolled in the Department of Environmental and Radiological Health Sciences and show intent to enter the fields of radiation health, health physics, radioecology, or radiation biology.

"Scholarships enhance our ability to attract the best and the brightest students to our programs, and that is especially important as we look to attract more graduate students to these important fields of study," said Dr. Jac Nickoloff, Head of the Department of Environmental and Radiological Health Sciences. "Majors in radiation health are coming into high demand as industry, academia, and government agencies struggle to keep up with new technology, changing regulations, and expanding applications, particularly in medicine and energy."

The CSU Radiation Health Scholarship has been established as an expendable account with gifts held in the fund for short periods of time and awarded on an as-needed basis and when funds are available. Eligible students need to fill out the Colorado State University scholarship application and an appointed committee shall select the recipient.

"CSU alumni are the most generous and loyal people I know," said Dr. Thomas Johnson, an Assistant Professor in ERHS. "Their actions will have an immediate and direct impact on the number of graduates in our program. Drs. Craig Little and Jan Johnson should be commended for their efforts in conceiving and implementing this scholarship."

For more information on the CSU Radiation Health Scholarship, or to make a gift to the scholarship fund, visit the Office of Development, College of Veterinary Medicine and Biomedical Sciences, at www.cvmb.colostate.edu/development, or contact Paul Maffey, Director of Development, at paul.maffey@colostate.edu, or (970) 491-3932.

Deadly Oral Carcinoma Target of New Research Project

Squamous cell carcinoma is the most common type of oral cancer diagnosed in cats. It also is one of most devastating diagnoses a cat's owner can hear. The most owners can hope for right now are treatments that enhance the quality of life for the remainder of the cat's life, which is a median of six months with oral squamous cell carcinoma. But a groundbreaking research project at Colorado State University may give new hope to veterinarians and cat owners.

"Oral squamous cell carcinoma is absolutely devastating in cats, and accounts for about 10 percent of all feline tumors diagnosed," said Dr. Susan LaRue, a Professor in the Department of Environmental and Radiological Health Sciences and principal investigator on the project. "Veterinary medicine has tried absolutely everything to improve the health outcomes for cats with SCC, but to no avail. We need a better understanding of these tumors as well as new tools to treat them."

Depending on the location of the tumor, cats with SCCs often have difficulty eating, drinking, and eventually breathing. By the time a tumor is diagnosed, it has often made its way into the surrounding bone. The visible part of the tumor is often just the tip of the iceberg. Secondary infection is common and cats typically begin to weaken as the disease progresses. When quality of life deteriorates, owners often have no choice but to euthanize their pets.

The Morris Animal Foundation has provided funding to Dr. LaRue and her colleagues to begin a three-year program of tumor study and treatment. One of the primary goals of the study is to try to understand the molecular properties of SCCs and why they are so difficult to treat.

"We will be looking at tumor oxygen levels to better understand response to radiation therapy and chemotherapy," said Dr. Hiroto Yoshikawa, a graduate student working on the project. "If a tumor is hypoxic it doesn't respond very well to either type of treatment. We'll also be looking at epidermal growth factor receptor expression, the levels of which relate to poor prognosis, and microvascular density, as well as mapping tumors to see which parts are hot and which parts are cold. These tumors can vary greatly from one part



Drs. LaRue and Yoshikawa

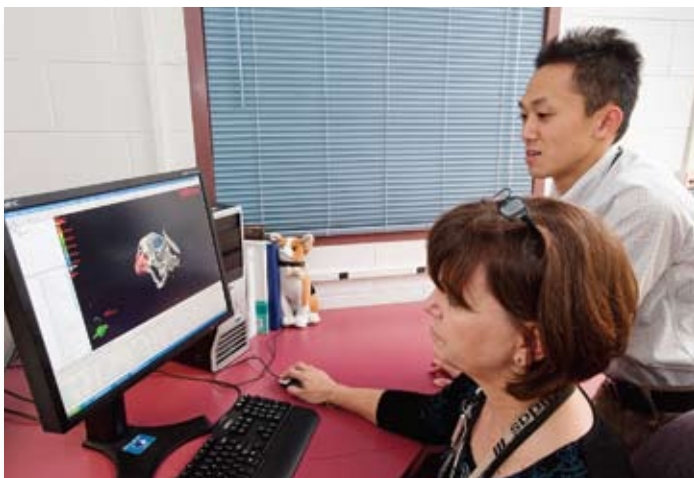
to another – they are not homogenous – so we want to develop a greater understanding of how they grow and evolve over time."

Part of the problem of treating SCCs, said Dr. LaRue, is that the biology of the tumors themselves is not well understood. This study hopes to better define the underlying biology of SCCs. In addition to evaluating the molecular tumor characteristics of SCCs, investigators will be treating cats with SCC using stereotactic radiation therapy. In SRT, veterinarians can give higher doses of radiation over a shorter period of time with the hopes of improving tumor control and survival. SRT also has a lower risk of damage to surrounding tissue and other side effects. The study will enroll 10 cats each in the first and second years, with the third year devoted to evaluation and follow up.

"This type of treatment is already being used in human medicine with success, so in this case humans are being very nice guinea pigs for our feline patients," said Dr. LaRue. "We want to be able to give cat owners a treatment option that can increase the length and quality of their cat's life, something we are not able to do right now, so we are very excited about the possible outcomes of this study."

New radiation and diagnostic imaging equipment are making this study possible. Researchers will be using the Varian Trilogy Linear Accelerator to deliver radiation treatment, and also will use the new PET/CT scanner for imaging and treatment staging. Drs. LaRue and Yoshikawa are joined in this project by Dr. E.J. Ehrhart, who is responsible for histology; Joseph Charles, molecular pathology technician; and Kelly Carlsten, ACC clinical trials coordinator.

To participate in the study, cats must have a diagnosis of oral squamous cell carcinoma. Full details about clinical trial qualifications and enrollment are available at the Animal Cancer Center clinical trials website located at <http://www.csuanimalcancercenter.org/clinical-trials>.



Drs. LaRue and Yoshikawa look at an image showing a cat with an oral carcinoma.

Study Examines Role of Telomeres in Feline Kidney Disease

Kidney failure is the most common kidney disease in cats, especially in older cats, and is a leading cause of death. Now, researchers in the Department of Environmental and Radiological Health Sciences and the Department of Clinical Sciences are investigating the role telomere shortening and accompanying cell senescence play in declining renal function. The research group recently received a grant from the Morris Animal Foundation to support their work.

“Our hypothesis is that kidney failure in aging cats is linked to telomere shortening,” said Dr. Susan Bailey, an Associate Professor in the Department of Environmental and Radiological Health Sciences and principal investigator on the project. “Kidneys may be particularly vulnerable to this phenomenon because kidney cells are actively dividing. We believe that as cats get older the telomeres in kidney cells lose sequence as they divide so they shorten, a scenario that triggers senescence, and eventually failure of the tissue or organ.”

Telomeres are protective structures at the ends of chromosomes, composed of DNA and numerous associated proteins. Similar to the protective caps at the end of shoelaces, telomeres protect chromosome ends from unraveling. Telomeres prevent chromosome ends from being recognized as if they were the ends of DNA double-strand breaks in need of repair. In cats – as in humans – the DNA component of telomeres gradually shortens with increasing age due to the absence of the enzyme telomerase and the inability of conventional replication machinery to replicate the very end of linear DNA. Eventually, one or more telomeres within a cell become too short to allow the protective end structure to form and function properly, so the cell enters senescence. In this state, the cell is alive but cannot divide. As such, senescent cells contribute to tissue and, ultimately, organ decline.

“In our study, we aim to establish a link between telomere shortening and compromised kidney function in aging cats,” said Dr. Bailey. “If we are in fact successful in demonstrating such a link, then it may be possible one day to treat kidney failure with compounds that activate telomerase activity, which will help maintain telomeres at a healthy, ‘younger’ length longer, and help to improve kidney function.”

Dr. Bailey is working with colleagues at the Colorado State University Veterinary Teaching Hospital to obtain and evaluate tissue samples from a group of control cats, cats without renal failure, and cats with renal failure. Researchers will conduct numerous assays, including looking for the presence of telomerase, the enzyme responsible for replacement of telomeres.



Dr. Susan Bailey

“The study is a nice example of how basic research can interact with clinical investigations to improve overall animal health, particularly in this case, where our focus is on one of the most devastating diseases for the feline population,” said Dr. Bailey. “It also has important implications for human health.”

Telomerase was discovered by Drs. Carol W. Greider and Elizabeth Blackburn in 1985 in the ciliate *Tetrahymena*. Together with Dr. Jack W. Szostak, they were recently awarded the 2009 Nobel Prize in Physiology or Medicine for their discovery, reflecting the importance of new studies into telomerase and telomeres.

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the DNA component of telomeres
gradually shortens with
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or more telomeres within a cell
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enters senescence.*

Large-Animal Gamma Camera Delivers Superior Diagnostic Technology to VTH



Radiology technologists Ray Parham and Ronda Vocke prepare to do a scintigraphic acquisition on a horse using a large-animal gamma camera at the CSU Veterinary Teaching Hospital.

Horses and other large animals visiting the Veterinary Teaching Hospital at Colorado State University for lameness exams are benefiting from the recent installation of a specialized large-animal gamma camera. The new system allows veterinarians to quickly take highly detailed images of the skeleton and soft tissues.

Veterinary radiology specialists use this system – one of only two in the state – to monitor different musculoskeletal problems such as stress fractures, infections, arthritis, and injuries to the soft tissues that attach to bone. The gamma camera provides a rapid study of the entire skeleton and helps evaluate areas of the body that are difficult to X-ray in a large animal, such as the spine and pelvis.

State-of-the-art software allows for motion correction on the images if the animal being scanned moves during the scan.

“Colorado State University has six board-certified veterinary radiologists who assess the images on site, providing immediate evaluations, which allows veterinary surgeons to quickly create a treatment plan,” said Dr. Debra Gibbons, a radiology specialist at the Veterinary Teaching Hospital. Dr. Gibbons is a veterinarian and a Professor in the Department of Environmental and Radiological Health Sciences, College of Veterinary Medicine and Biomedical Sciences.

“One very important feature of the gamma camera is that large animals, such as horses, don’t have to undergo anesthesia while we get these images. We can position them standing in the room and move the gamma camera around them to acquire the images. It makes the whole process much easier for the horse and the veterinary team.”

For this type of imaging exam, horses and other large animals receive a low-level dose of radioactive material – less than the amount a human is exposed to when he or she flies across the United States. Depending upon how the material is designed, it travels to different parts of the body, such as the skeleton. One of the radioactive materials used at the VTH for this scanner localizes to fractures, stressed bones, infections, and other abnormalities, which makes the abnormalities visible on the images.

The material is not present in the animal’s body for very long and much of it is excreted in the urine within the first two hours. Animals often are able to go home within 24 hours. The superior images and convenience for the large-animal patients and owners are clear examples of the ERHS’ commitment to continue to provide the finest veterinary radiology service available anywhere.

Faculty Transitions

Several longtime faculty members in the Department of Environmental and Radiological Health Sciences are entering transitional or permanent retirement, but are staying active in the Department: Drs. Thomas Borak, Michael Fox, and Ray Yang.

Dr. Thomas Borak, Professor Emeritus, will continue his research work at the Department as a special faculty member funded through several grants. Dr. Borak’s interests are principally related to radiation physics and dosimetry.



Dr. Thomas Borak



Dr. Michael Fox

and also will continue his work with the U.S. Environmental Protection Agency. Dr. Yang has had a split appointment between Colorado State University and the EPA for several years focusing on physiologically based pharmacokinetic/pharmacodynamic (PBPK/PD) modeling.

Dr. Michael Fox, Professor Emeritus, is retired but will continue to teach in the field of radiobiology for the Department.

Dr. Raymond Yang is entering transitional retirement, is entering transitional retirement, and also will continue his work with the U.S. Environmental Protection Agency. Dr. Yang has had a split appointment between Colorado State University and the EPA for several years focusing on physiologically based pharmacokinetic/pharmacodynamic (PBPK/PD) modeling.

“Each one of these faculty members has played a strong role in the Department for many years,” said Dr. Jac Nickoloff, Head of the Department of Environmental and Radiological Health Sciences. “We are very grateful for their contributions, and are pleased that they will each continue to be a part of our departmental efforts toward excellence in the research and teaching of radiobiology, health physics, and toxicology.”



Dr. Raymond Yang

FACULTY PROFILE

Lesley Butler

At work in a laboratory at the University of Washington, Dr. Lesley Butler was genotyping samples – hundreds of tubes of samples – which she didn't really think too much about until she learned what it was she was actually genotyping. The samples were part of a large population-based breast cancer study and all of a sudden those tubes became more than samples – they became pieces of a puzzle that may help unravel the riddle of individual genetic susceptibility to cancer risk.

Dr. Beth Newman, from the University of North Carolina-Chapel Hill, had come to UW to share the broader-based goals of the study and Dr. Butler was intrigued with her work as a cancer epidemiologist.

“Meeting her was a turning point for me,” said Dr. Butler, who is now an Assistant Professor in the Department of Environmental and Radiological Health Sciences. “She was brilliant and enthusiastic and I decided to apply to the master's program in public health and epidemiology at UNC. I was interested in being a physician, and knew this program wouldn't shut any doors for me, but after six months I knew I had found my career. Epidemiology brings together statistics, health, and science. I knew I had met my tribe.”

Dr. Butler continued to work on breast cancer for her master's and then decided to continue toward getting a doctorate in epidemiology. She began working with Dr. Bob Millikan on a colon cancer study, which looked at genetic susceptibility in the *NAT1* and *NAT2* genes involved in metabolizing carcinogens commonly found in grilled, charred meat. (The study showed a twofold increase in the development of colon cancer among those who ate more charred meat and also carried the susceptible genotype.)

Her postdoctoral fellowship took her to the National Institute of Environmental Health Sciences in Research Triangle Park, N.C., where she studied gene/diet interactions, particularly looking at nonmalignant lung disease. She joined the Singapore Chinese Health Study in 2001 looking at a cohort of 63,000 men and women and tracking diet as well as the development of cancer and other chronic diseases.

“This is a fascinating study in that some of the participants have a more Western diet, while others have maintained a more traditional Asian diet of rice, cruciferous vegetables, and fish,” said Dr. Butler, who analyzes the study's data sets and recently returned from a trip to Singapore where she traveled to better understand the region's culture and diet as they pertain to the study. “Singapore has a national cancer registry, so we have a good database from which to identify our cases. This study began in 1993 with a baseline questionnaire, and also collected pre-diagnostic blood and urine samples. We have an ongoing active and passive follow-up program looking at dietary patterns and the incidence of cancer.”



Dr. Lesley Butler visiting Singapore for the Singapore Chinese Health Study.

Dr. Butler came to Colorado State University in 2008 and is working as a cancer epidemiologist in the Department of Environmental and Radiological Health Sciences. She looks forward to developing cooperative research projects with the Animal Cancer Center, which has an extensive biospecimen repository that will enable in-depth genetic studies of cancer in dogs. She also is developing a graduate-level class in the principles of cancer epidemiology that will be offered beginning Fall 2010.

“We have an ongoing active and passive follow-up program looking at dietary patterns and the incidence of cancer, particularly looking at dietary patterns and the incidence of cancer.”

ALUMNI PROFILE

Russell S. Thomas

When Dr. Russell Thomas was an undergraduate student at Tabor College in Hillsboro, Kan., his plan was to attend medical school. But, things were busy around MCAT time with other obligations and responsibilities, so he decided to put off pursuing a professional degree. Instead, he decided to go to graduate school. He completed a master's degree, and then his professor encouraged him to pursue his doctoral degree.



Dr. Russell S. Thomas

Now, 10 years later, Dr. Thomas still reflects on decisions that led him away from medical school, but realizes through his research he is having a broad impact on human health and wellness—just in a different way. Dr. Thomas is the Director of the Center for Genomic Biology and Bioinformatics and a senior investigator at the Hamner Institute for Health Sciences located in Research Triangle Park, N.C.

“I sometimes think about medical school, especially when I have a grant rejected, but feel that the work I do here is helping me to make a difference,” said Dr. Thomas. “This is a great place to do research in toxicology, especially with so many other academic organizations and federal agencies close by with which to collaborate, including Duke University, the University of North Carolina, the Environmental Protection Agency, and the National Institute of Environmental Health Sciences.”

Dr. Thomas received his master's degree in radioecology and health physics from Colorado State University in 1993. He earned his doctoral degree in toxicology in 1997. Drs. Shawki Ibrahim and Ray Yang were his advisers, and gave him the freedom to discover and build on his interests in radioecology and toxicology.

“My PhD adviser Ray Yang gave me a lot of freedom to pursue other hypotheses within a larger research topic,” said Dr. Thomas. “Both the freedom to explore other ideas early in my career and the educational diversity provided by the Department have been important factors in my success. In my master's degree, the training in radiological health sciences incorporated a diverse set of disciplines including radiation ecology, radiation biology, and health physics. And in my doctoral degree, the training in environmental health included epidemiology, industrial hygiene, and toxicology. The diversity in disciplines formed a breadth of study that enhanced graduate research, thinking, and education. In today's environment,

this cross-disciplinary training and thinking are key to a successful research program.”

He uses that diverse skill set today as Director of the Center for Genomic Biology and Bioinformatics to study how cellular processes are perturbed when exposed to environmental chemicals and pharmaceuticals. His research program uses a variety of genomic, proteomic, and metabolomic technologies for understanding these perturbations and he develops bioinformatic tools for analyzing the data in the context of understanding the health risks associated with exposure. He is currently adding high-content imaging analysis into the mix to associate the molecular changes with integrated cellular effects.

Prior to joining the Hamner Institute, Dr. Thomas was a scientist in the biotech and pharmaceutical industry. In the biotech industry, he helped develop a novel microarray platform of orthologous genes in humans and mice to examine cross-species conservation in gene expression. He also helped develop a bioinformatics pipeline for analyzing polymorphisms from high-throughput sequencing data. After graduating from Colorado State University, Dr. Thomas did his postdoctoral research in genomics and molecular biology at the McArdle Laboratory for Cancer Research at the University of Wisconsin. He is a member of the Society of Toxicology and was recently awarded the Achievement Award for significant contributions to the field of toxicology.

Freshman Scholars Program



This year's participants in the Freshman Scholars Program, shown here with faculty coordinator Dr. David Gilkey, are, from left to right: Logan Maxwell, Melissa Bushey, Nicole Mikoni, Eryn Wylie, and Morgan Jueschke. The Freshman Scholars Program started in 2004 to give undergraduate students experience in laboratory settings as well as provide them with a peer group and faculty mentors. Students selected for the program pursue a particular interest in research. Next year, the program will expand its applicant pool by opening up to upperclassmen.

STUDENT PROFILE

EHSA President Influenced by Jane Goodall to Study Environmental Health

When Jessica Lucero arrived at Colorado State University in 2006, her plan was to major in political science and Spanish/Latin studies. She had attended the National Hispanic Institute at CSU while in high school, and had her interest piqued by the leadership and political emphasis of the program. Then, during her second semester at CSU, she saw Jane Goodall speak at Moby Arena.

“Something clicked,” said Lucero. “She was talking about people, health, the environment, and right after that I made an appointment at the Center for Advising and Student Achievement. Before long I was in Erin Reichert’s (EH undergraduate adviser) office and knew that this is where I was meant to be.”

Lucero grew up in Pueblo where she attended South High School. She fell in love with CSU after attending the National Hispanic Institute and, though she had her early sights set on a medical profession, enjoyed the leadership emphasis of the institute. Her mother had always worked in medical facilities and she grew up with the constant presence of hospitals and doctors’ offices. These experiences led her down a path where she knew she wanted to help people. Now president of the Environmental Health Student Association, she still is determining where that path will take her.

“At this point I haven’t decided which direction I will go, but I’m getting ready to apply to PA (physician assistant) schools as well as the master’s program in environmental health,” said Lucero. “I have a soft spot for industrial hygiene, but also an interest in being a physician assistant in an emergency room setting. I’m applying to both kinds of programs to keep my options open, but will have to make a decision soon.”

Lucero is hoping that the environmental health’s mandatory internship program will help clear her career sights. Meanwhile, she is keeping busy attending to EHSA business where she is promoting volunteer activities including CSUnity and RamRide (a volunteer service that provides safe rides home), and developing fundraising programs for the Environmental Health Scholarship. She works at CASA, where she started in the advising office but now is on the student staff in the Intra-University computer labs. She also is a volunteer with the Northern Colorado AIDS Project where she helps out at the front desk and with special events.

“Everything I’ve done has helped direct me in my decisions, including seeing Jane Goodall and coming to the environmental health program,” Lucero said. “It’s like a family here. I really enjoy my classes for my major, especially epidemiology, water quality, industrial hygiene, and waste management. Dr. (David) Gilkey has



Jessica Lucero

been a great resource and mentor as has Dr. (Ken) Blehm, who teaches you with tough love, and I appreciate that. The really great thing about our Department is how each of our faculty members really cares and is concerned about each student. They want to see us succeed and make decisions that will lead us to productive and happy lives.”

“The really great thing about our Department is how each of our faculty members really cares and is concerned about each student. They want to see us succeed and make decisions that will lead us to productive and happy lives.”

ERHS Professor Honored with Outstanding Academic Advising Award

The door to Dr. David Gilkey's office is always open and you can usually find one, or two, or a few students coming to give Dr. Gilkey an update on their progress, news of how they did on a particularly challenging exam, or to share a great internship experience they had over the summer. Like the Pied Piper, Dr. Gilkey draws students in and along to explore their passions in environmental health not through the power of music, but through the power of empowerment.

One of the first things that Dr. Gilkey tells his undergraduate students is that school is their job and needs to be treated as such. They should "work" 40 to 50 hours a week to be successful, and balance

their lives: social time with family and friends, volunteering in their communities, and establishing healthy life practices, including exercise, adequate sleep, and a nutritious diet.

Such common-sense advice, along with an innate desire to help students achieve their full potential academically, personally, and professionally, garnered Dr. Gilkey the 2009 Outstanding Academic Advising Award for Undergraduate Education in the College of Veterinary Medicine and Biomedical Sciences. It is a well-deserved honor, noted Dr. Jac Nickoloff, Head of the Department of Environmental and Radiological Health Sciences.

"It really is amazing how many undergraduate students came to major in environmental health because of the counsel and positive influence of Dr. Gilkey," said Dr. Nickoloff. "Through his EH 220 seminar course, or through referrals from other academic advisers, he is always there as a mentor and guide, helping students figure out their passions."

Dr. Gilkey, along with EH undergraduate adviser Erin Reichert, advises students on multiple academic levels including developing a balanced schedule and workload; exploration and "passion finding;" providing a conduit to on- and off-campus resources; helping students detect, discover, and make inquiries; as well as providing guidance in helping to make good life choices.

"Young people have too much coming at them, and I find a lot of joy in helping them sort through all that information, and helping them develop the tools they need for success in life," said Dr. Gilkey, who is an Associate Professor and Director of Undergraduate Education for ERHS. "From career fairs, to interview practices, and communicating with faculty members, I hope to impart the idea to our students that 80 percent of good things come from the relationships you form with others."

He is particularly proud of how undergraduates are making their mark in faculty research laboratories in the Department where they gain practical experience while developing a better understanding of life in a laboratory.

"There was some concern that the undergraduate students wouldn't be mature enough, but what we are finding is that the laboratory experience helps them connect what they learn in the classroom to what they will be doing in real life, and helps connect students to their areas of passion," said Dr. Gilkey. "Our faculty members now appreciate the work ethic and desire undergraduates bring, and it's so rewarding to be a part of that."

Dr. Gilkey received his PhD in industrial hygiene and ergonomics from Colorado State University, his MS in environmental policy management from the University of Denver, and his Doctor of Chiropractic from the Los Angeles College of Chiropractic. In addition to an active advising and teaching role in the department, Dr. Gilkey's research interests include environmental and occupational human health, complementary and alternative human health, construction safety and ergonomics, and back pain and musculoskeletal pain syndromes among workers.



Dr. David Gilkey

"Young people have too much coming at them, and I find a lot of joy in helping them sort through all that information, and helping them develop the tools they need for success in life."

Professional Society Provides Scholarship Support

The Central Rocky Mountain Chapter of the Health Physics Society recently awarded partial tuition support to two students in the health physics program at Colorado State University. Nikolas Roche was awarded \$1,000 and Christopher Pederson was awarded \$500 from the chapter to help defray tuition expenses. An additional \$500 was pro-



Christopher Pederson

vided to the CSU student branch of the HPS.

Roche and Pederson are both pursuing master's degrees in health physics at CSU. Roche is a first-year master's student who obtained his bachelor's degree in physics from the University of Northern Colorado. Pederson is the first student in a novel program called Track III, where he will obtain his bachelor's degree in environmental health and master's degree in health physics in five years.

The CRMCHPS is the sponsoring chapter for the CSU student branch of the HPS and the two organizations work closely together. The student financial support is in addition to the joint technical meetings held annually featuring speakers from the local chap-

ter, as well as student speakers. The first meeting this year featured CSU students demonstrating how they taught a recent class on radiation for elementary students. The support that CSU receives from the CRMCHPS is invaluable, and the students are looking forward to moving into new roles in the Health Physics Society, and mentoring new students.



Nikolas Roche

ERHS Students Attend Professional Conference



Fourteen students from the Department of Environmental and Radiological Health Sciences attended the Colorado Environmental Health Association Conference held at Copper Mountain Sept. 28-Oct. 2. The students networked with professionals from the field of environmental health and attended sessions on food safety, water and wastewater, sustainability, zoonosis, air quality, waste management, and other general environmental health topics. The Department supported eight students to attend and the CEHA supported six. During the conference, students presented on the Nicaragua Cook Stove Project led by ERHS Assistant Professor Dr. Jennifer Peel, and the results of her team's summer 2009 study. Pictured, front row from left to right, are: Christina Khat, Lianna Salva, Theresa Tonozzi, Katie Fromuth, and Stephanie Minnaert; back row, Hannah Reed, Rachel Burmeister, Sherman Paranandi, Lindsay Davis, Dan Gorum, Ryan Autenrieth, and Sarah Yoder.

ERHS Winter/Spring 2010 Calendar

Jan. 19, 2010 – Spring 2010 Classes Begin

April 17, 2010 – CSUnity Day

April 24, 2010 – CVMBS Scholarship and Awards Luncheon

May 14-15, 2010 – Colorado State University Spring Commencement (www.colostate.edu)



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