

DISCOVERY



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Research at the University of Tennessee College of Veterinary Medicine

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UTCVM Part of Nationwide Comparative Oncology Consortium

The UTCVM is on the ground floor in the development of new anticancer reagents for human and dog cancers. The college is one of twelve veterinary institutes nationwide to be part of the Comparative Oncology Trials Consortium (COTC) formed in 2005 by the Comparative Oncology Program at the National Cancer Institute's Center for Cancer Research. As part of its organizational infrastructure, the COTC has undertaken translational clinical trials in companion animals.

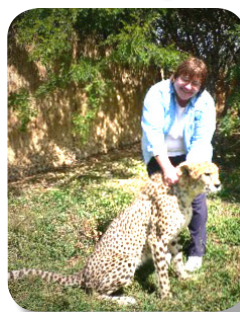
One of the main goals of the consortium is to better understand the environmental risk factors for cancer, and in doing so, examine genetic determinants for predispositions to cancer in some dog breeds. Previously, dogs had been under-used as animal models for cancer drug development. However, they make effective candidates for testing novel therapies since definitive treatments for canine cancers have not yet been developed. Additionally, dogs' life spans allow veterinary researchers to complete clinical trials time effectively.

The results from these canine cancer trials will be used to design phase I and phase II human clinical trials. Agent activity and toxicity data as well as biological endpoint identification and validation data will be critical in that design.

Now, UTCVM is one of only four veterinary colleges participating in the first clinical trial on naturally occurring tumors. This trial evaluates the safety and effectiveness of the phage-based delivery of Tumor Necrosis Factor (TNF α). Researchers expect delivery of TNF α to blood vessels surrounding a tumor to block the blood supply to that tumor, thus inducing tumor cell death.

The teamwork between clinic and basic cancer researchers and the effective oncology program and client base at the UTCVM continue to help the college qualify for pioneer experiences like this one.

Kennedy Out of Africa



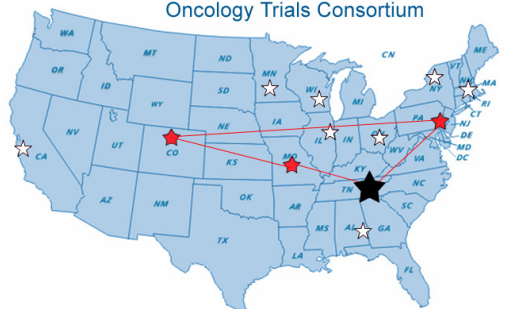
A ride through a river in a Toyota Corolla did not deter Dr. Melissa Kennedy from her mission last month in South Africa. There in collaboration with the University of Pretoria, Dr. Kennedy is working to investigate the prevalence and epidemiology of coronavirus infection in captive and free-ranging cheetahs and the infection's effect on their health.

During her month-long visit, Dr. Kennedy consulted with cheetah conservation managers at three different organizations to solicit their participation in the coronavirus project. She and her research collaborators at Pretoria will use cheetah fecal samples to characterize the genetic basis of the feline coronavirus in order to protect and preserve cheetah populations.

Plans are in the works to develop a seminar for the fall semester that details her research. In addition, Dr. Kennedy continues to mentor Ph.D. student Dr. Hayley Adams, who is also in Africa working on characterizing the lentivirus of southern African lions. Dr. Adams hopes to improve detection assays for infected lions, an innovative task.

Dr. Kennedy is seen above cautiously cuddling with a cheetah at the De Wildt Cheetah and Wildlife Centre.

Members of the Comparative Oncology Trials Consortium



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Cui Receives Chancellor's Award

The university's highest faculty honors are presented annually at the Chancellor's Honors Banquet. At this year's banquet, Dr. Mei-Zhen Cui received a Chancellor's Award for Research and Creative Achievement.

Recipients of this prestigious award must be nominated by their department and are chosen based on their engagement in research and contributions to their field. The selection committee considers peer recognition and national and international research involvement to be indicative of Dr. Cui's success.

Since coming to UTCVM in 1999, Dr. Cui has brought in over \$2 million in grant funding, and her research on delineating the mechanism responsible for the development

of atherosclerosis and thrombosis has had a significant effect on the field of atherothrombotic disease. The results of her research have been published in journals such as *Arteriosclerosis, Thrombosis, and Vascular Biology*; *Circulation*; *Blood*; and the *Journal of Biological Chemistry*, all of which are highly respected, peer reviewed journals. She was also recently invited to offer expert commentary for the International Atherosclerosis Society.

Dr. Dave Edwards, head of pathology, describes Dr. Cui's work as being "pivotal in revealing the subcellular mechanisms of atherogenesis" and having "incredibly high impact."

Guide to Conducting Lit. Searches Available

The Animal Welfare Information Center at the National Agricultural Library developed a new brochure outlining the search process for alternatives to animal testing.

The five-step guide to conducting a literature search for alternatives contains a final section on red flags that may arise during Institutional Animal Care and Use Committee (IACUC) review. They are

- only one database searched
- only painful procedure terms included
- only the term "alternative" used
- keywords and concepts linked incorrectly
- inadequate time period searched

The entire brochure is available at www.nal.usda.gov/awic/alternatives/Altbrochure.pdf. Copies are also available in the Pendergrass Library.

If you would like assistance searching for alternatives to animals for research protocols, contact Ann Viera at annviera@utk.edu or 4-9015.

NIH Grant Submission Goes Electronic

NIH is transitioning from paper grant application submission to electronic submission, and while the new procedure will take some extra time, it also comes with some benefits. Besides the obvious (saving paper), PIs will have two days after their completed submission to recall and resubmit an application (this perk is not a deadline extension, however).

The major change, though, comes with the actual submission process, which can be done only by an authorized organizational representative (AOR). For UTCVM, the AOR is Debbie Hampstead. Principal investigators can still update their NIH profiles and check the status of their applications, but PIs cannot submit their own applications.

The applications themselves will look slightly different as well and must be downloaded from the NIH Web site. Sample forms, application guides, and training information can be found at era.nih.gov/ElectronicReceipt/index.htm.

All R03 and R21 applications went electronic June 1; R01 grants will transition February 1, 2007; and e-submit for K- and F-series grants will begin June 1, 2007, and August 5, 2007, respectively.

Thesis/Dissertation Workshops Offered

One of the last things graduate students tend to think about when writing a thesis or dissertation is the formatting adjustments they will have to make before that masterpiece is officially accepted by the graduate school.

Of course worrying about research and fretting about whether the committee will accept it should be a grad student's first priority. But before a degree can be awarded, students must visit the university's Office of Graduate Studies for both a preliminary and final review of the document.

The graduate office takes appointments until about a month before each semester's submission deadline. Students who wait until the last two weeks for the final review often find themselves waiting in the first-come, first-served line, and just about

everybody gets sent away at least once to make minor corrections.

But most people can avoid multiple trips to the formatting police with a little extra effort. Each semester, Graduate Student Services offer thesis/dissertation workshops to help de-mystify those formatting guidelines. In the workshop, students will hear a thesis/dissertation consultant discuss the guidelines and obtain a brief overview of the electronic submission process.

This semester, workshops will be held from 5:30 to 7:00 p.m. on Thursday, June 15, and 9:30 to 11:00 a.m. on Friday in the Hodges Library Auditorium.

More details can be found at web.utk.edu/~thesis/.

Funding Deadlines Drawing Near

Deadline	Sponsor	Program	\$ Amount/yr.	URL
Continuous	DoD	Live infectious agents, drug development, disease identification & diagnosis	Varies	www.usamraa.army.mil/pages/Baa_Paa/baa_04_1.cfm
June 12	National Pork Board	PRRS	Varies	www.pork.org
June 30	Horses and Humans Foundation	Therapeutic effects of horses on humans	50,000	www.horsesand-humans.org/
July 1	NIH	Competing continuations, revised, supplemental	Varies	grants.nih.gov/grants/guide/index.html
July 11	American Heart Association	Scientist development, postdoc fellowship, established investigator	65,000 (4 yrs.) or 100,000 (5)	www.american-heart.org
July 15	American Diabetes Association	Clinical, innovation, young PI geriatric, postdoc fellowship, career development	45,000 to 200,000	www.diabetes.org
Aug. 1	Susan G. Komen Breast Cancer Foundation	Basic, clinical, translational, postdoc fellowship, population-specific, interdisciplinary	45,000	www.komen.org
Aug. 5	American Meat Institute Foundation	Preproposals -- control of microbial pathogens in meat	Varies	www.amif.org
Aug. 15 (letter of intent Jul. 1)	Philip Morris	Epidemiological, clinical, and model systems; tobacco smoke and smoking behavior	Similar to NIH	E-mail: Rmgroup2000@aol.com

Research Resource Spotlight

Statistical Consulting Center

The university's Statistical Consulting Center (SCC) offers 10 free hours of face-to-face consulting per semester for faculty, staff, and students.

Consultants are available to help with research planning such as experimental and survey design, sample size determinations, and sampling methods. In addition, they can provide support for data analysis or statistical software, among many other services. Basic problems, such as accessing or converting datasets or putting surveys on the Web, can be addressed by calling, e-mailing, or walking in.

Those who want more instruction can take one of the SCC's training seminars. Offered throughout the year, each two-hour



course is designed to introduce or improve research computing skills.

Regardless of the assistance level needed, the SCC asks that a visit be made early in the planning stage to save you time and money. If you need help beyond the 10 free hours, hourly stats service costs \$20 for students and \$70 for faculty and staff.

The SCC has multiple offices on campus, and from 1:00-5:00 on Thursdays, they are in 106 Brehm Animal Science Bldg. For a full list of locations and the SCC's services, access their Web site at oit.utk.edu/scc. You can receive periodic information about new research software and services by signing up on the SCC listserv—select “News” from the home page.

UTCVM Well-Represented at Recent Conferences

Joo HM. Distribution of virus-specific memory B cells following influenza infection of the respiratory tract. Poster* presented at: Viral Immunity: From Basic Mechanisms to Vaccines Conference; March 28-April 2, 2006; Steamboat Springs, CO.

**Joo's poster was selected for a short talk and earned her a \$1,000 scholarship.*

Lee SH, Kim JS, Yamaguchi K, Eling TE, Baek SJ. 3,3'-diindolylmethane, a major acid condensation product of indole-3-carbinol, induces expression of NAG-1 and ATF3 in colorectal cancer cells. Poster presented at: American Association for Cancer Research 97th Annual Meeting; April 1-5, 2006; Washington, DC.

Sun L, Tan M, Hao F, Xu X, Donnell R, Cui MZ. Lysophosphatidic acid induces Egr-1 expression *in vivo* in a mouse model.

Poster presented at: 7th Annual Conference on Arteriosclerosis, Thrombosis, and Vascular Biology; April 27-29, 2006; Denver, CO.

Tan M, Hao F, Sun L, Xu X, Cui MZ. Lysophosphatidylcholine activation of protein kinase D2 in THP-1 monocytic cells. Poster presented at: 7th Annual Conference on Arteriosclerosis, Thrombosis, and Vascular Biology; April 27-29, 2006; Denver, CO.

Yamaguchi K, Lee SH, Kim JS, Wimalasekna J, Kitajima S, Baek SJ. Involvement of activating transcription factor 3 and early growth response-1 in LY294002-induced apoptosis in human colorectal cancer cells. Poster presented at: American Association for Cancer Research 97th Annual Meeting; April 1-5, 2006; Washington, DC.

Steady Grant Funding Brings in Nearly \$600,000 since April

Title	PI	Agency	Start date	Type	\$ Amount
Lysophosphatidic acid and tissue factor in atherosclerosis	MZ Cui	NIH/NHLBI	5/1/06	Year 3 of 4	247,446
Mechanisms of coronavirus RNA amplification	D Brian	NIH/NIAID	6/1/06	5/5	298,458

Sample Size Calculators Help Achieve 'Delicate Balance'

When using animals, experiment size is “a delicate balance,” writes Arnold M Saxton of the Animal Science Department. Using too many animals wastes resources and needlessly exposes animals to potential harm. However, insufficient data might result from using too few animals. Repeated experiments then cause the same problems as using too many animals up front.

However, Web-based computer programs exist to assist researchers in finding an appropriate sample size. For example, a University of Iowa calculator allows researchers to estimate sample size by first choosing the type of analysis to be used in the study.

If using a two-sample *t* test, one of ten options at the site, the Web calculator will allow you to set standard deviations, the alpha value, and the true difference of means. The power and sample size values can be adjusted simultaneously to achieve the perfect balance.

For a link to the calculator, visit our IACUC Web site: iacuc.tennessee.edu/HowManyAnimalsDoINeed.htm.

Proposal Routing Policy Updated

As more agencies move to electronic submission, more time is required for adequate review to ensure timely applications. For this reason, the Office of Research is requesting more advanced notice of grant applications.

Effective immediately, PIs should notify Debbie Hampstead the moment they decide to apply for any grant. At least 5 business days before the application deadline, the

PI guide to research flow chart now available:

www.vet.utk.edu/research/info/pdf/PIGuide_FlowChart2.pdf

PI should submit a proposal draft, the final budget, and the signed routing form. The final proposal and all other application materials must be ready to submit at least 3 days before the deadline.

If the Office of Research does not receive materials in a timely manner, there is no guarantee that the proposal will be submitted.

Recent Publications . . .

Anderson E, Tobias KM. Omentalization. *Vet Med.* 2006;101:230-233.

Brandt LE, Tobias KM. Intestinal biopsy. *Vet Med.* 2006;101:220-225.

Cui MZ, Laag E, Sun L, Tan M, Zhao G, Xu X. Lysophosphatidic acid induces early growth response gene 1 expression in vascular smooth muscle cells -- CRE and SRE mediate the transcription. *Arterioscler Thromb Vasc Biol.* 2006;26:1029-1035.

Frank N, Elliott SB, Brandt LE, Keisler DH. Physical characteristics, blood hormone concentrations, and plasma lipid concentrations in obese horses with insulin resistance. *J Am Vet Med Assoc.* 2006;228:1383-1390.

Fry MM, Kirk CA. Reticulocyte indices in a canine model of nutritional iron deficiency. *Vet Clin Pathol.* 2006;17:1-181.

Gassel AD, Tobias KM, Cox SK. Disposition of deracoxib in cats after oral administration *J Am Anim Hosp Assoc.* 2006;42: 212-217.

Hecht S, Penninck DG, Mahony O, King R, Rand WM. Relationship of pancreatic duct dilation to age and clinical findings in cats. *Vet Radiol Ultrasound.* 2006;47:287-94.

Keller RL, Kania SA, Hendrix DVH, Ward DA, Abrams K. Evaluation of canine serum for the presence of antiretinal autoantibodies in sudden acquired retinal degeneration syndrome. *Vet Ophthalmol.* 2006;9:195-200.

Latorre R, Arencibia A, Francisco G, Rivero M, Henry RW, Ramirez G, Vaquez JM. Correlation of magnetic resonance images with anatomic features of the equine tarsus. *Am J Vet Res.* 2006; 67:756-761.

Lee SH, Yamaguchi K, Kim JS, Eling TE, Safe S, Park Y, Baek SJ. Conjugated linoleic acid stimulates an anti-tumorigenic protein NAG-1 in an isomer specific manner. *Carcinogenesis.* 2006;27:972-981.

Newton AL, Craig LE. Multicentric pyseal dysplasia in two cats. *Vet Pathol.* 2006;43: 388-90.

Sargent SJ, Frank LA, Buchanan BR, Donnell RL, Morandi F. Otoscopic, cytological, and microbiological examination of the equine external ear canal. *Vet Dermatol.* 2006; 17:175-181.

Frank LA. Sex hormone and endocrine look-alike dermatoses. In: Birchard S, Sherding R, eds. *Saunders Manual of Small Animal Practice.* 3rd ed. St. Louis, MO: Saunders Elsevier; 2006:517-522.



Shuler E, Tobias KM. Gastroto-my. *Vet Med.* 2006;101:207-212.

Tate P, Anneaux B, Nickelson D, Tobias K, Shalaby S. Evaluation of Tissumend II sterile as a multipurpose absorbable tissue adhesive. *Int J Appl Res Vet Med.* 2006;4:74-85.

Tobias KM. Symposium on key gastrointestinal surgeries. *Vet Med.* 2006;101:206.

Tobias KM, Ayres R. Intestinal resection and anastomosis. *Vet Med.* 2006;101:226-229.

Watson K, Tobias KM. Incisional gastro-pexy. *Vet Med.* 2006;101:213-219.

Yamaguchi K, Lee SH, Eling TE, Baek SJ. A novel peroxisome proliferator-activated receptor ligand, MC-555 induces apoptosis via post-transcriptional regulation of NAG-1 in colorectal cancer cells. *Mol Cancer Ther.* 2006;5:1352-1361.

. . . And Presentations

On April 17, **Dr. Seung Joon Baek** was an invited speaker on cancer chemoprevention and the NSAID activated gene. The presentation was part of the spring 2006 seminar series entitled "Interdisciplinary Faculty of Toxicology" at Texas A&M University in College Station.

Dr. Roslyn Casimir spoke to 4th- and 5th-grade girls May 8 and 11 at Spring Hill Elementary School. Her talk was about the importance of veterinary medicine and veterinary pathology.

Shambhunath Choudhary, a Ph.D. student, represented the anti-cancer molecular oncology laboratory April 3 at the 97th Annual Meeting of the American Association for Cancer Research. His presentation entitled "Ras-increased susceptibility of human cancer cells to histone deacetylase inhibitor" was part of a minisymposia session at the Washington DC conference.

Four pathobiology department members presented cases on May 20-21 at the 34th Annual Southeastern Veterinary Pathology Conference in Tifton, Georgia: **Dr. Linden Craig** -- "Lawsonia enteritis in an Icelandic pony"; **Dr. Shelley Newman** -- "Canine aflatoxicosis"; **Dr. Roslyn Casimir** -- "Case #05-255"; and **Dr. Alison Tucker** -- "Oligodendroglioma in a lion."

On April 20-22, **Dr. Greg Daniel** and **Dr. Frederica Morandi** presented the Nuclear Medicine Short Course at Ghent University in Belgium.

On April 7, **Dr. Linda Frank** presented "Estrogen receptor evaluation in Pomeranian dogs with hair cycle arrest on melatonin" at the North American Veterinary Dermatology Forum in Palm Springs.

Dr. Frederica Morandi was the invited keynote speaker at the May 19 annual meeting of the Italian Society of Companion Animal Veterinarians in Rimini, Italy. She presented three lectures about comparative diagnostic imaging and its use in veterinary medicine.

THE UNIVERSITY of TENNESSEE
College of Veterinary Medicine

Discovery is published four times each year by the UTCVM Office of Research and Graduate Programs. Comments and suggestions may be forwarded to the office in care of Misty Bailey: mrbailey@utk.edu or 865-974-7446.

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