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DISCOVERY



Research at the University of Tennessee College of Veterinary Medicine

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The Business of Research

 by Dr. Robert Moore

Trying to understand research reports can be quite confusing since the numbers can be presented in different ways. The most accurate representations of research activity are expenditures and yearly awards.

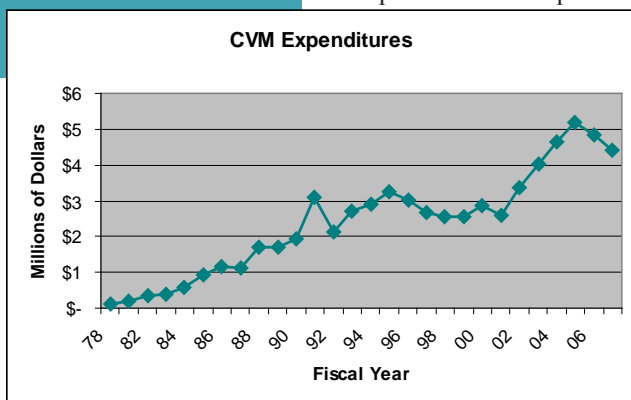
As a young institution, the CVM has research expenditure data that cover the college's entire lifespan. The data provided in the figure are interesting in that three distinct periods in the college's short history can be identified. From 1978 through 1991, the gradual increase in research expenditures represents the original growth phase for CVM research. Between 1992 and 2001, research expenditures stabilized at approximately the 1991 level with no growth in the college's research enterprise. The third phase is a dramatic increase in

research expenditures between 2001 and 2005. Expenditures for 2006 and 2007 remained at an elevated level, but appear to represent an ending of the second growth phase.

A partial explanation for the abrupt stoppage of the second growth phase

is that federal funding decreased sharply in FY06-07 to approximately the level in FY01-02. A slight offset to the decrease in federal funding was provided by a large increase in funding from foundations and private sources. The decrease in federal funding was expected and reflects the budget levels of the primary granting agencies, the National Institutes of Health, who are below their 2005 operating levels at a time of extreme competition for funding. Another compounding factor is the absolute limitation of research space in the CVM.

The second research growth phase was driven by a change in the CVM administration with different expectations and values afforded for research and scholarly work. Progress has been made, and during FY06-07, approximately 50% of CVM faculty were listed as principal or co-investigators on externally funded awards. Moreover, new competitive awards for FY07 were a college record of 45, 10 better than FY05 and 26 more than FY01. Enrollment in the Comparative and Experimental Medicine Graduate Program is at an all-time high, while the laboratory animal facility at Cherokee is undergoing major renovations. In short, although there is a depression of research funding from external sources, a variety of positive indicators support the conclusion that research in the college is stronger than it has ever been.



Success of Research Symposium Sparks Interest in Expanded Event

Over 60 people from 11 different departments on campus attended the First Annual Comparative and Experimental Medicine (CEM) Graduate Student Research Symposium held June 22.

Oral and written feedback indicates that participants and attendees enjoyed the opportunity to exchange ideas in an organized setting.

Administrators of the CEM program met with CVM departmental representatives in August to discuss next year's symposium. A tentative date of June 17, 2008, has been set. The participant pool has been expanded, and clinics might be altered to emergency-only service to allow more students and clinical faculty to attend.

More information about next year's program will be announced in upcoming newsletters.

All graduate students presenting at this year's research symposium won travel awards to be used for presenting their work at a meeting of their choice.

Receiving \$1,000 travel awards:

- **Dr. Ferenc Toth**, Large Animal Clinical Sciences (LACS) Dept.
- **Beth Wilson**, Nutrition Dept.

Receiving \$500 travel awards:

- **Amanda Peretich**, LACS
- **Mugdha Sukhthankar**, Pathobiology Dept.
- **Pranita Sarangi**, Microbiology Dept.
- **Dr. Angela Lusby**, Small Animal Clinical Sciences Dept.



Clockwise from upper left: Dr. Karla Matteson (R) presents Amanda Peretich with her travel award; Robin Cissell presents to a captivated audience; Shambhu Choudhary (L) and Sharvan Sehrawat (R) explain their studies to Dr. Robert Moore; Jason Liggett (L), Nichelle Whitlock, and Julia Gouffon (R) discuss their research with each other

CVM Down Under

Over 19,000 horse races took place last year in Australia, with nearly \$306 million in prize money awarded. Considering the popularity of Thoroughbred horses, it is no surprise that **Dr. Frank Andrews'** research on equine gastric ulcer disease (GUD) is so popular there.

A research partnership with Dr. Rafat Al Jassim led Dr. Andrews to Queensland and Fremantle, Australia, in July to deliver several lectures (see *Presentations* on p. 4). Drs. Andrews and Al Jassim are working to characterize the bacterial diversity in the equine stomach. They have found that bacterial fermentation products like lactic acid



Dr. Al Jassim (R) and graduate students from the University of Queensland present Dr. Andrews with a boomerang, a traditional Australian gift to encourage its recipient to one day return.

Discovery an Award-Winning Newsletter

Discovery has earned one of the 2007 Awards for Publication Excellence (APEX). The newsletter was entered in the "Best New Newsletter" category for this yearly competition for communication professionals.

Around 1/3 of the nearly 5,000 entries across categories won recognition for excellence.

Misty Bailey is the editor for the newsletter. She and Anik Vasington were also recognized with an APEX for their editing and design, respectively, of the *Center of Excellence in Livestock Diseases and Human Health 2006 Annual Report*.

Dhar, Hance & Plummer Receive Best Poster Award

Dr. Howard Plummer accepted Best Poster Award for "Tobacco carcinogens stimulate G-protein inwardly rectifying potassium channel 1 (GIRK1) protein expression in a small cell lung cancer cell line," presented Sept. 11 at the Ion Channel Targets conference in Boston.

Dr. Madhu Dhar and **Michael Hance**, PhD candidate, were co-authors on the poster.

The award was sponsored by ePosters.net (The Online Journal of Scientific Posters) and Technology Networks.

play an important role in the development of acid injury in the non-glandular region of the equine stomach. This is especially a problem for Thoroughbred racehorses because vigorous exercise can aggravate GUD.

Scientists long suspected that bacteria could not survive in the stomach because of its acidic atmosphere. However, the non-glandular region of the equine stomach is not as acidic as the rest of the stomach, allowing

bacteria to survive and grow, possibly by metabolizing sugar in the diet.

Therefore, the next goal of their research is to be able to prevent and treat GUD by manipulating the horse's diet, most likely by lowering its sugar intake. A Rural Industries Research & Development Corporation grant has supported their endeavors since 2004, and they are seeking funding from that Australian government agency once again this year.

"What I Did on My Summer Vacation"

Not all students involved in the Center of Excellence summer research program spent their entire vacation in a block-walled laboratory. Second-year veterinary students Jayme Peck and Jennifer Bernard spent 40 hours on a plane—to and from South Africa, of course. That is where they joined Dr. Melissa Kennedy to investigate coronavirus infections in captive and free-ranging cheetahs at the University of Pretoria.

While there, the two students used real-time polymerase chain reaction and indirect fluorescent immunoassays to look at the prevalence and epidemiology of the infections.

They were also fortunate to see a demonstration of a cheetah run. A grassy area served as a temporary cheetah racetrack, with a red flag serving as the cheetah's fixation at the moment. The nearly 70 mph speed of the

cheetah made for difficult videography, the students said.

Jayme and Jennifer are seen here collecting samples from lions, making friends with a cheetah, and taking a guided (handed) horseback ride.



Funding Deadlines Drawing Near

Deadline	Sponsor	Program	\$ Amount	URL
Oct. 15	American Cancer Society	Established & new investigators; post-docs	Up to 200,000	www.cancer.org
Oct. 16	NIH	R03, R21, R33, R34, & R36	Varies	www.nih.gov
Nov. 1	Burroughs Wellcome Fund	Pathogenesis of infectious disease	Varies	www.bwfund.org
Nov. 1	Morris Animal Foundation	Established investigators & first awards	~4,000-100,000	www.morrisanimalfoundation.org
Nov. 3	Banfield Charitable Trust	Human-animal bond, preventive healthcare for pets, & educating children about animals	210-32,000	www.banfieldcharitabletrust.net
Nov. 5	NIH	R01 renewals, resubmits, & revisions	Varies	www.nih.gov
Nov. 8	Susan G. Komen For the Cure Foundation	Pre-proposals due Oct. 9	Up to 600,000	cms.komen.org/komen
Nov. 16	NIH	R03, R21, R33, R34, & R36 renewals, resubmits, & revisions	Varies	www.nih.gov

Research Resource Spotlight



Editing Services

All CVM faculty and staff have free access to a technical editor. Misty Bailey, whose office is in A306, edits mostly manuscripts for publication and grant proposals, and in just under two years, she has already worked with around 40 different employees at the college.

Misty works on a first-come-first-served basis, and her turn-around time is usually a week or less for any type of document.

What should you expect from a technical editor?

An editor reads your document from the audience's standpoint and makes suggestions on how to clarify your writing, pointing out any potential areas of confusion. An editor checks for consistency and formats the document to fit specific journal or grant guidelines. An editor also looks at your tables and graphs to help you arrange your data in the most straightforward way.

Who uses a technical editor?

Professors at all levels, native English speakers, and even the most published and funded writers use a technical editor.

Anyone whose first language is not English should use a technical editor. Even though most English-as-a-second-language writers know the rules of English better than native speakers, it is easy to confuse some of the subtleties of the language.

CVM Receives Over \$1.5 Million for Sponsored Projects Since June

Title	PI	Agency	Start date	Type	\$ Amount
Pharmacokinetic and pharmacodynamic effects of an oral and intravenous drug in horses	HS Adair	Private industry (additional funds)	6/1/07	Phase 2, Year 1	2,982
The efficacy of Seabuckthorn liquid supplement in prevention of gastric ulcers in horses	FM Andrews	Seabuck Equine	7/1/07	2/1	6,700
PPAR-gama ligands in colorectal cancer	SJ Baek	NIH	6/1/07	Year 2 of 5	199,929
Gene alteration by NSAIDs	SJ Baek	American Cancer Society	7/1/07	2/3	180,000
Nutrition technician	JW Bartges	Nestle	6/23/07	5/5	31,050
Preliminary clinical field trial to evaluate the safety and effectiveness of nisin-impregnated wipes as a treatment of canine bacterial pyoderma	LA Frank	ImmuCell	7/11/07	1/1	39,774
Effects of resting insulin sensitivity on the acute response to endotoxin in horses	N Frank	American Quarter Horse Association	10/1/07	1/1	50,015
Evaluation of a multidose drug for the induction and maintenance of anesthesia in dogs	RC Harvey	Abbott Laboratories	8/27/07	1/1	5,500
Diuretic renal scintigraphy in normal cats--pilot study	S Hecht	Morris Animal Foundation	10/1/07	1/1	8,005
Nutrition resident agreement	CA Kirk	Hill's Pet Nutrition	7/1/07	1/5	30,000
Influence of gender and sexual alteration status on feline adiponectin	CA Kirk	Nestle Purina PetCare	8/1/07	1/1	15,078
Population pharmacokinetics of Carboplatin in dogs	T Martin-Jimenez	Morris Animal Foundation	10/1/07	1/3	16,578
Sponsored clinical pharmacology residency agreement	T Martin-Jimenez	Pfizer Animal Health	8/1/07	2/5	38,150
Placebo-controlled field efficacy trial of a drug administered orally via transmucosal oral mist in client-owned dogs with osteoarthritis	DL Millis	Novartis Animal Health	7/1/07	1/1	25,750
Clinical evaluation of extracorporeal shock wave therapy for management of canine osteoarthritis of the elbow joint	DL Millis	Sanuwave	8/31/07	1/1	43,068
A randomized, blinded, placebo-controlled, multi-center, confirmatory efficacy field trial for the evaluation of a drug	DL Millis	Private industry	6/1/07	1/2	9,900
Center of Excellence in Livestock Diseases and Human Health	RN Moore	State of Tennessee	7/1/07	Since 1984	556,600
IPA work agreement for the US Dept. of Commerce, NOAA, National Marine Fisheries Service	DS Rotstein	Dept. of Commerce & NOAA	6/1/07	3/5	153,760
A clinical field study evaluating the safety and efficacy of a drug in dogs with idiopathic epilepsy	WB Thomas	Boehringer Ingelheim Vetmedica	8/8/07	1/1.5	37,200
Carcinogenesis cellular model for identifying preventive agents	H-CR Wang	NIH	9/27/07	1/2	72,500

Recent Publications . . .

Brown DR, Wendland LD, **Rotstein DS**. Mycoplasmosis in green iguanas (Iguana iguana). *J Zoo Wildl Med*. 2007;38:348-351.

Choudhary S, Wang HCR. Pro-apoptotic ability of oncogenic H-Ras to facilitate apoptosis induced by histone deacetylase inhibitors in human cancer cells. *Mol Cancer Ther*. 2007;6:1099-1111.

Choudhary S, Wang HCR. Pro-apoptotic activity of oncogenic H-Ras for histone deacetylase inhibitor to induce apoptosis of human cancer HT29 cells. *J Cancer Res Clin Oncol*. 2007;133:725-739.

Cox SK. Allometric scaling of marbofloxacin, moxifloxacin, danofloxacin and difloxacin pharmacokinetics: A retrospective analysis.

. . . And Presentations

Representing the CVM at the 234th American Chemical Society National Meeting in Boston in August was **Dr. Sherry Cox**, who presented a poster entitled "Determination of bromide in canine plasma using ion chromatography." Amanda Whiton and **Heather Bowman** were also authors on the poster.

Dr. Cheryl Cross presented "Pathologic findings of domoic acid-exposed rodents" at the National Ocean Service in Charleston, SC, in June.

Dr. Hugo Eiler presented "Diabetes: Early detection of glucose homeostasis failure by a new combined intravenous glucose-insulin testing" at the Society of Comparative Endocrinology and European Society of Veterinary Endocrinology joint meeting in Victoria, BC, in June.

A poster entitled "Combined intravenous glucose-insulin test in horses: Effect of a single dose of dexamethasone on glucose homeostasis and laminitis risk" was presented at June's ACVIM Forum in Seattle. The authors were Drs. John Haffner, **Hugo Eiler**, Rhonda Hoffman, **Kellie Fecteau**, and **Jack Oliver**.

Michael Hance and **Drs. Madhu Dhar** and **Howard Plummer** presented a poster entitled "Effects of G-protein inwardly rectifying potassium channel 1 (GIRK1) knockdown in the MDA-MB453 breast cancer cell line" at

J Vet Pharmacol Therap. 2007;30:381-386.

Edge VL, Doré K, **Odoi A**, Flint JA, Fyfe F, Boom N, MacDougall L, Muchaal PK, Majowicz SE, Sockett PN. Physician diagnostic and reporting practices for gastrointestinal illnesses in three health regions of British Columbia. *Can J Public Health*. 2007;98:306-310.

Hecht S, Henry GA. Sonographic evaluation of the normal and abnormal pancreas. *Clin Tech Small Anim Pract*. 2007;22:115-21.

Pereira-Sampaio MA, Favorito LA, **Henry R**, Sampaio FJB. Proportional analysis of the pig kidney arterial segments: Differences from the human kidney. *J Endourol*. 2007;21:784-788.

the Beyond Genome Conference held in San Francisco in June.

Dr. Silke Hecht gave several lectures and seminars in June and July as an invited speaker at the Department of Small Animal Internal Medicine, Ludwig-Maximilians-University, Munich, Germany.

In July, at the Third International Conference on Communication in Veterinary Medicine in Washington, DC, **Drs. India Lane, Elizabeth Strand, and Nancy Howell** presented "Using reflection to reinforce learning in communication training, problem-based and early clinical experiences."

On August 9, **Dr. Shelley Newman** presented a case on bilateral ocular dermoids and nasal choristomas in a calf at the Midwest Association of Veterinary Pathologists meeting in Indianapolis.

In September, **Dr. Howard Plummer** presented a poster at the Ion Channel Targets meeting in Boston. **Dr. Madhu Dhar** and **Michael Hance** were also authors on the poster entitled "Tobacco carcinogens stimulate G-protein inwardly rectifying potassium channel 1 (GIRK1) protein expression in a small cell lung cancer cell line."

Dr. Tulio Prado gave a one-hour lecture on canine reproduction at the American Kennel Club Canine Health Foundation Breeders'

Roach W, Hecht S. What is your diagnosis? Gastroesophageal intussusception in a dog. *J Am Vet Med Assoc*. 2007;231:381-2.

Majidi M, Al-Wadei HA, Takahashi T, Schuller HM. Non-genomic beta estrogen receptors enhance beta1 adrenergic signaling induced by the nicotine-derived carcinogen 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone in human small airway epithelial cells. *Cancer Res*. 2007;67:6863-6871.

Prado TM, Schumacher J, Hayden SS, Donnell SL, Rohrbach BW. Evaluation of a modified surgical technique to correct urine pooling in cows. *Theriogenology*. 2007;67:1512-1517.

Symposium in Knoxville in August.

In June, **Dr. David Rotstein** gave a lecture on "Marine mammal pathology" for the six-day Sea Vet II course in Gainesville, FL. In July and August, he was part of the Morbillivirus Working Group in Silver Springs, MD. His travels then took him to Seattle in September to present "Consequence of traumatic insults to cetaceans and pinnipeds" at the Serious Injury Workshop.

Dr. Marcy Souza presented "Pharmacokinetics of tramadol in bald eagles (*Haliaeetus leucocephalus*)" at the Association of Avian Veterinarians Annual Conference in Providence, RI, August 6-9, 2007. **Drs. Michael Jones** and **Sherry Cox** also contributed to the presentation.

In June, at the Society of Veterinary Soft Tissue Surgery 6th Annual Meeting in Breckenridge, CO, **Dr. Karen Tobias** presented three lectures: postoperative management of extensive gastrectomy in dogs, the radiologist/surgeon relationship, and palate repairs.

At the July Animal Disaster Response Seminar in Knoxville, **Dr. Matt Welborn** presented "Euthanasia techniques for livestock." He also contributed to the Agriculture and Food Vulnerability Assessment Training Course in Chattanooga in August.

THE UNIVERSITY of TENNESSEE
College of Veterinary Medicine

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