Drs. Smith & Lockman Receive DOD Grant

The U.S. Department of Defense (DOD) has awarded $3 million in extramural grant funding to School of Pharmacy investigators Quentin Smith, PhD, and Paul Lockman, PhD, as part of a 2006 Breast Cancer Center of Excellence Research award. Drs. Smith and Lockman will work with a team of scientists from eight other universities under the direction of Patricia Steeg, PhD of the National Cancer Institute in Bethesda, Maryland.

The Center of Excellence (COE) brings together highly qualified investigators to develop novel drug strategies to treat brain metastases of breast cancer. Brain metastasis of breast cancer is a devastating disease which occurs in 10-16% of metastatic breast cancer patients and is associated with a one-year survival after diagnosis of <20%.

The award was the only one of 38 applications funded this year by the DOD. Drs. Smith and Lockman will each receive approximately $1.5 million over the next five years and have planned out their research for this grant.

Jointly, Drs. Smith and Lockman will be setting up and standardizing the brain metastasis of breast cancer rodent model. Dr. Smith will evaluate the pharmacokinetics of chemotherapeutic drug delivery across the blood-brain barrier (BBB) and blood-tumor barrier (BTB). His lab will measure the pharmacokinetics in brain, metastatic brain tumor, brain adjacent to tumor (BAT), and plasma of ten standard breast cancer chemotherapeutics following systemic administration to the brain metastasis of breast cancer rodent model. Also as part of this grant, Dr. Smith will assess the systemic pharmacokinetics, BBB and BTB penetration, and integrated tumor exposure of 10 preclinical therapeutic lead compounds developed by the COE. A particularly intriguing aspect of the grant will be Dr. Smith’s...

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Grant Writing Workshop

During the 5th Annual Research Days, David C. Morrison, PhD, Co-Founder and Member of the Grant Writers’ Seminars and Workshops, LLC, presented an all-day grant-writing workshop to faculty on Thursday, August 3rd, 2006. Attendees praised his instruction, complimenting his ability to keep a dry subject matter interesting for an entire day.

Dr. Morrison’s lecture entitled “Write Winning Grants” held a plethora of helpful information. He covered everything from the development of fundable ideas to the proper preparation for the NIH, NSF, USDA, and other major agencies. While discussing the review process, Dr. Morrison said, “The key to success in grant writing is to engender enthusiasm in the reviewer—who then becomes an advocate for the applicant’s proposal. Therefore always write your application for the reviewer, NOT for yourself.”

There were a total of 45 attendees, several of which found the presentation so helpful, they requested that Dr. Morrison return for future grant writing seminars. His approach helped the faculty feel more confident and knowledgeable of the subject matter, and his presentation was very proficient.

Faculty had the privilege of a Q&A session afterwards. Due to lack of time, only a few had the opportunity to speak with Dr. Morrison one on one. So much was taken away from this experience. If you would like more information, please contact the Office of Research.
Grants Awarded

The School of Pharmacy is pleased to announce the following grant approvals for the past quarter. These grants have a grand total $1.1 million which further cements our status as an up and coming research institution. Please congratulate the following Drs for their achievements.

**Dr. Paul Lockman:** DOD/FDN grant for SC: Breast Cancer Blood-Tumor Barrier Char/Nanoparticle

**Dr. Quentin Smith:** DOD/FDN grant for Chemo-therapy Drug uptake/Distribution Pharmacokinetics in Brain Metastasis of Breast Cancer

**Dr. Karin Borges:** FDN Grant for Poly-Unsat

**Dr. Margaret Weis:** AHAT grant for Inhibitors of Endothelial LCFOACoAS Inhibitors as Anti-Hypertensive agents: defining the eLCFAoAS resaction mechanism.

**Dr. Richard Leff:** NIH/ORG for SC: 13-Week Oral Toxicity Studies of Diindoyl Methane-BRNG in Dogs

**Dr. Thomas Thekkumkara:** NIH grant for Role of Glucose in hATI Gene Expression

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Up Coming Graduates

**Julie Gaasch** defended her dissertation “Iron-overload toxicity in central nervous system-associated cells and its attenuation by calcium channel blockers” Monday, October 9th. Since fall of 2002, Julie has studied in the labs of Dr. Suzanne Lindsey, Dr. David Allen as well as her current mentor, Dr. Neels Van der Schyf. She was fortunate enough to work in several different areas with each mentor including osteoporosis, an in vitro subarachnoid hemorrhage model and finally the central nervous system. While working with Dr. Lindsay on osteoporosis, Gaasch earned the publication *Hepatocyte growth factor-regulated genes in differentiated RAW 264.7 osteoclast and undifferentiated cells.* Gene. 2006 Mar 15;369: 142-52.

While grateful for her experiences with each lab, Julie commented on Dr. Van der Schyf gusto for science with, “…a wonderful experience. His enthusiasm as a researcher and a teacher is definitely contagious!”

Julie was the recipient of the American Foundation for Pharmaceutical Education (AFPE) pre-doctoral fellowship in 2004 and 2005. Last year, she was selected to give a podium presentation at the Society for Neuroscience meeting in Washington D.C. and again this year in Atlanta, Georgia.

As for future plans, Julie has planned to become a post-doc in Dr. Quentin Smith’s lab.

**Cornelia Kiewert** defended her dissertation “Mechanism of action and protective effect of bilobalide, a constituent of *Ginkgo biloba*, in models of brain ischemia and edema” on Friday, October 27th. Connie has studied under Dr. Jochen Klein since the summer of 2002. She joined the doctoral program in January of 2003, and has since co-authored several scientific papers and presented her findings at regional, national and international conferences (AAPS, EB and Neuroscience). She also had the privilege of working with Dr. Alexander Mdzinarishvili and the PATOS center in collaboration with a project concerning “Monitoring of Stroke markers by microdialysis.”

TTUHSC Amarillo was Connie’s first exposure to the United States. Prior to her joining the Health Sciences Center, Kiewert studied at Johannes Gutenberg University of Mainz, Germany where she became a registered German pharmacist. Since she’s been in the US, she has researched several projects in neuropharmacology and the neuroprotective compound bilobalide and still found time to become a frequent traveler and a passionate photographer.

Connie intends to work in Europe, preferably in hospital pharmacy, but has also considered the option of working in the pharmaceutical industry. Connie said, “I definitely plan to visit the US again for vacation. My stay in the US has been an experience of a lifetime, and thanks to all who made it possible.”
**Drs. Smith & Lockman Receive DOD Grant**

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evaluation of BBB penetration of MDA-MB-231BR cells. In _in vivo_ antitumor efficacy studies, Dr. Smith will also measure serum and tissue levels of preclinical compounds. Dr. Smith’s lab will provide drug analysis support to other COE investigators to determine brain, metastatic brain tumor, and plasma concentrations of drug delivered by novel nanoparticle, carrier-mediated influx, inhibition of active efflux, or other investigational mechanisms to improve chemotherapeutic drug delivery to tumor within brain. Dr. Smith will also determine serum and tissue pharmacokinetics in animals treated with osmotic BBB disruption to ascertain trastuzumab levels in the brain. Finally, Dr. Smith will measure chemotherapeutic drug levels in resected human brain and tumor tissue for comparison and analysis with the animal model.

Dr. Lockman will be responsible for characterizing barrier passive permeability at the tumor, brain adjacent to tumor and in brain distant from tumor as well as normal brain using the brain metastasis of breast cancer rodent model with sham injected animals as normal, healthy controls. Dr. Lockman will measure expression of critical anticancer drug efflux transporters at the BTB, BBB and tumor using the brain metastasis of breast cancer rodent model. Efflux carriers that will be examined include p-glycoprotein (P-GP), multi-drug resistance associated protein (MRP-1, -2 and -4), and breast cancer resistance protein (BCRP), all of which have been identified at the BBB and closely linked to chemotherapeutic multidrug resistance. In addition, Dr. Lockman will be responsible for quantifying expression of influx carriers at the BTB, BBB, and tumor using the brain metastasis of breast cancer rodent model. The influx carriers that will be examined include the glucose carrier (GLUT-1), large neutral amino acid carrier (LAT-1), cationic amino acid carrier (CAT-1), and choline transporter. Dr. Lockman’s lab will also engineer nanoparticle colloidal drug delivery devices. For nanoparticle/drug formulations that show promise of increased brain distribution _in vitro_, Dr. Lockman will test the colloidal formulations _in vivo_. In addition, brain and tumor uptake will be compared for free drug and for drug incorporated in NP after intravenous or _in situ_ perfusion administration.

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**Dr. Fakhrul Ahsan:** NIH grant for Long Circulating Low Molecular Weight Heparins for Pulmonary Delivery

**Dr. Jochen Klein:** NIH grant for Anti-edema and Neuroprotective Effects of Ginkgo Extract Egb761 and Bilobalide

**Dr. Ronald Hall:** NIH/UNIV grant for SC: NIH Clinical Scholars Program

**Dr. Cynthia Raehl:** West Texas grant for Improving Care in West Texas Long term Care Facilities Regarding Outcome Measures and Prescription Practices

**Dr. US Rao:** WHRI grant for Drug Resistant Biomarkers in the Human Breast Cancers

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**5th Annual Research Days**

The 5th Annual Research Days was busier than in previous years, stretched to a full three days. But as with previous years, the event was a success.

On Wednesday, August 2, 2006, our keynote speaker, Dr. David Margolis presented his talk entitled “Opportunities in Translational Research: The HIV Pandemic as Paradigm” to an appreciative crowd of SOP and SOM faculty, students, and staff.

Forty-two posters were exhibited during Research Days. Thirty-nine were entered into the competition, and of those, four poster teams were recognized. The winners (first authors/presenters) are listed below:

**First place—Kalkunte Srivenugopal, PhD**
**Second place—Jennifer Paulson**
**Third place—James Egbert**
**ABRI best poster—Brandi Cota**

As always, Research Days attendees enjoyed the time to interact more informally with their peers and complimented the food (lots of good eating!)
Publications (July-September 2006)


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Publications (July-September 2006)


Moridani Chair-elect

Dr. Majid Moridani was elected as the Chair-elect of the Pharmacogenomics Focus Group. The group consists of 400 members who promote the study of genetic causes of individual variations in drug responses. It is one of five focus groups within the Clinical Pharmacology and Translation Section (CPTR) at the American Association of Pharmaceutical Science (AAPS).

The group organizes discussions and workshops, along with several other outreach programs. They facilitate communications between academia, biotechnology/genomics firms and regulatory agencies as well as provide a forum for information exchange on topics in the pharmacogenetics and pharmacogenomic area at the internet. The team of scientists generate yearly Theme Issues in Pharmacogenetics-Pharmacogenomics in AAPS PharmSci.

Congratulations Dr. Moridani!
Research Seminars (July-September 2006)

During the school year, faculty and graduate students present research seminars highlighting their work. Occasionally, guest speakers also present seminars while visiting the school. Below is a summary of the seminars that took place in the last few months.

7/14/06-Xianxin Hua, MD, PhD, Assistant Professor of Cancer Biology, Abramson Family Cancer Research Institute, University of Pennsylvania, Philadelphia. “Menin, a Tumor Suppressor or Tumor Promotor?”

7/25/06-Janette Dufour, PhD, Brandt Schneider, PhD & Simon Williams, PhD, Department of Cell Biology & Biochemistry & Raul Martinez-Zaguilan, PhD, Department of Physiology, TTUHSC, Lubbock. “Development of a cross campus cancer research initiative at TTUHSC.”

8/28/06-Richard Bartsch, PharmD, PhD, Organic, Analytical and Polymer Chemistry, TTUHSC, Lubbock. “Metal Ion Complexation and Separation with Calix(4)arene Compounds.”

9/11/06-Karin Borges, PhD, Assistant Professor, Department of Pharmaceutical Sciences. “Use of microarrays in the search of Neuroprotective genes & pathways.”

9/18/06-Randolph Schiffer, MD, Professor and Chairman, Department of Neuropsychiatry and Behavioral Science, TTUHSC SOM, Lubbock. “A new Sigma-1 agonist and NMDA blocker for the treatment of emotional lability syndromes.”

9/25/06-Vamshi Manda, Graduate Student/Research Assistant, Department of Pharmaceutical Sciences. “Active transport of High-Affinity Choline and Nicotine Analogs into the Central Nervous System by the BBB Choline Transporter.”

9/25/06-Runa Naik, Graduate Student/Research Assistant, Department of Pharmaceutical Sciences. “Effects of Chloride Flux Blockers in an in vitro model of Brain Edema.”

9/27/06-Dr. Suresh Ambudkar, Senior Investigator & Chief, Transport Biochemistry Section, Laboratory of Cell Biology, National Cancer Institute, NIH. “Multidrug resistance in cancer cells and ABC drug transporters.”