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WV CoHORTS team from the WVU School of Pharmacy. Pictured from left: Steve Small, Cindy Tworek, Joel Halverson, Suresh Madhavan, and Michael Smith.

WV CoHORTS Center Leads Statewide Health and Research Promotion Effort

A research team led by faculty in the WVU School of Pharmacy received a grant from the Agency for Healthcare Research and Quality (AHRQ) to support the West Virginia Collaborative Health Outcomes Research of Therapies and Services (CoHORTS) Center. The grant—$1.5 million over the next three years—will enable the Center's interdisciplinary team of scientists to continue to study health disparities in West Virginia.

Disparities in the quality of health and healthcare services are of particular importance in West Virginia which has some of the highest prevalence and mortality rates for chronic diseases in the nation.

To help document existing disparities, the Center will house a repository of state and federal health care data. The databases are essential for conducting state-of-the-art research on access, cost, quality, and outcomes of health services and treatments in West Virginia. The Center will also facilitate collaborative partnerships and projects that bring together health services researchers from a variety of disciplines.

"Our vision is to be recognized nationally for excellence in producing high quality research in health services and health outcomes that will focus on addressing healthcare problems specific to the citizens of West Virginia and the Appalachian region," said Suresh Madhavan, Ph.D., principal investigator and director of the WV CoHORTS Center and chair of the Department of Pharmaceutical Systems and Policy.

The WV CoHORTS Center will involve all four schools of the Health Sciences Center. Dr. Michael Smith and Mr. Steve Small, School of Pharmacy, and Drs. Anoop Shankar and Rachel Abraham, School of Medicine, are co-directors of the Center cores. Drs. Cindy Tworek and Joel Halverson, School of Pharmacy, and Jame Abraham and Dina Jones, School of Medicine, are investigators on research projects.

The Center will also work with Dr. Pat Colsher, director of the West Virginia Cancer Registry, to build a cancer-related data set to study cancer disparities in West Virginia.

The WVU School of Pharmacy is one of only two schools nationwide to receive funding from AHRQ for this initiative. The research will provide critical information that will help design strategies to reduce health disparities and improve the overall health of our citizens.

In This Issue

Graduate Students Go Global: Summer Research in China

Through a grant funded by the National Science Foundation, three graduate students from the laboratory of Dr. Peter Gannett, professor and acting chair in the Department of Basic Pharmaceutical Sciences, spent the summer working at Jilin University in Changchun, China.

All of the students traveled as part of the WVNano Initiative and collaborated on projects with investigators at the State Key Laboratory of Supramolecular Structure and Materials.

Lance Wollenberg, a fourth-year graduate student, worked with Dr. Lixin Wu, professor in the Department of Chemistry. The project resulted in the creation of Mn12-based ordered honeycomb structures and patterned films. These innovations have potential applications for high-density information storage and quantum computing applications.

Brian Train, a third-year graduate student, worked with Dr. Wenke Zhang, professor in the Department of Chemistry, to learn the technique of single molecule force spectroscopy (SMFS). Mr. Train will use the SMFS technique to measure and quantitate the mechanical properties of single DNA molecules during the B– to Z-DNA transition which is the focus of his research at WVU.

Nissa Thomsen, an M.D/ Ph.D. student, worked on engineering a P450 CYP2C9 as a bi-functional enzyme platform.

When not conducting research, the students enjoyed sampling the food, seeing the sights, and getting to know their Chinese colleagues.

"The trip to China was a tremendous opportunity to explore new scientific techniques in an international research environment," said Train. "The part of the trip that I enjoyed most was the ability to experience the science, culture, and history of China all at the same time."

The trip was made possible by a grant awarded to Dr. James Lewis, associate professor in the Department of Physics and member of the WVNano Initiative.

Graduate student Brian Train near the entrance of China's Forbidden City

As a result of the program and research in partnership with scientists at Jilin University, the students at both schools provided scientific presentations in both countries and forged stronger working relationships.

Pharmacy Students Discover New Strategy for Protecting the Diabetic Brain

As part of their Advanced Pharmacy Practice Experiences as fourth-year Pharm.D. students, Matt Chua and Rachel Ptachicinski, Class of 2009, published a research project describing the beneficial effects of sesamol in diabetic rats. The students worked under the guidance of Dr. Jason Huber, associate professor in the Department of Basic Pharmaceutical Sciences

"Giving students the opportunity to experience research during their education is important, and the work that they produced during their rotation in my lab was essential to getting the data necessary to accomplish our study," said Huber.

Poorly controlled blood glucose in diabetics can lead to the generation of damaging molecules, called reactive oxygen species. These damaging molecules can lead to vascular complications which contribute to a host of other problems, including a higher risk of stroke and dementia.

The study, which was published in Experimental Brain Research, showed that sesamol, a natural antioxidant found in sesame oil, could mitigate the harmful effects of reactive oxygen species in diabetic rats. The study focused on improvements in the structure and function of the blood-brain barrier (BBB).

The BBB normally protects the brain from harmful substances. This protective capacity is compromised in diabetes.

The findings of the WVU researchers suggest that sesamol or other similar compounds may have therapeutic utility in minimizing cerebrovascular complications in diabetes.

An estimated 23.6 million people in the United States have diabetes.

Also working with the pharmacy students was Reyna VanGilder, a graduate student, who conducted the research as part of her dissertation. Ms. VanGilder earned her Ph.D. this summer based on this and related work.

ISPOR Team Takes Top Honors at International Competition

Graduate students from the WVU School of Pharmacy Health Outcomes pathway garnered multiple kudos from the International Society of Pharmacoeconomics and Outcomes Research (ISPOR).

ISPOR is the premier professional organization for promoting the science of health economics and outcomes research. The organization facilitates the translation of this research into useful information for healthcare decision-makers to ensure that society allocates scarce health care resources wisely, fairly, and efficiently.

The graduate student team from WVU competed against nine other teams from around the world to win the student research competition.

ISPOR team members and faculty (pictured from left): Kimberly Blake, Gretchen Pierce, Neel Shah, Ginger Scott, Abhijeet Bhanegaonkar, Tricia Lee Wilkins, Suresh Madhavan, Elvonna Atkins, Rahul Khanna, and Dean Pat Chase

The WVU team was comprised of the following students in their first to final years of their graduate training: Rahul Khanna, Pramit Nadpara, Pallavi Rane, and Tricia Wilkins.

WVU also received second place in the outstanding student chapter category. The chapter earned this recognition through their noteworthy efforts in educational outreach, community service, and research. Kimberly Blake received the Student Award for her role as president of the WVU Chapter of ISPOR.

Gretchen Pierce, a M.S. student in the program, created a t-shirt design that was selected by the ISPOR student network and featured on shirts given to all participants at the conference.

"The accomplishments of our students bring great pride to WVU and the WVU School of Pharmacy," said Suresh Madhavan, professor and chair of the Department of Pharmaceutical Systems and Policy.

The health outcomes program at WVU has a long history of accomplishments and has proven once again that its international reputation is well deserved.

Tobacco Research Program Studies New Smokeless Product

Cindy Tworek, Ph.D., assistant professor in the Department of Pharmaceutical Systems and Policy, is a core investigator with the Translational Tobacco Reduction Research Program (T^2R^2) at WVU.

Tworek and her team are studying a new smokeless, spitless tobacco product, RJ Reynolds' Camel Snus, to gauge acceptance among consumers, particularly young adults on or around college campuses in West Virginia.

"West Virginia has extremely high rates of smokeless tobacco use and high rates of smoking," said Tworek.

In the past, the tobacco industry has developed and marketed new products that purport to be less harmful than existing products.

"Snus products have not been tested in terms of long-term safety, to know whether it's accurate to market them as a health-safe alternative to smoking," said Tworek.

Snus qualifies as a Potential Reduced Exposure Product (PREP). However, PREPs are not evaluated for safety by the government.

In collaboration with T^2R^2, researchers have shown that the Camel Snus sold in West Virginia can contain surprisingly high levels of nicotine compared to other brands of snus, snuff products, and even earlier test-market versions of the same product.

T^2R^2 is a joint effort of the Mary Babb Randolph Cancer Center at WVU and the West Virginia Prevention Research Center.

The program brings together a multidisciplinary team of researches to uncover answers about the biology, behavior, and environment of tobacco addiction.

Notes from Dr. Matsumoto

Rae Matsumoto, Ph.D.

Summer 2009 was a busy time for research at the WVU School of Pharmacy. The Graduate Program in Pharmaceutical and Pharmacological Sciences welcomed five new students for a total of 38 graduate students in our program. Nine new residents also joined us for post-graduate training in pharmacy.

The PGY1 residents are required to complete a research project as part of their training at WVU and we look forward to working with them to complete this challenge.

In addition, four pharmacy students, four medical students, and two undergraduates actively engaged in a variety of research projects with faculty in the School. The achievements of two former pharmacy research students are highlighted in the present issue, and we anticipate many new discoveries by current students in the upcoming year.

A flurry of research grants, supplements, and revisions were also submitted by faculty at the WVU School of Pharmacy in response to opportunities created by the American Reinvestment and Recovery Act (ARRA). A supplement to support undergraduate research experiences in medication development has been awarded from the National Institutes of Health, and additional proposals are in line for impending funding decisions.

Future editions of the Research Quarterly will highlight some of the projects supported through ARRA. We look forward to the new opportunities provided by these additional funds and the innovative research and programs that will be possible through them.

Rae Matsumoto, Ph.D., is the Associate Dean for Research and Graduate Programs. She may be contacted at: rmatsumoto@hsc.wvu.edu for questions or comments regarding this column.

School of Pharmacy Ph.D. Graduates Pursue Academic Careers

Three Ph.D. students graduated from the Pharmaceutical and Pharmacological Sciences Graduate Program in 2009, with two moving into faculty positions in pharmacy schools.

Andrea Pfalzgraf completed her dissertation, "Self-reported physician prescribing behavior and factors related to antidepressant prescribing to children and adolescents with major depressive disorder," under the mentorship of Dr. Virginia (Ginger) Scott in the Department of Pharmaceutical Systems and Policy.

Dr. Pfalzgraf is currently an assistant professor at the Mylan School of Pharmacy at Duquesne University in Pittsburgh, Pennsylvania.

Vorasit Vongsutilers completed his dissertation, "The effect of C8-arylguanine adducts on B/Z-DNA equilibrium: implications in aryl hydrazine carcinogenesis." His major advisor was Dr. Peter Gannett, professor in the Department of Basic Pharmaceutical Sciences. Dr. Vongsutilers is currently a professor at Chulalongkorn University in Bangkok. Chulalongkorn is the oldest and most prestigious university in Thailand.

Reyna Van Gilder defended her dissertation, "Examining the protective effects of sesamol on oxidative stress associated blood-brain barrier dysfunction in Streptozotocin-induced diabetic rats," under the mentorship of Dr. Jason Huber in the Department of Basic Pharmaceutical Sciences.

We congratulate our newest Ph.D.s and look forward to them making a significant impact on research and teaching at pharmacy schools around the world.

To view earlier issues of the Research Quarterly, please visit our website at:
http://www.hsc.wvu.edu/sop/research/index.html

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