



DEVELOPMENTS

VOL. 3, NO. 1: FALL/WINTER 2009-2010

BIOTECHNOLOGY INNOVATION & OPTIMIZATION CENTER

A KTEC CENTER OF EXCELLENCE

BIO Center changes to meet future goals

The year 2010 brought major changes to the Biotechnology Innovation and Optimization Center at the University of Kansas. In response to recent budget constraints felt by the state of Kansas, the Kansas Technology Enterprise Corporation chose not to fund the BIO Center past the current fiscal year.

In order for the BIO Center to continue its critical role in assisting bioscience business development efforts at the university, a plan for continued development and funding has been established. The plan integrates the BIO Center into the Institute for Advancing Medical Innovation. This will allow the center to play an ever increasing role in the broader drug discovery, delivery and development efforts of the university, which is led by the IAMI. To facilitate this integration Dr. Scott Weir, director of the IAMI, was named director of the BIO Center.

The IAMI was established in January 2009 as a collaborative effort between the Ewing Marion Kauffman Foundation and the KU Endowment Association to assist KU and its researchers in transforming federally funded research into medical innovations. These innovations focus on technologies that aid in the diagnosis, treatment, prevention or control of human and animal disease.

Vice Provost for Research and Graduate Studies Steven Warren and Weir are working with KTEC to manage the BIO Center's transition from a KTEC Center of Excellence to a fully integrated part of the IAMI. During the next year a sustainable business model will be developed by Weir and KU administrators. The model will rely on building a revenue stream of funding through industry and disease philanthropy sponsored service work, federal funding through grants, and sponsored research, with a heavy reliance on service. Ultimately, this revenue stream should offset the loss of funds from KTEC. ■



Construction continues on new pharmacy school

Progress continues on construction of the new pharmacy school located on the University of Kansas west campus. The four-story structure is expected to be completed this summer.

New pharmacy school includes cutting-edge teaching technology

After 16 months of design and an expected 16 months of construction, the new School of Pharmacy on the University of Kansas west campus is on track for an August move-in date. The new \$50 million facility will increase the number of students the university will be able to train as pharmacists and will open up new methods of teaching.

"The pharmacy teaching facility is one of the very few new buildings we have received state funding for in the last 10 or more years," said University Architect and Special Assistant to the Chancellor Warren Corman, who has been overseeing the project from the beginning. "The acute shortage of pharmacists in Kansas created the need for this facility. When it is finished in August 2010, it will be able to enroll about 150 students on the Lawrence campus, instead of 105, and will also enroll 40 in Wichita on the KU medical campus there, so in effect, we are almost doubling the number of students that can enroll each year."

To increase the number of students in training as pharmacists, the building has been designed to allow students to participate in classes while off-site. The 40 new students on the Wichita campus will be a part of this program.

"One of the unique features of the facility is the ability, in numerous classrooms, to project video and sound to other sites in Kansas or elsewhere instantly and have two-way instruction going on back and forth to remote sites," Corman said. "This is a difficult problem with large classes — to make sure that everyone in the room can hear and see and be a part of what is transpiring."

(Continued on page 2)

New pharmacy school designed to aid research collaboration

Building offers dining area, pharmacy museum

(Continued from page 1)

The new equipment will allow KU to use existing faculty to train professional and graduate students in the pharmaceutical sciences on the Wichita campus, in

laboratory and a student resource suite along with a resource center. It will also provide pharmacy and patient consulting rooms and a drug information center. Added to this will be features meant to help unite the researchers who work

student locker room and a concrete storm shelter, which has been recognized by the Federal Emergency Management Agency.

“The intent of placing dining facilities, convenience shop, pharmacy and other features in the building was to create a central point of attraction for teachers, researchers and students to create an environment where introductions are made, conversations and interactions initiated, and as a consequence, collaborations eventually blossom,” said Kenneth Audus, dean of the School of Pharmacy.

To help meet KU’s constant need to lower expenses, the contemporary style of the new building incorporates features that will help the school to save money, both on maintenance and energy bills. Internally, the building has been designed to be 30 percent more efficient than new codes require. Externally, the landscaping will include biological swales to contain and absorb oil and salt from the driveways and parking areas.

To view a slide show detailing the progress of construction of the new School of Pharmacy building visit http://www.pharm.ku.edu/index.php?page=content:new_pharmacy_building.

The intent of placing dining facilities, convenience shop, pharmacy and other features in the building was to create a central point of attraction for teachers, researchers and students to create an environment where introductions are made, conversations and interactions initiated, and as a consequence, collaborations eventually blossom.

- Kenneth Audus, dean of the School of Pharmacy

remote Midwestern locations and, potentially, globally. The Wichita campus currently uses two-way video instruction as part of the master’s of science public health program in collaboration with the KU Medical Center in Kansas City, Kan. With this system already in place, the Wichita campus should comfortably be able to add additional two-way classes taught from Lawrence. The ability to use this technology at the new School of Pharmacy will allow KU to compete with other universities such as the University of Oklahoma that already routinely offers two-way video instruction in Oklahoma City and Tulsa.

throughout west campus, including a soda fountain and a dining facility. The building will also include a pharmacy museum. In addition, the basement will house a large

With four floors and 110,000 square feet, the new KU School of Pharmacy will provide resources for those in the school and for west campus. The building will include two auditorium-style classrooms that will seat 175 guests, one 75-seat classroom, two 50-seat classrooms and several smaller seminar and conference rooms. The top three floors will include offices for faculty and staff, a large integrated laboratory, a biochemistry



School of Pharmacy construction progresses as expected

The new pharmacy building will include features that could be used by anyone on west campus, including a dining facility, soda fountain and storm shelter. Photos show construction progress as of April 23, 2010.

KU doctoral student receives national fellowship

Alison Donnelly studies cancer therapies related to Hsp90

- Contributions by University Relations

A doctoral student in medicinal chemistry at the University of Kansas has received a highly prestigious and competitive \$26,000 fellowship from the American Chemical Society Division of Organic Chemistry, sponsored by the pharmaceutical company Roche.

Alison Donnelly of Grand Island, N.Y., is one of 11 students nationally selected to receive the ACS Division of Organic Chemistry Graduate Fellowships, each worth \$26,000, to support their graduate studies.

Donnelly is studying traits of a type of protein known as Hsp90 that cancer cells must have to proliferate. By targeting Hsp90, researchers hope to find effective cancer drugs that attack and halt malignant cell growth. Donnelly is among more than 20 graduate students working in the laboratory of her research adviser Brian S.J. Blagg, associate professor of medicinal chemistry. Blagg collaborates with Biotechnology Innovation and Optimization Center researcher Roger Rajewski on this project.

"I am working on a novel class of Hsp90 inhibitors that lack the toxicity and shortcomings of those now in clinical trials," Donnelly said, also noting its promise and versatility. "Unlike other cancer therapies, Hsp90 inhibition allows simultaneous disruption of multiple avenues for cancer

Reserve University. She received a master's degree in medicinal chemistry from KU in summer 2009. She is the daughter of Thomas Donnelly of Buffalo, N.Y., and Martha Donnelly of Grand Island, N.Y., and a graduate of the Nardin Academy in Buffalo.

"I had always loved science," she said. "Chemistry fascinated me and I was drawn more to a research rather than clinical setting. I worked in a wide range of laboratories and a wide range of research but found organic chemistry to be my favorite."

For that, she credited Irene Lee, her Case Western Reserve undergraduate organic chemistry professor, who introduced Donnelly to organic chemistry and urged her to continue with graduate studies in medicinal chemistry as a way to apply chemistry toward the improvement of human health. After she completes her KU doctoral degree, she hopes to work as a leader in the pharmaceutical industry

Alison Donnelly

Graduate Student



progression, which gives it broad applicability and the capacity to treat many different kinds of cancers."

Donnelly came to KU after earning bachelor's degrees in chemistry and Spanish in spring 2006 from Case Western

(Continued on page 4)

BIO Center organizes Hsp90 Symposium at KU

On Dec. 7, 2009, nearly 90 people attended the Hsp90 Symposium, organized and co-sponsored by the Biotechnology Innovation and Optimization Center. Eight speakers discussed their research on the Hsp90 protein in the auditorium of Simons Research Laboratories on the west campus of the University of Kansas. The National Institutes of Health-funded Center of Biomedical Research Excellence (COBRE) in Protein Structure and Function and the COBRE Center for Cancer Experimental Therapeutics also co-sponsored the event.

Keynote speaker Dr. Robert Matts, the Sarkeys Distinguished Professor of Biochemistry in the Department of Biochemistry and Molecular Biology at Oklahoma State University, spoke on "Hsp90: Characterization of co-chaperone, client and drug interactions."

A poster session was held in the Structural Biology Center during lunch. Nineteen posters were presented. •



Hsp90 Symposium

Keynote speaker Robert Matts (center) completes paperwork at the Hsp90 Symposium as BIO Center researcher Roger Rajewski (left) and James Calvet, professor of biochemistry and molecular biology at the KU Medical Center, discuss the event.

BIO Center refines formulation of cancer prevention drug

Mayo Clinic completes initial clinical trials

A collaboration between the University of Kansas Cancer Center and the Mayo Clinic Cancer Center, which began in 2007 as part of a project funded by the National Cancer Institute, has led to the development by researchers at KU of four drug formulations that have proven promising enough to be put into clinical trials at the Mayo Clinic. The formulations were derived from a synthetic version of an agent found in vegetables that has shown the potential to prevent cancer. The trials began in October and were recently completed.

"The basic goal of the trial was to increase oral bioavailability," said Biotechnology Innovation and Optimization Center researcher Roger Rajewski, who led the research effort at KU.

This initial phase of human testing, called a phase '0' clinical trial, was designed to test which formulation of the agent the body would absorb best. The agent, SR13668, was originally discovered by the Stanford Research Institute. It is a synthetic version of a naturally occurring

anti-cancer agent found in vegetables such as broccoli, cauliflower and cabbage that naturally inhibits Akt, a protein that can stop a cell from destroying itself, thus keeping a malignant cell alive. This protein is abnormally active in many human malignancies such as breast, prostate, lung, pancreatic, liver, ovarian and colorectal cancers. Prior to this project, SR13668 had exhibited the ability to inhibit tumor growth, and potentially tumor invasion, in cell and animal experiments.

The basic goal of the trial was to increase oral bioavailability.

- Dr. Roger Rajewski, BIO Center researcher

The phase 0 trials just completed by the Mayo Clinic Cancer Center in Rochester, Minn., were 'pharmacokinetic' studies that tested the drug formulations on a small number of healthy volunteers to determine how the formulations of SR13668 would be absorbed, distributed and metabolized within the body. This short-

term phase '0' study was not meant to treat cancer or to demonstrate that these agents could prevent cancer. The initial clinical trial in humans went well but final results are not yet available. Strong results will allow the Mayo Clinic to request additional funding in order to complete phase 'I' clinical trials to determine the drug's effectiveness against cancer.

This project has been a cooperative effort between the KU and Mayo Clinic cancer centers. The project takes advantage of the research strength of KU and the clinical experience of the Mayo Clinic. The Mayo Clinic originally requested KU's assistance in this project due to the research expertise of Dr. Eric Munson, professor of pharmaceutical chemistry. KU refined the drug formulations that will make it possible for the Mayo Clinic to test the drug on humans. Although far from guaranteed, if future trials are successful, a cancer prevention drug could potentially reach the market in about a decade. It would be administered to those at high risk for developing cancer. ■

Graduate student wins ACS fellowship

Joins others honored for cutting-edge cancer research

(Continued from page 3)

focusing on the development of antitumor agents.

Among strengths that attracted her to the KU graduate medicinal chemistry program, Donnelly noted "the intriguing research, strength of the program and collaborative nature of the department."

The prior year, Micah Niphakis, also a KU doctoral student in medicinal chemistry, received a \$24,000 fellowship from the American Chemical Society Division of Medicinal Chemistry for his research into plant compounds that kill cancer cells.

Last year, significant research into the cancer-fighting potential of Hsp90 inhibitors earned Blagg national recognition from the American Chemical Society Division of Medicinal Chemistry. He received the 2009 David W. Robertson

Memorial Award, sponsored by the Pfizer Endowment Fund, given annually to "scientists under the age of 40 who have made seminal contributions to the discovery of novel therapeutic agents, or who

have made substantial contributions and discoveries in medicinal chemistry."

The society acknowledged Blagg for his work to create inhibitors of Hsp90 that have promise as cancer fighters. Because Hsp90 folds other proteins and helps them to achieve their correct three-dimensional shape, hindering the process can obstruct the constant proliferation of cancer cells. ■

BIOTECHNOLOGY INNOVATION & OPTIMIZATION CENTER

A KTEC Center of Excellence

The University of Kansas

2097 Constant Avenue

Lawrence, KS 66047

Tel: 785-864-5141, Fax: 785-864-5097

www2.ku.edu/~biocenter, biocenter@ku.edu

The Biotechnology Innovation & Optimization Center is a KTEC Center of Excellence, funded in part by the Kansas Technology Enterprise Corporation. The Biotechnology Innovation & Optimization Center is a division of the University of Kansas, which is an entity of the state of Kansas separately managed and distinct from the Kansas Technology Enterprise Corporation. Articles in *Developments* may be reprinted without special permission from the editor or Center. We ask that you credit the BIO Center or the original author for the information.