



Page 5

## **INSIDE :**

- *Faculty Scholars, Page 3*
- *Focus On: Pittsburg State, Page 4*
- *Undergraduate Core Update, Page 6*
- *Another View: Janice Barton, Page 7*
- *Assistant Director Honored, Page 8*

For more information about K-INBRE, contact your campus coordinator.



Fall 2007 Volume 6 Issue 2

## **New Tools, Kansas IDeAs**

*IDEA components – INBRE and COBRE grants – boost bioscience*



*Principal investigators of the Kansas IDeA program have been awarded more than \$120 million since 2000. Front to back: Joan Hunt (KUMC), Daniel Marcus (KSU), Bill Narayan (KUMC), Barbara Timmermann (KU-L), Curtis Klaassen (KUMC), Robert Hanzlik (KU-L) and Dale Abrahamson (KUMC). Photo submitted*

eligible for such funding.

“The IDeA program is giving an enormous boost to biomedical research in Kansas by  
(Continued on Page 2)

**Renee VanErp**  
*Contributing Writer*

This fall, the Kansas IDeA Office based at the University of Kansas Medical Center launched a Web site, a brochure and a four-color magazine, designed to raise awareness of a statewide initiative that has been awarded more than \$120 million during the past seven years. In addition, the K-INBRE Office, also based at KU Medical Center, updated its Web site to reflect changes in content and navigation. Many who have registered for the upcoming symposium on the new K-INBRE site have expressed appreciation for the improved features.

Visitors to <http://kansasidea.kumc.edu> will find an introduction to the Institutional Development Awards that are supported by the National Center for Research Resources at the National Institutes of Health.

The IDeA program is designed to foster health-related research and enhance the competitiveness of investigators at institutions in states that historically rank in the lower half of biomedical research funding from the NIH. Kansas is one of 23 states, along with Puerto Rico, who are

## K-INBRE Administration

### Director

Dr. Joan Hunt

### Associate Director

Dr. Peter Smith

### Assistant Director

Ms. Heiata Chapman

### Administrative Assistant

Ms. Janette Lyon

### Undergraduate Support Core Director

Dr. Stephen K. Chapes

### Bioinformatics Core Director

Dr. Gerald Lushington

### K-INBRIEF Editor

Mr. Joseph Chapes

### Campus Coordinators:

Dr. K. J. Abraham, LU

Dr. Janice Barton, WU

Dr. Tim Burnett, ESU

Dr. Stephen K. Chapes, KSU (Co)

Dr. Bridget Chapin, HINU

Dr. William Hendry, WSU

Dr. Michael Madden, FHSU

Dr. James Orr, KU

Dr. Virginia Rider, PSU

Dr. Larry Williams, KSU (Co)

**This publication was made possible by NIH grant number P20 R016475 from the INBRE Program of the National Center for Research Resources.**

*Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIH.*

The K-INBRIEF Newsletter is published four times a year and distributed electronically. All pictures and picture illustrations, unless otherwise noted, are by Joseph Chapes.

Questions and comments can be sent to [jchapes@ksu.edu](mailto:jchapes@ksu.edu).

## New Tools, Continued

helping secure millions in grant support," says Joan Hunt, PhD, DSc, chair of the Kansas IDeA Committee and KU's Vice Chancellor for Biomedical Research Infrastructure. "We invite everyone to visit the site to learn more about the IDeA program's impact on Kansas and the promise it holds for improving human health."

The site includes more information about the Kansas IDeA Network of Biomedical Research Excellence (K-INBRE) grant and Centers of Biomedical Research Excellence (COBRE) grants, two components of the IDeA program. Each IDeA state is eligible for one INBRE grant; Dr. Hunt of KU Medical Center is the principal investigator for the Kansas-INBRE. Five funded COBRE grants are in the state of Kansas: one at Kansas State University, three at KU Medical Center and two at KU-Lawrence. A link on the IDeA site connects to the new *Kansas IDeAs* brochure, which explains each of the grants in more detail.

Visitors to the new site also will find a link to *Kansas IDeAs*, a 24-page magazine that highlights some of the investigators who are shaping the future of biomedical research in Kansas. Governor Kathleen Sebelius provides the welcoming message and offers valuable support to this collaborative effort to boost the concentration of life sciences activity throughout the state. The magazine was mailed in October to key constituencies, such as elected officials, donors and the Board of Regents, who influence support for biomedical research in Kansas.

To receive a copy of the magazine or add someone to the mailing list, call the Kansas IDeA Office at 913-588-1324 or contact Cindy Maples at [cmaples@kumc.edu](mailto:cmaples@kumc.edu).

On the updated K-INBRE Web site at [www.kumc.edu/kinbre](http://www.kumc.edu/kinbre), visitors will find current information about the January symposium, a comprehensive overview of the K-INBRE program and its funding opportunities, along with additional helpful links. The K-INBRE Office welcomes feedback at 913-588-7517 or [jlyon@kumc.edu](mailto:jlyon@kumc.edu).



*In one of the labs for KU's Center for Cancer Experimental Therapeutics, University Distinguished Professor Barbara Timmermann mentors Juan Araya, a Ph.D. student in medicinal chemistry. Photo submitted*

# Honoring Distinction

K-INBRE Faculty Scholars take center stage each year to accept recognition for their contributions to research in cell and developmental biology and their service to Kansas universities.

“We realize our best faculty members often receive attractive recruitment offers from other institutions,” says Joan Hunt, Ph.D., DSc, K-INBRE principal investigator and KU’s vice chancellor for biomedical research infrastructure. “The Faculty Scholar awards give us an opportunity to tell our mid-level faculty stars how much we value them. We hope such recognition encourages them to stay in Kansas.”

Candidates must have a Ph.D. degree or equivalent, hold a position as assistant or associate professor with a minimum of three years of service to a Kansas university, and show evidence of extramural funding for an outstanding research program in cell and developmental biology. Senior executives on each K-INBRE campus can nominate investigators for consideration.

Faculty Scholar Awards include \$10,000 in flexible funds for academic/scholarly expenses allowable by NIH, such as travel to scientific meetings, purchase of books and computers.



*James McAfee, Ph.D.(right), presented by Charles Blatchley, Chair, Department of Chemistry (left) and Dr. Lynette Olsen, PSU College of Arts and Science.*

*Photos Submitted*



*Jeffrey May, Ph.D.(left) & Mark Schneegurt, Ph.D. (right), presented by Dean of WSU's Fairmount College of Liberal Arts and Sciences, William Bischoff.*



*Michal Zolkiewski, Ph.D.(right), presented by Michael Kanost, Ph.D., D.Sc., head of the KSU Department of Biochemistry.*



*Christophe Nicot, Ph.D.(left), presented by the KUMC Chair of Microbiology, Molecular Genetics and Immunology Bill Narayan, DVM, Ph.D.*



*Rollie Clem, Ph.D.(right), presented by the KSU Director of the Department of Biology Brian Spooner, Ph.D., D.Sc.*



*John Stanford, Ph.D.(left), presented by the KUMC Chair of the Department of Molecular & Integrative Physiology Paul Cheney, Ph.D.*



*Irina Smirnova, Ph.D.(left), presented by the KUMC Chair of Physical Therapy and Rehabilitation Sciences Lisa A. Stehno-Bittel, Ph.D. PT.*



# Pittsburg State University

*The "Focus on" section is made up of features on students and/or faculty at different K-INBRE Universities and how they see the K-INBRE Organization. This issue looks at Pittsburg State University. (Photo by Malcolm Turner)*

Russ Hall

## Emily Walters, Student

**Mentor: Dr. Virginia Rider**  
**Majors: Biology and Math.**

*What is your project?*

"We have been exploring the possible links between hormones and autoimmune diseases. We use tools like PCR and RNA microarray to analyze gene expression in the presence and absence of certain hormones in patients with Lupus."

*What kind of research would you like to get training in?*

"Computational biology! Using mathematics to understand things like emergent properties is incredibly exciting. A professor at Pitt State told me once that, to him, all the interesting problems are biological. That's true for me, too! But I really like using higher math to describe these problems and develop new ways of looking at them. For example, cell signaling can be described as a network problem, and the rules of graph theory and signaling can be applied. Boiling these problems down to their most abstract essences can really spur us to think about them in new ways. Also, biological problems are incredibly complex. As our computational power increases, our ability to model (and therefore understand) complex phenomena also increases."

*How does your mentor help you?*

"I think that I have the best possible mentor. She allows us an incredible amount of freedom in the lab, but gives us the knowledge which empowers us to solve problems as they

come up. She trains us not only to use techniques, but to understand them and be able to troubleshoot them. She walks us through her thinking while she develops hypothesis and experimental methods, making us feel like we are really involved in the scientific process. She also cares about our careers and gives us advice suited for our interests."

*What is the best thing about learning about science at your institution?*

"At Pitt State, we have nearly unlimited access to our professors. If I read an interesting article, I can go to the person whose specialty that is and talk to them about it. If I am interested in something, I can ask questions and get great answers. The professors here are very good about not talking down to students, and they make us feel like we are still people who are worthy of respect, even if we are at very early stages in our learning."

*What do you plan to do after you graduate? Does it include a possible career choice in biomedical research?*

"Yes!! I want to enter an MD/PhD program and continue to do research in computational biology and bioinformatics. I would like to work on translational research, bridging the gap between basic science research and patient applications. I think that the twin fields of computational biology and bioinformatics give us the best chance for developing personalized medicine, treatments that take into account all of an individual's history, medications, medical history, etc. Personalized medicine may help us to understand why some patients exhibit certain side effects and others don't, and why only some patients respond to certain treatments. I really think that that's the future of medicine, and I hope to be a part of ushering that in."



*Emily Walters (Photo Submitted)*

## Eric Bluml, *Student*

**Mentor: Dr. Nancy Brooker**

**Major: Biology/Pre-Med**

*What is your project and its goals?*

Halogenated Coumarin Derivatives as Novel Plant Protectants. "I hope to find a compound that can improve crop yields by limiting pathogens."

*What got you interested in scientific research?*

"I've always been somewhat interested in research, so when I heard about K-INBRE, I thought it would be a good

opportunity to find out exactly what it was all about."

*What is the best thing about learning about science at your institution?*

The faculty at PSU are what has made the experience great for me. My professors have been willing to go that extra mile if I have trouble understanding something, and they've made large amounts of material manageable.

*How has K-INBRE helped you to expand your scientific knowledge and experience?*

"I have greatly increased my knowledge of the research process, and research techniques. I've also learned about several plant pathogens."

## Nancy Brooker, *Mentor*

**Time at PSU: 14 years**

**Specialty/Expertise: Understanding how pathogens recognize their hosts and form compatible disease interactions.**

*How did you get interested in scientific research?*

"I first became interested in research when I was in high school and my science teacher, Mr. Craig Kasjaka was my first research mentor. He quickly introduced me to Dr. Bettie Duncan, the resident microbiologist at PSU and she mentored me heavily in research and development of my scientific interests. I would like to think that if the K-INBRE had been available when I was a student, I might have participated! I will say that after my first taste of original research that I was hooked and I am very grateful for the support and mentoring given so freely by my teachers and professors."

*Why do you think it is important to involve undergraduates in research?*

"I can distinctly remember my mentor Dr. Bettie Duncan, PSU microbiologist telling me as a junior in high school that, "Brooker, you have a talent in research, it comes easily for you and I can tell you love the process— Maybe you ought to look into careers in research to expand this gift!" I was excited to have my feelings and research results validated by this strong woman scientist mentor that I respected and admired! For a student, reading about research is quite different from doing it and with research experiences comes both the joy of discovery and the development of problem-solving skills that are rarely rivaled in other academic experiences. Sometimes we forget the power of one person on others lives, but certainly the K-INBRE reminds us all that we can make a difference in our students lives by interacting with them in the pursuit of new knowledge and the mentoring of young scientists in their



*Dr. Nancy Brooker with one of her students, Eric Bluml.  
Photo by Malcolm Turner*

respective career paths."

*Why do you think K-INBRE is a beneficial program?*

"I think the K-INBRE is important for a number of reasons. First, it helps to identify and recognize those students showing potential and aptitude in the basic sciences on our campus. The K-INBRE is a very prestigious program and so it is nice to reward those students who would do the work, regardless. . . . Secondly, it builds the confidence and interests of students who might otherwise wonder about their career choices in the basic sciences. Expanding the realm of studies to include a hands-on research project is invaluable to any young scientist, regardless of career track, and that makes for greater appreciation of what basic research is about and how to do it. . . . Thirdly, the K-INBRE helps faculty get recognition and support for their research work with students and this is very important at a school like PSU where we have limited resources for research. . . . All-in-all, the K-INBRE has been a "Win- Win" situation for everyone involved and we appreciate the multitude of ways that the K-INBRE program supports basic research on our campus!"

## Undergraduate Core Update: **How are we doing?**

**Stephen K. Chapes**

*Director, K-INBRE Undergraduate Support Core*

Next year, we will be submitting the competitive renewal of the K-INBRE grant. My impression from attending PI meetings at the NIH is that the undergraduate research component is important to the IDeA program and will continue to be a focus. That said, we still cannot take our program for granted. Part of our job is to keep tabs on what our students do. Tracking outcomes is important to the National Institutes of Health to show that a program is useful. How are we doing?

At the close of our last academic year (June 2007), we have supported 256 students at our 10 K-INBRE institutions from 2002-2007 including our Star Trainees and our Summer/Semester scholars. I'm sure this number has grown with the addition of new students in the fall semester. The youth of our program is exemplified by the statistic that 28% of our students are still undergraduates! Impressively, 33% of our students have gone into biomedical graduate programs. This compares to about 11% of the general undergraduate population in science curricula. 13% of our students are going to medical school, 10% are going into other medical professions and almost two percent are going into M.D./Ph.D. programs. The latter compares to a national average of less than 1%!

Our Star Trainee program is one that is being copied across the country because of its novelty. We allow these students to get outstanding science and laboratory training as undergraduates and by helping support them their first year in graduate school, we make them attractive graduate student candidates. 22 Star Trainees have completed their first year in the program since its inception in 2003 and 86% of them have gone into graduate programs in Kansas; helping to build our research programs and preparing outstanding scientists for the future.

Our successes are mirrored by a recent national survey conducted between 2003 and 2005 [1]. This report indicates that involving students in undergraduate research led to better student understanding of research, more self confidence and higher awareness of what to look for in graduate programs. 30% of the respondents said that being involved in research increased their interest "a lot" in a career in a science, technology, engineering or math field [1].

Just bringing undergraduates into our labs isn't the only thing that makes for a successful program. According to the Chronicle of Higher Education's report on undergraduate research, they reported that "...undergraduates learn and grow significantly from their research experiences, but require a strong mentor relationship to do so [2]." A long-term study, done at Indiana University, indicates that undergraduates do better when their mentors make it clear how important the student projects are [3]. These latter two studies reflect what I feel are important Kansas-INBRE traits.

Our mentors at our 10 undergraduate campuses value undergraduates and we let them know what they do is important. It isn't just busy work. Students get more out of a research experience if they are involved in assessment and literature review and not just collecting data [3]. Just look at the outstanding research our students present at our forums. Moreover, look at the pride they all take in what they do. So, to answer the question "how are we doing?" I say keep up the great effort and don't get complacent. We need to keep working hard to keep our program strong and to make improvements when and where we can. Especially, if we want our program to go another 5 years.

- 1 Russell, S.H. et al. (2007) THE PIPELINE: Benefits of Undergraduate Research Experiences. *Science* 316 (5824), 548-549
- 2 Guterman, L. (2007) What good is undergraduate research anyway? In *The Chronicle of Higher Education* (Vol. 53), pp. 12-16
- 3 Lipka, S. (2007) Helicopter parents help students, survey finds. In *The Chronicle of Higher Education* (Vol. 54), pp. 1,32

# 6th Annual K-INBRE Symposium

Cell and Developmental Biology

Saturday, January 19, 2008, 8:30 a.m.  
through  
Noon, Sunday, January 20, 2008

InterContinental Hotel  
Kansas City, MO  
On the Plaza

# Pondering the role of undergraduate scientific research

Another View

**Janice Barton**

*WU Campus Coordinator*

Looking back on 36 years of teaching biochemistry to graduate and undergraduate students in two states- Kansas and Texas, I find the dichotomy of both drastic and little change. The cadre of students exhibit similar distributions in their hopes, desires, and abilities. Yet the tools, techniques, and ways of knowing have altered tremendously, mostly for the good.

There are so many students whose lives I have influenced, for the better I hope; and in return, I have been changed by them as well. I have fond memories of that special group who worked on research projects with me; some still remain in contact. As many in my position experience, a special bond develops between research mentor and mentee that transcends the traditional relationship between professor and student. I am pleased that the majority of my research students attended either graduate school or medical school and now enjoy successful careers.

Research in the sciences is expensive, particularly for biochemistry and biomedical science. There is the cost of materials, equipment and instrumentation, and research assistants. Fortunately, I received help with these issues in the form of research grants from NSF, PRF, and NIH (Area). It seems to me, the greatest impact of research grants was

the ability to attract students into my research group. Providing research scholarships in the summer and the academic year gave students a viable alternative to working in fast food restaurants. The majority of my student co-authors, but not all, were supported on these research grants.

Early in my career, I was also fortunate to establish collaboration with Dr. Richard Himes of the University of Kansas Department of Biochemistry. Dick opened his lab to me and provided opportunities for addressing important problems. During those 20 years, we and his students were co-authors on several papers. I know I gained from our interaction and would recommend such collaboration to faculty at predominantly undergraduate institutions.

Federally funded graduate training grants have existed for several decades, and I, my peers, and our successors have enjoyed financial and career support through this mechanism. Training grants opened opportunities otherwise unavailable to doctoral students and allowed awarded states to build a scientifically based biomedical infrastructure. Except for the occasional individual grant, undergraduate institutions were left out of the equation. There were no training grants for undergraduate institutions.

BRIN in 2002 and INBRE in 2005 changed the landscape and introduced a new paradigm for undergraduates. Research training funds became available to a significant population of undergraduate students. Previously, the majority of students did their required research, but the conflict of time spent in research and earning support and spending money was palpable. With BRIN and INBRE, good students contemplating careers in science and medicine were able to concentrate on interesting and often challenging research projects, simultaneously meeting their financial needs through research scholarships. In summer, especially, the atmosphere was transformed at Washburn University. The labs were alive with students. There was a beehive of activity and sound as research students worked, collaborated and conversed with each other. Strong interpersonal connections were cemented. About five students could be supported on Washburn BRIN/INBRE funds

*(Continued on Page 8)*



**Janice S. Barton** graduated Hamilton High School in Hamilton, NJ and later received the BS degree in chemistry and zoology from Butler University in 1962. For the next three years, she was employed as a research associate by Eli Lilly in Indianapolis, IN. The Ph.D. was awarded in chemistry with specialization in biophysical chemistry by Florida State University in 1970. Subsequently, Barton received an NIH postdoctoral fellowship and worked with William Harrington at Johns Hopkins University. She was employed by East Texas State University and Texas Woman's University prior to Washburn University where she became professor of chemistry in 1988, chair of the chemistry department from 1992-2005, acting chair of physics in 2001-2005. Barton is a member of the American Chemical Society (ACS), Biophysical Society, the Kansas Academy of Science (KAS), Phi Kappa Phi, Phi Lambda Upsilon, and Iota Sigma Pi. She has been an officer for Iota Sigma Pi 1987-90, President (1992) and Treasurer (1995-2002) of the KAS, and the Washburn K-BRIN and K-INBRE coordinator. Barton will retire after the spring 2008 semester.

Another View

## Another View: *The role of undergraduate research, continued*

*(Continued from Page 7)*

and eight were possible with the Summer/Semester Scholarships from the KUMC administrative core. Research students not inclined toward biomedical science were also inspired and integrated into the BRIN/INBRE research group environment.

Not only has the impact on the Washburn University students and faculty been immense, but also the outcomes from the BRIN/INBRE program are admirable. Fifty percent of Washburn student awardees have entered graduate or medical school, another 10% have entered other medical programs, and still another almost 13% are employed in medically related laboratories.

What is the role of research in undergraduate education? It is a verity that professional scientists

are the product of research universities. On the other hand, undergraduate institutions inform and motivate students into science and send them off to graduate universities. Most undergraduate students are accustomed to learning by sitting in a chair listening to a sage and performing exercises designed to work and hopefully give a better understanding of the subject matter. But we all understand that is not science and not necessarily a motivational force for becoming a scientist. Science asks questions and designs experiments to test those questions. Today's questions often require complex instrumentation and theories. Undergraduate research introduces the student to the process, tools, environment, and professionalism of science. With the guidance of their faculty research advisor, student researchers evolve to the understanding they can become scientists. They determine whether science is the career for them as they learn about the challenges of failure and the joys of success in the undergraduate department.

## Assistant Director honored with Research Administrator Award

**Renee VanErp**

*Contributing Writer*

Heiata Chapman, Assistant Director of the K-INBRE, received a 2007 Research Administrator Award during KU Medical Center's annual Research Day celebrations November 8. The award recognizes and honors significant administrative support to the research or sponsored programs enterprise of KU Medical Center campuses in Kansas City and Wichita.

Chapman was nominated for the award by Joan Hunt, PhD, DSc, principal investigator of the K-INBRE. Her nomination was supported enthusiastically by Janice Barton, PhD, K-INBRE campus coordinator at Washburn University; S. Keith Chapes, PhD, Director of the K-INBRE Undergraduate Support Core; Rob Denell, PhD, University Distinguished Professor at K-State; Peter Smith, PhD, Associate Director of the K-INBRE; and Paul Terranova, PhD, Vice Chancellor for Research at KUMC.

Dr. Smith expressed sentiments shared by many supporting her nomination. "Heiata is perhaps the gold standard of Grants Administrators," he wrote. "She is exceptionally competent; I'm always amazed at the knowledge she has on the tips of her fingers. . . Heiata handles the most dire issues with contagious calm and aplomb. . . Her ability to manage and track resources is flawless. In many ways, Heiata



*K-INBRE Assistant Director Heiata Chapman was honored as the top research administrator at KUMC's Research day. Photo submitted*

serves as the face of the K-INBRE. She is the contact person for institutions across the state and the NIH, and always manages to present us in the best possible light."

Dr. Chapes added, "Heiata is not only organized and hard working. She is also one of the nicest people around."

Congratulations, Heiata!