Summer 2014

A&S LETTERS

Solving the research equation

Providing students in the College of Arts & Sciences with valuable research opportunities.

KANSAS STATE UNIVERSITY | College of Arts & Sciences

Alumni and Friends,

As I write this, the campus is too quiet following a busy finish to the spring semester. Manhattan was buzzing with students and faculty wrapping up course work, end-of-year celebrations and our commencement ceremony, marking the culmination of an incredible journey for more than 1,000 graduates from the College of Arts & Sciences. The last month was an amazing whirlwind of celebration of all we love about K-State.

The end of the 2014 spring semester was also a celebration of a new initiative we launched one year ago. In fall 2013, we introduced a new student course fee with the focus of enhancing the student experiences in our college, especially in the areas of course improvements, advising and undergraduate research opportunities.

K-State has always been a research university; our college has been a central part of that mission. In recent years, we've focused our efforts to expose more students to the broad spectrum of research opportunities. In this issue of A&S Letters, we'll demonstrate just how powerful those efforts and experiences are and share some of the exciting things our students are doing.

On the following pages, we hear from Beth Montelone, associate dean of research and professor of biology, who has been a leader in the development and implementation of the fee. We will also take a look at how the Department of Psychological Sciences is encouraging its undergraduate students to get involved in research as an example of what's happening in departments throughout our college.

In this issue we hear from students themselves, who share how hands-on research opportunities have impacted them, as well as alumni who have used their undergraduate research experience to help them advance their career. On top of that, we do a little "myth busting" with a story illustrating that research is not only for scientists.

Our college has had many students recognized for their research. We've included stories highlighting some of their accomplishments, including a feature on K-State's participation at the inaugural Research Day at the Capitol, where seven of the 10 students who represented K-State came from Arts & Sciences.

Of course, an issue of A&S Letters wouldn't be complete without a spotlight on our faculty and outstanding alumni. We're excited to introduce our new interim assistant dean of diversity, recruitment and retention, Kimathi Choma, who will lead our efforts to help strengthen our college. This spring, we also celebrated with two of our alumni who were recognized as alumni fellows and said goodbye to Mark Chapman, one of the most generous supporters in the history of our college. I think you'll find the stories about these three to be powerful and inspiring.

Though the spring semester has drawn to a close, there is so much that is still happening in our college. Research opportunities are growing, students are learning about careers, and we are helping K-State advance toward the goal of becoming a Top 50 public research university by 2025.

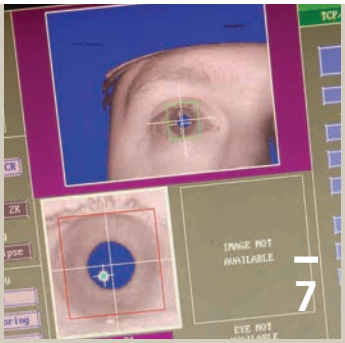
I hope you'll enjoy this issue of A&S Letters and that you have a wonderful summer.

All the best,

Peter Dorhout

Dean

PS: Follow me on Twitter: @KSUArtSciDean



A&S LETTERS

Peter Dorhout, *Dean*
Louise Benjamin, *Associate Dean*
Beth Montelone, *Associate Dean*
Kimathi Choma, *Assistant Dean*
Alison Wheatley, *Assistant Dean*
Tom Roesler, *Communications Coordinator*

Dean's Office: *785-532-6900*
artsci.k-state.edu
artsci@k-state.edu

KSU Foundation Development Office:
Sheila Walker, *Director of Development*
David Spafford, *Associate Director of Development*
Eric Holderness, *Development Officer*

800-432-1578 or 785-532-6266
found.k-state.edu
foundation@found.k-state.edu

Produced by
Division of Communications and Marketing
Kansas State University
k-state.edu/vpcm

Photos by
David Mayes and Tommy Theis
Division of Communications and Marketing

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Cover photo: *Faculty in the College of Arts & Sciences, like University Distinguished Professor Christer Aakeröy in chemistry, offer powerful research opportunities to students in every department in the college.*

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Planned investment

How a new student fee is supporting undergraduate research and travel in the college

by Greg Tammen

A new tuition fee is paying off for the College of Arts & Sciences and its students.

In fall 2013, the college introduced an $8 per credit hour fee for its courses. The fee, dubbed the instructional improvement fee, helps enhance student experience in the college by covering everything from classroom supplies and equipment, to remodeling laboratories and studios, to funding research and travel awards for undergraduates.

The $8 fee is expected to generate $2.4 million a year for the college, said Beth Montelone, associate dean for research and professor of biology. She was integral in the development of the fee and currently oversees its implementation.

"Instruction is improving across the college because of that money, and in every way it benefits the students," Montelone said. "In addition to paying for things like equipment, the money is letting departments bring in guest speakers, take students on field trips, fund undergraduate research and really enrich the undergraduate experience in terms of formal instruction."

Although it is less than a year old, the fee has already received a lot of positive feedback from faculty and students in the college, Montelone said.

"We've already seen a big increase in morale from both students and faculty," she said. "From 2008-2011 when the budgets were way down, all of our departments were giving back their operating expenses for the basics, such as copies, blue books, dry erase markers, etc. Now, the college is not only able to supply those basics, it also is actively creating opportunities for students to conduct research and travel to academic conferences."

Establishing an award

College administrators and a faculty committee started looking at how to structure a student fee that supported classroom instruction beginning in fall 2011. Every College of Arts & Sciences department was asked to identify and estimate its annual needs for consumable supplies and replacements for instructional technology and equipment.

Based on the identified needs, the provost's office gave the college $800,000 to distribute according to the committee's guidelines, while the administrators continued to work with student leadership on finding a way to institute a fee.

"It was an interactive process," said Peter Dorhout, college dean. "Many students in the college were strong advocates of implementing a fee because it increased their education and research opportunities. I'm very pleased with the outcome and look forward to the college and our students benefiting from it."

Creating opportunities

Of the $2.4 million, more than $400,000 is available annually as competitive student awards.

The college created 180 $1,000 undergraduate research awards to fund student research projects. Applicants submit budget and research proposals and if awarded, conduct 100 hours of research during a semester or summer. Up to three hours of optional academic credit also can be earned for the project.

The college issued 85 awards in the program's first year, with 43 being awarded in fall 2013 and 42 awarded in spring 2014. According to Montelone, this is a promising start and points toward growth as the program becomes more established.

The instructional improvement fee also created 100 $800 travel grants for undergraduate students and 100 $1,000 travel grants for graduate students. The grants help students present their research at conferences or travel to another college or laboratory in the U.S. to conduct research with a faculty scholar.

"The travel grants benefit more than the individual student," Montelone said. "It is visibility for the student, the program, the department, the college and the university."

According to Montelone, both the research and the travel grants can be tailored to serve the diverse academic disciplines housed in the college. In January, 10 theatre graduate and undergraduates attended the Kennedy Center American College Theater Festival in Nebraska, where they read plays and met with theater professors and students from across the U.S. A costume design major traveled to New York to select fabrics. Archaeology students plan to fund their travel and six weeks of lodging at a dig site in western Kansas.

"We've seen a few students apply for both awards," Montelone said. "When I see students who got an undergraduate research award and then the following semester are applying for research travel so they can present their work, that's like rock 'n' roll."

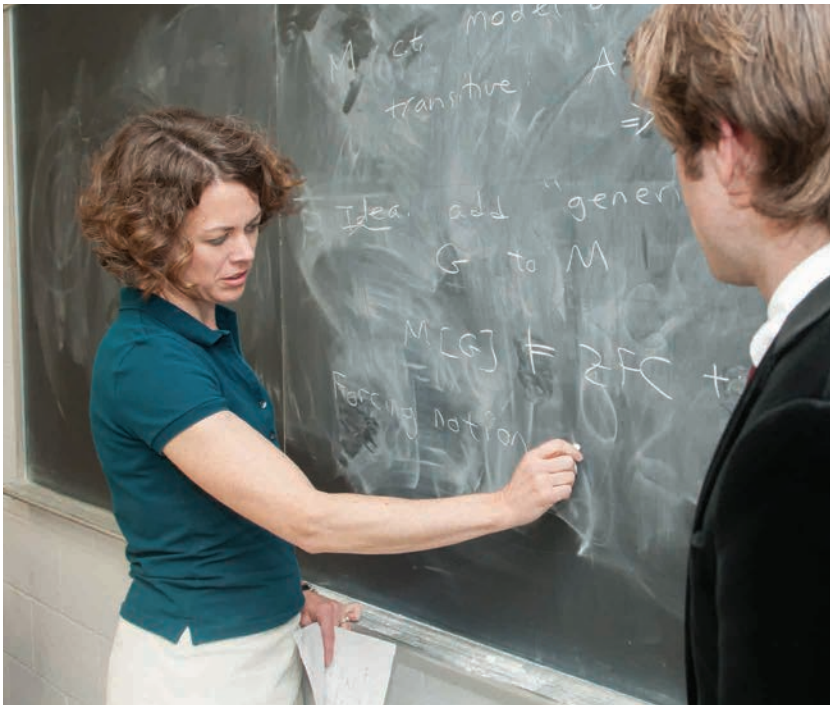
(continued on p. 6)

THE NEED:

Named endowments to sustain undergraduate and student travel awards.

TO HELP:

Sheila Walker, Director of Development, *sheilaw@found.ksu.edu*, *785-532-7511*



(continued)

Several faculty- and graduate student-centric grants also were created from the funds. These also indirectly benefit undergraduates.

An allocated $30,000 supports training for graduate teaching assistants. Some of this allocation will be used to sponsor an interactive training with a University of Michigan drama troupe that performs classroom scenarios.

The college will hire more advisors and provide and purchase advising materials with an allocated $165,000.

Additionally, $350,000 has been set aside for major instructional equipment grants. These are competitive grants for a single piece of classroom technology that costs more than $5,000.

"We really see this fee as something that is able to support instruction in a variety of ways," Montelone said. "It underscores our ability to offer undergraduate students meaningful research opportunities and supports the K-State goal of being named a Top 50 public research university by 2025."

Physics students utilize new equipment to collaborate on group research projects.

Finding their footing

The Department of Psychological Sciences encourages students to get a head start through undergraduate research

by Megan Saunders

THE NEED:

Support psychological sciences undergraduate students with hands-on research experience.

TO HELP:

Sheila Walker, Director of Development, *sheilaw@found.ksu.edu*, *785-532-7511*

A recent graduate from the Department of Psychological Sciences in the College of Arts & Sciences was in a job interview when she received a difficult question. Her interviewer asked if she knew regression, a difficult statistical technique. When she said "yes," the interviewer spun his computer screen around and said, "Show me."

Thanks to her undergraduate research with Mike Young, psychological sciences professor and department head, the student did.

"You can learn about psychological theories, but you don't know how to put it into practice until you try," Young said. "It's one thing to watch a cooking show, but trying to cook the meal yourself is entirely different."

To create more opportunities for students, the department is launching an initiative to double the amount of undergraduate students working in labs, as well as increase faculty numbers. Young said this initiative is in line with the university's plan to be a Top 50 public research university by 2025, as well as with a complementary College of Arts & Sciences initiative.

"Many students don't think about doing lab-based research as an undergrad," Young said. "We have to reach out to those students who have the potential."

Young said that undergraduate research is crucial for students who apply to clinical graduate programs, many of which have an acceptance rate of less than four percent. The department is developing fliers and posters to promote undergraduate research opportunities, as well as an updated website that will allow students to efficiently connect with researchers.

"Students are able to see what these skills look like on the ground," said Young. "They develop basic analytical skills and work with faculty, graduate students and postdoctoral students."

Kathryn Johns, College of Arts & Sciences ambassador and senior in psychological sciences, Olathe, KS, said she found it surprisingly easy to get involved in research — all it took was an email and a meeting.

"I couldn't believe all I had to do was ask," Johns said. "Being in the lab has exposed me to many teaching techniques and developed my critical thinking skills. I've learned it's OK to have more questions in the end than when I started."

Researchers and graduate students also benefit from mentoring undergraduate students. Young said that as a researcher, it's often difficult to connect with undergraduate students in large lecture halls.

"There's a lot of satisfaction in seeing your students grow as researchers," Young said. "Additionally, graduate students have mentoring opportunities, leaving them better prepared when they go on to academia."

In labs, students often collect data, set up equipment, run participants through experiments and more. Additionally, Young said he meets with his undergraduate research assistants once a week to discuss the theories behind their experiments and tie them back to their classroom learning.

Once they become confident in their skills, students often pursue independent research projects. Maya Wang, senior in psychological sciences, Jinan, China, works in three labs and has two independent projects, both of which have received fellowships or award funding.

Associate professor Les Loschky works with undergraduate students in the visual cognition lab in psychological sciences.

Wang said now that she's started applying for graduate school, it's quickly become apparent how valuable these opportunities are.

"Graduate schools see the effort I've put into my research," she said. "My professors have high expectations for me, so I'm motivated to meet them. Professors invest time and effort into undergraduate students, and they've been extremely supportive."

By 2025, Young said he hopes psychological sciences will be recognized as a Top 50 department. That means more undergraduate, graduate and faculty research; more students attending scientific conferences; and more undergraduates co-authoring publications.

"People often think of psychology in the clinical or counseling sense, but we want them to see it as a science," Young said. "Counseling and clinical processes are the application of what we're discovering in labs."

Taking education to the next level

by Stephanie Jacques

Students in the College of Arts & Sciences at Kansas State University are discovering the advantages of attending a research university.

With $2.4 million per year generated from the College of Arts & Sciences' new instructional improvement fee, the college is funding student research scholarships and travel awards.

"The students in the College of Arts & Sciences have the opportunity — even as undergraduates — to be directly involved with faculty research and scholarship," said Beth Montelone, associate dean of the college.

Students may apply for one of the 180 $1,000 scholarships and $250 research support grants. Students also may apply for an $800 undergraduate or $1,000 graduate student travel award to pay for travel in connection with research, such as presenting at a conference or conducting research at a remote location.

"One of the reasons we wanted to support student research and travel is because conducting research is an added value to students' educational experiences at a research university as opposed to a community college," Montelone said.

The research scholarships and grants program awarded 43 scholarships for the fall 2013 semester, 42 for the spring 2014 semester and 10 for the summer 2014 term. Students who are awarded the research scholarships are required to spend at least 100 hours on their research over a semester or summer.

"Students are getting an opportunity to learn one-on-one from a faculty member in their discipline, whether it is bench research, field research or learning about art, theatre or music," Montelone said.

The college is spreading out the scholarships and awards across all subject areas. Recipients include:

Sarah Cossey, *junior in biology, Manhattan, KS.*

"Before I received the scholarship I was working a part-time job. The research scholarship has allowed me to focus on my research. It's nice to have extra outside support because the equipment I need for my research is really expensive to use."

Cossey is working with Brad Olson, assistant professor of biology, at the K-State biotechnology facility on the evolution of multicellularity. She is using *Chlamydomonas*, a species of unicellular green algae, as her model species to investigate the signaling mechanism used by unicellular organisms to detect the presence of a predator.

Brandin Davis, *junior in physics and math, Derby, KS.*

"If you are going into math and physics you need to have some research experience, and I wasn't being paid to do my research when I first began. It's been really awesome to now be able to do my research and receive financial aid support."

Davis is working with Robert Szoszkiewicz, associate professor of physics, and the atomic force microscopy machine. Davis uses the instrument to make topographical maps of microscopic surfaces. The instrument provides a detailed look at items that are only a few nanometers in scale by shining a laser on a cantilever, which runs along the surface of the item. He is using the machine to help scientists find a way to detect cancer molecules.

Lois Wetzel, *junior in English, Kansas City, KS.*

"I'm learning a lot about research. Honestly, I've been a little bit overwhelmed at just what an incredible opportunity this is. I knew it would bring benefits to come to Kansas State University, but I had no idea the kind of relationships I would build with professors and the opportunities that are available."

Wetzel is assisting Lori Johnson, professor of political science, in researching the writings of Alexis de Tocqueville, a French political thinker and historian who wrote "Democracy in America." The two are analyzing de Tocqueville's reflections of the U.S.'s ethics, particularly honor during the Thomas Jefferson era. Wetzel is looking for literature that assesses de Tocqueville's views of Native Americans, African-Americans, slavery, women, children and families, and how his works have, in some ways, prophesized the current state of America.

THE NEED:

Named endowments to sustain undergraduate and student travel awards.

TO HELP:

Sheila Walker, Director of Development, *sheilaw@found.ksu.edu*, *785-532-7511*

Jaden Anderson, *junior in biology, Shawnee, KS.*

"Exploring your interests is what you are supposed to be doing in college, and participating in research as an undergraduate has helped me find my interests," Anderson said. "I've explored so many different options — and now I'm doing something that I didn't know I'd be doing."

Like Cossey, Anderson also works with Brad Olson to investigate the evolution of multicellularity. Anderson is studying *Chlamydomonas*, a species of green algae that is unicellular until it encounters predation and clusters together. Anderson is researching if *Chlamydomonas* has a self-recognition mechanism for predation and if the response is general or species-specific.

Michael Vega, *junior in geology and civil engineering, Overland Park, KS.*

"I think students need to get into research as soon as possible. With a master's degree becoming a requirement for a lot of jobs, undergraduate research experiences will help you stand out in the graduate school admissions process."

Vega is working with Saugata Datta, professor of geology, and Brent Campbell, master's student in geology, Johnson, KS, to investigate the possibility of storing carbon dioxide (CO_2) in an aquifer in western Kansas. As part of a larger study with the Kansas Geological Survey, Vega is looking at the mineralogy of the rocks to determine the effects that the CO_2 will have on the geology, because the CO_2 solution will dissolve different elements depending on the rocks' chemical compositions. The goal of the research is to investigate if the dissolved elements can combine to produce solid minerals to securely store the CO_2.

A NEW STAGE FOR RESEARCH

Undergraduate research opportunities abound in nonscience disciplines

by Megan Saunders

Motivating a student in research often includes integrating real-world experiences.

Students use undergraduate research opportunities to not only grow in their chosen field, but to share their acquired knowledge.

The college encourages and invites its departments to find undergraduate research opportunities for their students.

THE NEED:

Scholarships, research opportunities, and travel awards for students in the arts.

TO HELP:

Sheila Walker, Director of Development, *sheilaw@found.ksu.edu*, *785-532-7511*

Research can mean lab coats and microscopes, but it also can mean performances and industry-like experiences. The College of Arts & Sciences offers undergraduate research opportunities for students in many nonscience disciplines.

Beth Montelone, the college's associate dean for research, defines research in a broad way that includes scholarly and creative activity and discovery.

"We are a research university and have been since 1863, when the university was founded," she said. "That's what we offer to students that sets us apart. Research means more than just lab- or field-based studies."

The college encourages and invites its departments to identify and promote undergraduate research opportunities for their students. Montelone said the college had a kickoff event in fall 2013 with representatives from every department to discuss new options for student involvement in research.

"The College of Arts & Sciences is increasing research and scholarship in nonscience disciplines through new opportunities and undergraduate encouragement," she said.

Several opportunities for nonscience undergraduate research stemmed from the Kennedy Center American College Theatre Festival at the University of Nebraska, Lincoln. Ben Stark, assistant professor in the School of Music, Theatre, and Dance, recently took 10 students to the festival to research scene work and character motivations, as well as attend workshops and compete for scholarships.

Stark said more than 1,500 students nationwide attended this regional festival to see invited productions, compete in scholarship auditions, present production and design work, and attend workshops offered by faculty and industry professionals.

"Students practiced scene work through rehearsing and blocking a scene, song or monologue," said Stark. "In doing so, they conducted research on the play, characters and motivations of the circumstances surrounding the presented pieces."

Emily White, senior in theatre, Topeka, KS, attended the festival to participate in the National Stage Management Fellowship. She said it was a chance to meet other student stage managers and review their production notes.

"The festival also had many workshops and shows that other universities performed in the past year," said White. "The festival was an excellent opportunity to conduct research and gain a better understanding of professional stage management."

Students use undergraduate research opportunities to not only grow in their chosen field, but to share their acquired knowledge. Kevin James, senior in American ethnic studies, Junction City, KS, recently attended the National Council of Black Studies conference in Miami, FL, to present his research on the Black Seminoles, descendants of Native American Seminoles and Gullah Slaves.

"I researched how this culture was created and how it has been intentionally repressed," James said. "It is imperative that we delve into the depths of our own ethnic histories to acknowledge omitted cultural relics."

James was led to his research interests through several professors, including Dwanna Robertson, assistant professor of American ethnic studies, and her Native American Perspectives and Research methods courses. Tosha Sampson-Choma, assistant professor of English, brought James to the conference.

"I want to earn a doctorate in education and create an ethnic studies curriculum for K-12," he said. "My professors have prepared me for the rigor of graduate school through research skill development and a curriculum that creates avenues for academic excellence."

Motivating a student in research often includes integrating real-world experiences. Mervi Pakaste, assistant professor and area coordinator of graphic design, recruits exceptional students as research assistants to assist in her visual communication and Letterpress printing research.

In Letterpress printing, movable type is locked into the bed of a press, then inked and pressed against paper to transfer the ink from the type. Pakaste said her research assistants are exposed firsthand to the creative process and skills used in the printing industry.

"I serve as the art director and the students execute the designs as directed, very much like an intern would do," she said. "These students are provided with design experience in an industry-like environment on campus."

Whether it's creating works of art or encouraging students in performances, opportunities in undergraduate research are seemingly endless. Stark said research is a chance for students to consider the possibilities of both what has been done before and what can happen in the future.

"Undergraduate research is directly influenced by individual passions rather than prescribed course work, developing independent and critical thinking," Stark said. "The hands-on and experimental nature helps students solidify concepts, solve problems and examine innovative approaches."

Voices of alumni

Undergraduate research valuable in building health care careers

By Sheila Ellis-Glasper

Undergraduate research can open many doors for future educational, financial and career opportunities. These K-State College of Arts & Sciences alumni, undergraduate researchers and professors have reaped the benefits from participating in advanced research and discovery.

KaraJo Sprigg

First-year medical student at KU Medical School; K-State graduate, bachelor's in biology

Q: How has undergraduate research impacted your career path?

A: "I began working in a research lab my freshman year at K-State. Working in a lab gave me the hands-on, real-life experience I was only taught about in the classroom. I was able to be part of research, get to know faculty, and get to know many other biology undergrads and graduate students in numerous fields of research. Research experience helped me succeed in my biology and premed courses and fostered my interest in biology.

It also helped me meet people at all levels within the scientific community. This networking with other students and researchers allowed me to gain more perspective, and allowed me to understand what I could do with a biology degree. It was primarily through my research experience that I decided I wanted to finish my biology degree, and then continue my education at medical school. I am also considering entering the Master of Science in clinical research program between my third and fourth years of medical school."

Q: Did your undergraduate research give you a competitive edge when applying for medical school?

A: "Absolutely. Through my undergraduate research experience, I received fellowships and scholarships, attended scientific conferences, gave many oral and poster presentations, was a part of K-INBRE program, attended journal club meetings, and learned numerous lab techniques that helped build my CV and displayed my commitment to my education in biology and my ability to succeed in medical school. I also developed relationships with faculty who gave me support and mentorship when I needed it the most. My mentor, Dr. Kristin Michel, was always there for me in every step of my undergraduate education."

Q: Describe how your undergraduate experience at K-State has helped you excel in medical school.

A: "My research experience allowed me to constantly learn and understand more about biology while making friends, making money and having fun. Sometimes reading textbooks and studying for tests became monotonous, boring and felt like such a chore. My research experience gave me a place to learn that was exciting, and it fueled and motivated me to succeed academically. It's through my research experience that I also became much better at presenting, speaking in front of others and communicating. I also learned how to handle more responsibility. The responsibility of a research project taught me to be more efficient and focused. In medical school, the volume of material increases dramatically, and responsibilities increase as well. My research experience allowed me to learn the skills necessary to be successful at balancing academics, interest groups, extracurricular activities and my personal life in medical school."

Jesus Garcia

First-year medical student at KU Medical School; K-State graduate, bachelor's in public health nutrition and biology

Q: How has undergraduate research with the Developing Scholars Program affected your career path?

A: "DSP further cultivated my love for science. I knew I wanted to focus on a health-related field when I started college, and DSP guided me in the right direction. It allowed me to connect with faculty and experience different areas of study. It also equipped me with skills like goal setting, organization and leadership, which ultimately allowed me to become a quality applicant for medical school. I also made connections with former DSP students in medical school who gave me valuable advice on how to become a better medical school applicant."

Q: How has experience in a Developing Scholars undergraduate research project helped you while applying for medical school?

A: "I believe my extensive experience in research helped separate me from the other applicants in my year. I also remember questions about my research being part of my medical school interviews, so it must be regarded highly. I believe it tells a lot about the applicant. In addition, the relationships I made with my faculty mentors and DSP staff allowed me to obtain strong letters of recommendation."

Q: How did undergraduate research help you find a major and career path?

A: "Research was a valuable experience that allowed me to try different fields and decide the right one for me. I was exposed to nutrition, kinesiology, genetics and microbiology research that ultimately lead me to choose microbiology as my major."

Stefan Bossmann

K-State professor of chemistry and Developing Scholars Program mentor

Bossmann's research focuses on applying nanotechnology to fighting cancer. In 2012, Bossmann helped develop a cancer detection test. The test uses a small sample of a patient's blood and alerts doctors about the early stages of breast and non-small-cell lung cancer before physical symptoms appear. Bossmann encourages undergraduates to participate and assist in his research. About 80 percent of his undergraduate researchers are College of Arts & Sciences students.

The pre-health professions advising team in the College of Arts & Sciences, Molly Sanderson, Gayla Adams-Wright, Rebecca Bohner, David Cassiday and Sherryl Allen (not pictured).

THE NEED:

Pre-health students have the opportunity to enhance their research experience through scholarship.

TO HELP:

David Spafford, associate director of development, *davids@found.ksu.edu*, *785-532-7613*

Q: What is the importance of undergraduate research for professors and students alike?

A: "Programs like the Developing Scholars program strive for academic excellence and it gives me the chance to have access to high-quality students."

Q: Does undergraduate research help students decide on a career path?

A: "For students who want to become medical professionals there are many medical cases with no textbook solution. If you do research, you learn to be comfortable being in uncharted territory. Undergraduate research adds value to the undergraduate experience and helps students confirm earlier in their college education on a career path and major."

Gayla Adams-Wright

K-State health professions advisor, College of Arts & Sciences

Q: What is the top reason you advise pre-health students to be involved in undergraduate research?

A: "Research at the undergraduate level helps a student both professionally and personally. On a professional level, research experience develops an understanding of processes as well as a practical understanding of the nature of scientific knowledge. As a health care provider, much of the knowledge used to care for the sick and to heal patients is based upon scientific knowledge. The ability to connect the two is invaluable. For students' individual growth and development, research helps to develop critical thinking skills and connects students directly with scientists who may be able to mentor them or support their application to professional school. Research teaches written and oral communication skills as well as critical thinking, problem-solving, teamwork and time management."

Q: Has undergraduate research given your students a competitive edge when applying for health professions programs?

A: "Yes, for a number of reasons. Some of the significant benefits of undergraduate research include: working closely with a faculty mentor; developing a deeper understanding of your field; working on a research team and gaining academic credentials as a published author and presenting at conferences; and earning academic credit or scholarships for being part of research."

Q: How does undergraduate research add to the classroom experience?

A: "Research helps students make connections in the classroom as it often helps to conceptualize course material as well as degree requirements. Participating in research also helps a student understand the rationale underlying other research, and it assists students in better understanding the nuances and complexity of research design."

Three students earn research honors at biomedical research symposium

Three College of Arts & Sciences students earned honors at the 12th Annual Kansas Institutional Development Awards Network of Biomedical Research Excellence Symposium, Jan. 18-19.

The symposium is part of the Kansas Network of Biomedical Research Excellence, or K-INBRE, initiative, to identify and recruit promising college science students into careers in biomedical research in Kansas. Led by the KU Medical School, 10 campuses in Kansas — including K-State — and northern Oklahoma are a part of this collaborative network.

Students worked in laboratories alongside scientist mentors to develop research projects. The projects give students early hands-on experience in putting the scientific method into practice. Their research findings were presented at the symposium.

Award winners included:

- Tara N. Marriage, postdoctoral scholar and research associate in biology, second place for her oral presentation "The evolution of life cycle gene expression in the *Volvocine* algae: toward a molecular understanding of multi-cellular evolution."
- Wren Michaels, junior in microbiology, received $100 for her poster "Generation of mosquito cells with enhanced antiviral activities."
- Erin Peel, junior in microbiology, received honorable mention for her oral presentation "The extracellular protease network that regulates malaria mosquito immunity."

Assistant Dean for Diversity, Recruitment and Retention Announced

Fostering a strong and diverse student body is a goal in every college at Kansas State University, and is an important part of recruiting and retaining students. The College of Arts & Sciences has a long history of being committed to cultivating a strong culture and is now taking the next step in advancing that cause by selecting Kimathi I.A. Choma as the college's interim assistant dean for diversity, recruitment and retention.

"We are very excited to have someone like Kimathi joining our team in the college," said Peter Dorhout, dean of the College of Arts & Sciences. "He has a proven record of working with students, focusing on their successes in a very challenging academic environment like K-State."

Choma has been the director of undergraduate public health programs for Pathways to Public Health in the College of Veterinary Medicine at K-State for the past six years. In addition to being a veterinarian and mentoring veterinary and pre-veterinary students, he has taught and directed the Pathways to Public Health Program, which was designed to recruit diverse students to the field of public health and ultimately to the Master of Public Health program.

"I am passionate about diversity and I strive to promote student academic and professional success at the undergraduate and the graduate levels," Choma said. "Much of my experience has centered on the student perspective, but I look forward to working with faculty, staff and various entities to enhance the Kansas State experience and to service the needs of those within the College of Arts & Sciences."

As interim assistant dean, Choma will work to develop and guide a comprehensive strategy for diversity, retention, recruitment and inclusion for the college. Choma also will lead efforts to advance inclusion initiatives and practices for underrepresented groups within the college.

"As someone who is passionate about diversity and strives to promote student academic and professional success at the undergraduate and the graduate levels, I believe the objectives of the position parallel my professional goals and recent experiences," Choma said.

Choma earned a Bachelor of Science degree at Messiah College in Grantham, Pennsylvania, in 1997 before completing two years of graduate-level chemistry course work at the University of South Dakota in preparation for veterinary medicine school. He graduated from the College of Veterinary Medicine at K-State in May 2007 and earned his Master of Public Health from K-State in 2013.

A day at the Capitol

Undergraduate researchers show off their work

by Lauren Meehan and Beth Bohn

College of Arts & Sciences undergraduate students pose with Anita Cortez, director of undergraduate research at the Undergraduate Research Day at the capitol in Topeka, KS. Students include Fernando Roman, Jeffrey Murray, Jessica Wheeler, Christine Spartz, Daniel Dissmore, Joshua Ames and August Fitch.

Undergraduates from the College of Arts & Sciences received the special opportunity to share their research with state lawmakers, members of the Kansas Board of Regents and the public in February at the inaugural Undergraduate Research Day at the Capitol.

The event showcased the research being conducted by students at the state's four-year institutions. Ten students were selected to represent K-State, and most of them — seven — came from the College of Arts & Sciences.

"The purpose of Undergraduate Research Day at the Capitol was to make evident the many unique opportunities for undergraduates in Kansas to participate in cutting-edge research and discovery," said Anita Cortez, director of the office of undergraduate research at K-State. "Further, this event illustrated the important role that higher education plays in developing educated and prepared citizens for the workforce and for the economic growth of our state."

One of the most difficult aspects of attending the event, according to the students, was explaining their research in an understandable way to the general public.

Fernando Roman, senior in mathematics, Toa Alta, Puerto Rico, presented "Backward shift realization of discrete analytic functions." His faculty mentor is Dan Volok, associate professor of mathematics.

"Explaining mathematical research to the general public can be a very challenging task," Roman said. "When most legislators saw my poster their reaction was to ask me to explain, and even though at first the theorems and results of my project seemed meaningless to them, after my brief explanation they where able to have a general understanding of what my research was about. Most of them congratulated me for knowing my subject so well that I could explain it to non-mathematicians in a way that made sense to them."

Here's a look at some of the other College of Arts & Sciences students selected to participate and their research:

Jessica Wheeler, junior in biochemistry and history, Ellis, KS, "Chetolah: One place, many faces, Ellis County, Kansas." Her faculty mentor is M.J. Morgan, assistant professor of history.

"My research would not have been possible without the guidance of Dr. Morgan, my professor, as well as the staff at the Ellis County Historical Society and Harold Kraus, the current property owner of the town site I chose to research."

Joshua Ames, senior in microbiology, Lenexa, KS, "Expression of innate immunity in Frankliniella occidentalis during tomato spotted wilt virus infection." His faculty mentor is Dorith Rotenberg, research associate professor of plant pathology. Ames attributes his success to many of his Arts & Sciences classes.

"I enjoy conducting and sharing research, so any opportunity I have to present to new audiences is exciting for me. When this opportunity to present at the Capitol was offered, I was more than happy to share my work with new people and represent my lab, department and Kansas State University in Topeka."

August Fitch, junior in chemistry and philosophy, Manhattan, KS, "Consequences for the epistemology of computer simulation from an analysis of computer simulations as heuristic methods." His faculty mentor is Scott Tanona, associate professor of philosophy.

Jeffrey Murray, senior in physics, Manhattan, KS, "Visual cueing and feedback influencing undergraduate students' reasoning resources on conceptual physics problems." His faculty mentor is N. Sanjay Rebello, professor of physics.

Christine Spartz, senior in chemistry, Ellington, CT, "Changing the bioavailability of a known cancer drug." Her faculty mentor is Christer Aakeröy, professor of chemistry.

(continued on p. 16)

Fernando Roman, senior in mathematics, presented mathematical research at the capitol.

(continued)

"The research I presented involved a cancer drug, 5-Fluorouracil," Spartz said. "The drug is used to treat various forms of cancer, such as breast, colorectal and head and neck cancers. It has limited solubility in water, so it has to be administered using an IV. We are attempting to co-crystallize the drug molecule with other neutral molecules to alter the solubility of the drug molecule. This presents the possibility of different forms of administration, such as oral dosages, if the solubility can indeed be increased."

Daniel Dissmore, sophomore in music education and history, West Point, N.Y., "Miles Davis: Kind of blue." His faculty mentor is Wayne Goins, professor of jazz. Because Dissmore's research revolved around music, he had the opportunity to play the trumpet for legislators in Topeka.

"Part of my presentation at the Undergraduate Research Day at the Capitol involved playing Miles Davis' improvised solo from 'So What,' one of the songs on 'Kind of Blue' with my trumpet," Dissmore said. "While it was great when people asked me to play the solo, it was even more amazing when I could tell that the music had connected with them and they were astounded."

Developing Scholars Program develops undergrad researchers

by Sheila Ellis-Glasper

In the nearly 15 years since its inception, the Developing Scholars Program, or DSP, at Kansas State University has helped mold and shape the lives of aspiring doctors, lawyers, chiropractors, dentists, chemists, social change agents and other professionals by giving them undergraduate research experience and mentorship opportunities.

The program offers high-achieving, underrepresented and first-generation students research projects in their field of study with faculty mentors. Students selected engage in structured, faculty-supported research opportunities, according to Anita Cortez, director.

Additionally, students from the National Institute of Health's Bridges to the Future program who transfer to K-State from southwest Kansas community colleges, also participate in the Developing Scholars Program. And recently, K-State received a Louis Stokes Alliance for Minority Participation (LSAMP) grant, which will bring students into the program.

Since 2000, the program's first year, 343 students have participated in the Developing Scholars Program with an 83 percent graduation and matriculation rate after five years. More than half of these success stories have been from students pursuing a major in the College of Arts & Sciences, ranging from biomedical sciences to the social sciences, the humanities and the arts. Arts and Sciences' students in the program have also won prestigious scholarship awards, including Fulbright and Goldwater scholarships. Some current students in the program are competing for these awards.

Cortez credits the success of the program to identifying students with grit or persistence.

"We want the students who are hungry to learn, to explore, to advance themselves — but not just for themselves. We want students who want to make a difference in their world, who believe a difference can still be made."

— Anita Cortez

Current students in the program say the Developing Scholars Program confirmed career plans and helped them be competitive while applying for graduate programs.

THE NEED:

Named endowed scholarships to support Arts & Sciences Developing Scholars and their research.

TO HELP:

Eric Holderness, Development Officer, *erich@found.ksu.edu*, *785-532-7593*

Being a part of the program has helped Nallely Barron, senior in microbiology, Dodge City, KS, make her résumé stand out. A third-year scholar in the program, Barron is applying for medical school. She has been accepted to the University of Kansas School of Medicine and has interviewed with Harvard Medical School. She plans to become a primary care physician.

Barron is researching breast cancer treatments with faculty mentor Annelise Nguyen, associate professor of diagnostic medicine and pathobiology, and support from the Johnson Cancer Research Center.

"DSP has helped me solidify my plans to go to medical school," Barron said. "I am gaining experience that I will use later as a primary care physician treating patients facing cancer. Breast cancer is one of the biggest problems for women, so researching treatments that will help many people is very rewarding."

Of the many Developing Scholars Program success stories is Jorge Mendoza's. The May 2010 K-State bachelor's graduate in biology has been conducting his master's research at the University of Wisconsin, Madison on two- and three-toed sloths in Costa Rica and has made a splash in the news with articles in national publications, including the New York Times. After graduation, he hopes to come back to Kansas and plans to apply to veterinary school.

Another program alumna, Thuy Kieu Nguyen, graduated with a Bachelor of Fine Arts in drawing in 2007. She has worked for internationally renowned fashion designers, including Fendi and Salvatore Ferragamo in New York City.

The program has already produced medical doctors and attorneys, including two from the College of Arts & Sciences. Dr. Kristy Morales Garcia received a bachelor's degree in biology from K-State in 2004 before going on to earn her medical degree at the Saint Louis University School of Medicine. The program's first attorney, Dwight Alexander, studied political science at K-State, graduating in 2008. He now has his own private practice, the Alexander Law Firm LLC, in Kansas City, KS.

Navante Peacock, a freshman in psychology and Developing Scholars Program student from Haysville, KS, says being in the program has motivated him to excel in everything he does.

"My mentor, Dr. (Donald) Saucier (associate professor of psychological sciences) pushes me to do my best every day," Peacock said. "He holds everyone in his lab to a higher standard; doing average or 'good enough' on anything I'm working on is not acceptable. I apply this attitude in all my classes, which has helped my success."

Peacock said he chose K-State specifically for the undergraduate research opportunities.

"Before coming to campus, DSP was a program I had researched and hoped I could be a part of," he said. "Being funded through DSP has allowed me to focus and excel on research instead of having to find other part-time employment to help with my college expenses. Many of my fellow students have to juggle part-time employment and their class work, which leaves them very little time to engage in research."

Anita Cortez mentors students in the Developing Scholars Program.

The sound of science

How an undergraduate researcher harmonizes his interests in music and physics

by Jennifer Tidball

THE NEED:

To attract strong students with scholarships to physics and support their undergraduate research.

TO HELP:

Sheila Walker, Director of Development, *sheilaw@found.ksu.edu*, *785-532-7511*

Jeff Murray's transition from professional drummer to scientist and teacher followed a natural rhythm.

After several years in Nashville as a professional drummer who toured with country stars Martina McBride and Sara Evans, Murray decided to attend Kansas State University to pursue a bachelor's degree in physics education.

"There's a real rush to playing on a stage," said Murray, junior in physics education, Topeka, KS. "But there's just as big a rush when sitting down with a student and helping them go from hating science to loving it. That's when you know you're on the right path."

As an undergraduate researcher, Murray is improving physics education. He is studying how visual cues and feedback can develop students' problem-solving skills.

The project is part of National Science Foundation-funded research that involves the departments of psychological sciences and mathematics at K-State. Murray's faculty mentor is Sanjay Rebello, professor of physics.

"In working with Jeff, it is clear that he is not doing research just to get a line on his résumé, he is doing it because he is truly interested in what we are doing and its applications to science, technology, engineering and mathematics, or STEM, education," Rebello said. "Jeff is curious about the details of the research and asks good questions that often make the rest of us think."

For the project, the researchers used an eye tracker to observe the eye movements of problem solvers and determine where their eyes went while solving a problem. Murray used these observations to develop effective visual cues and hints to solve the problem.

While the goal of the research is to help students remember concepts and ideas that they already know, the challenge is helping students without giving them the answer, Murray said.

Murray also is studying how feedback can help students understand physics concepts. All too often students only learn the "how" of science and never learn the "why," Murray said.

"Our research shows that it is not only good to be told if you're wrong or right, but it's also good to have to explain why," Murray said. "In that explaining process you gain a greater depth of understanding."

Results so far show that the visual cues and feedback are helping students and can improve online learning and tutoring systems, Murray said.

"A lot of learning is transitioning to online where there isn't a physical teacher or a physical classroom," Murray said. "If we can innovate these ideas into an online tutoring system, it will be similar to having the instructor there to give students feedback."

Murray presented the research at the National Association for Research in Science Teaching conference in March in Pittsburgh. He received a student research travel award from the College of Arts & Science to support his trip. Murray also received an undergraduate research award from the college for his project.

"I'm extremely grateful for this financial support because it has allowed me to not have to work an additional job," Murray said." I am able to focus on my research, which has given me the opportunity to excel."

Murray also has been involved in numerous undergraduate programs in the college, including the McNair Program, the Developing Scholars Program and the Research Experiences for Undergraduates program, where he studied fiber optics.

His research experiences have inspired him to pursue a doctorate in physics education so that he can continue to help others.

"Even my motivation to play music was to make people happy," Murray said. "I wanted to help them and maybe make them forget about a tough situation or inspire them to do something. It's the same way with teaching. I want to offer something that helps somebody."

The seeds of success

Two alumni fellows' careers rooted in undergraduate experiences

by Jennifer Tidball

Patricia Seitz

Senior U.S. district judge, Southern District of Florida, Miami
Bachelor of Arts in history, 1968

U.S. District Judge Patricia Seitz's law career began in classrooms at Kansas State University. She credits her College of Arts & Sciences courses and professors for their introduction to important subjects: philosophy, political science, history, geography, geology, psychology and sociology.

> "All of these courses whetted my appetite, which unknown to me at the time, really laid the foundation for being a lawyer. The psychology and sociology courses were so important to what I do today as a judge in understanding people. I also needed an understanding of political science and history."

In 1968, Seitz graduated with a bachelor's degree in history. She focused her studies on Russian history before the 1917 Bolshevik revolution. Her involvement in student government also sparked her interest in democracy and public service.

After graduating from law school, Seitz began a successful career and paved the way for women in law. In 1974 she was the first woman lawyer hired by her firm and in 1993 she became the first woman to serve as president of the Florida Bar. In 1998, President Bill Clinton nominated Seitz to the U.S. District Court for the Southern District of Florida. As a federal judge, she hears both criminal and civil cases.

Seitz stays an active philanthropist and gives back to her alma mater where her career began. Seitz and her husband, trial lawyer Alan Greer, have established two College of Arts & Sciences scholarships in her parents' honor: the Betty Merrill Seitz journalism scholarship and the Richard J. Seitz veteran's scholarship. Her parents were college sweethearts at Kansas State University and married in France at the end of World War II.

"College was my introduction to that which is new and out of the box," Seitz said. "I learned to be open and withhold judgment until you have all the facts and fully understand the new proposition. To me, that is the essence of education, and I got that at K-State."

Gary Sandlin

President of Sandlin Oil Corp., Denver
Bachelor of Science in geology, 1955; Master of Science in geology, 1957

Gary Sandlin struck oil at the young age of 17. During a teenage experience as a roughneck on an oil rig, Sandlin discovered his interest in geology.

He decided to pursue his passion in the College of Arts & Sciences at Kansas State University and soon earned a bachelor's degree and a master's degree in geology, with a minor in petroleum engineering.

After graduation, he spent nine years working in Casper, WY, Albuquerque, N.M., and Denver, before forging his own path in the oil industry. Sandlin started as an independent geologist in 1965 and incorporated Sandlin Oil Corp. in 1977. Today he is president of Sandlin Oil Corp. in Denver, and continues to drill wells and operate producing wells.

Sandlin credits his professors and education at Kansas State University for his successful career in the oil industry. He continues to stay in touch with other geology alumni.

> "Having good instructors helped prepare me for the career that I have now. I continue to stay involved by attending geologic council meetings and communicating with the department and administration."

Sandlin and his wife, Kathie, continue to give back to the university. They recently established the Sandlin Geology Scholarship to encourage more students to pursue careers in geology.

"Philanthropy is important because of a lack of public funding," Kathie Sandlin said. "Gary is very loyal to Kansas State University and wants to help the next generation of students."

KANSAS STATE UNIVERSITY
College of Arts & Sciences
Office of the Dean

117 Eisenhower Hall
Manhattan, KS 66506-1005
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Remembering Mark Chapman

Mark Chapman, College of Art & Sciences alumnus, passed away this spring, leaving a legacy of generosity and support, which will continue to enrich the lives of others for years to come. He was a man of many passions, who used his gifts to help strengthen K-State and the college in a variety of ways.

Born on January 18, 1943, in Clay Center, KS, Chapman grew up near Broughton, a small town 30 miles northwest of Manhattan. He earned bachelor's degrees from K-State in 1965 in history and political science. As a student, he was involved in Army ROTC, Acacia fraternity, and athletics, including football and track.

After serving two years as a U.S. Army Signal Corps officer, Chapman entered the business world, first in real estate, then in the oil and gas industry. While growing his business acumen, he also cultivated his artistic talents, immersing himself in the arts. He and his wife, Cheryl Mellenthin, became deeply invested in music, art and literature. Over the last two decades, Chapman became a painter and writer himself, donating some of his work to K-State, as well as recently publishing two books of poetry.

With a wide-range of interests, Chapman generously supported the college and K-State on many fronts. In the College of Arts & Sciences, he developed the Chapman Scholars Program, the Chapman Center for Rural Studies, the Chapman Art Gallery in Willard Hall, and he helped the School of Music, Theatre, and Dance achieve the distinction of becoming an all-Steinway school. He and his wife helped to create the Chapman-Mellenthin Vet Med Plaza with the College of Veterinary Medicine. Chapman also helped K-State Athletics, with several program and facility improvements, as well as the K-State Libraries Great Room window transformation, which became one of his favorite projects.

Mark Chapman exemplified what the College of Arts & Sciences is all about. He was invested, financially, emotionally and intellectually in a variety of passions. He cultivated a complete mind and a complete life, befriending many and positively impacting lives of others he never met. We greatly appreciate Mark Chapman and cherish all that he did to help so many.