What’s the Problem with the E-Book?
Emporia State Research Impacts Kansans’ Lives

QUEST has become so popular on campus that Emporia State researchers and scholars are wondering why they haven’t appeared in the issue. This is our second issue of QUEST, and even though some of our deserving faculty haven’t appeared as yet, rest assured we’ll get to them. I’m amazed every day about the amount of research that takes place at our small university.

This issue again shows the depth and breadth of research taking place at Emporia State University. Of course, much of our research is what Dr. Melissa Reed, an assistant professor for Early Childhood/Elementary Teacher Education in the Teachers College, calls action research, that is, research put in the hands of Kansans to use in their own lives. Even though she doesn’t consider herself an expert in math, she and her student Lacy Jordan created math camp where students learned complex math concepts through rap songs. The children soared in their scores. This research has been put into the hands of math teachers to help them improve our children’s interest and aptitude in math.

Having an excellent library is crucial to solid research. For example, the university’s Special Collections include rare children’s book sketches and illustrations that show the creative process. The May Massee Collection of 1,600 illustrations is beyond compare, and the collection is at our university.

The sciences at ESU are rare gems that more people need to know about. Our sciences faculty involve their undergraduates as well as graduates in their research. It’s a rare opportunity for a student to do advanced research with such professors as Dr. Yixin “Eric” Yang, associate professor in molecular and cellular biology, whose research shows how natural plant extracts affect cancer cells.

ESU’s world-renowned glass program is also featured in this edition. Patrick Martin, head of the program, tells us why it’s the best program in Kansas, the region and the nation. I could go on and on about the ESU researchers who appear in this issue. But I’ll let you explore this exciting issue yourself. Partake and Enjoy!

Dr. Kathy Ermler
Dean, ESU Graduate School
and Distance Education

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Unpacking the Standards

BY EMILY MOORE

While U.S. educators are now 10 years deep trying to stay afloat in the sea of No Child Left Behind, it seems that their resources for success are becoming fewer and fewer. Dr. Connie Schrock, a professor of mathematics, computer science and economics and specialist in mathematics pedagogy, is concerned about the state of American education.

“The pressure that classroom teachers are under today is unfounded,” she says. “Never before have I seen teachers with so many obligations and so few tools and support to help them become better at their craft.”

In an attempt to ease the burden of No Child Left Behind and to bring light to the newly implemented National Common Core Standards for Mathematics, Schrock is working with the National Council of Supervisors of Mathematics to “unpack” the standards and give teachers an ally in the classroom.

“Teachers are expected to teach to standards that are so dense. We help break them down into teachable lessons with proven results. These lessons, called Great Tasks, have been researched and are ready to use,” she continues.

For an aspiring educator like myself, the idea of a seasoned professional designing research-based lessons that are ready to go is a bright beacon staring back in the face of the daunting American education system.

As a country, we are struggling to stay afloat in the education arena. No Child Left Behind promised to fix this, but we are nowhere near contending on a global scale. What Schrock and her team of professors and educators are doing is a small promise that there may be hope on the horizon.

“As a high school student, I skated by in math and my grades slipped,” Schrock recalls. “After a wake-up call from a teacher, not only did I realize I was good at math, but that I enjoyed teaching it to others as well. I love teaching, and I enjoy helping create good teachers.”

When I questioned Schrock about why she does what she does, she nearly jumped out of her chair with excitement.

“The payoff for me is when I get to go out and see my students teaching in the classroom. It’s that moment when I know they get it and that we’re all here to accomplish the same thing.”

One thing is for certain, with people like Schrock reaching out and being such a huge resource for today’s teachers, there are definitely exciting things to come.
The Real World
Learning business from a textbook is not as memorable as learning in the real world. That’s where Emporia State’s School of Business comes in. Bill Barnes, director of ESU’s MBA program, is a man on a mission to help ESU’s business students get that hands-on experience.

“Our faculty has developed several innovative ways to provide students with opportunities to expand their knowledge with hands-on experiences,” Barnes explains. “Students have used internships for a number of years. For example, internships have been widely used by our accounting students, but more recently businesses have been requesting students in other academic backgrounds.”

Emporia State’s faculty has recently developed relationships with local businesses, which provide a unique and challenging experience for undergraduate and graduate business students, according to Barnes.

“The businesses provide projects or unsolved problems to the students,” Barnes explains. “The students work with faculty members to apply their academic knowledge to the situation, perform appropriate research and present their recommendations to the business client.”

Barnes believes this “real world experience exposes the students to the challenges they will see beyond graduation and strengthens their analytical and critical thinking skills.”

The projects range from helping small, local businesses to aiding global businesses in analyzing markets and opportunities in China.

“Undergraduate students in a marketing class recently addressed problems given them by ESU’s Recreation Center and problems from the local mall,” Barnes adds. “MBA students have used knowledge gained in two paired courses to help improve the operations of the Emporia Granada Theatre and the local water park at the request of the Emporia Recreation Commission and the city manager.”

The knowledge gained by the students is invaluable, and the community benefits too. The School of Business acts as a resource to businesses. These businesses, in turn, benefit from the research provided by the ESU students.

Recently, Lisa Brumbaugh, executive director of the Kansas Small Business Development Center (KSBDC), asked for business student volunteers to help her clients with projects. The KSBDC, housed at the School of Business, works with start-up businesses and entrepreneurs as a service to help them develop business and marketing plans and teach them how to find funding sources.

“In addition to the MBA program and the KSBDC, the School of Business Center for Business and Economic Development is another resource to help the business community,” Barnes says. “This center has worked with the Flint Hills Tourism Coalition and has provided numerous training programs.”

The Art of the Matter
Art Professor Dan Kirchhefer asks his students a “riddle of the Sphinx” question: “What’s not descriptive or recognizable?”

“Abstract art” is the answer. “When viewing an abstract painting,” he says, “you have to really look at it. The answer of what it is trying to represent is not always readily recognizable like other art forms.”

He is in awe of abstract artists. Their work was forged in the fires of World War II when “artists gave up trying to paint pretty things because of the monstrosity of what was happening around them.”

Kirchhefer notes that Jackson Pollock’s abstract art proved that an artist could find himself or herself through that destruction, and this idea led to the abstract art movement.

He finds his inspiration for his art in his students—and travel. Kirchhefer describes a trip to Brazil to see the Iguazu waterfalls. “Seeing new landscapes, being able to record them and have them forever is very inspiring.”

Kayaking through the Shoup Glacier inspired him to paint the landscapes that he saw and experienced.

What’s Kirchhefer’s greatest accomplishment? “Seeing general studies students change their major to art after taking one of my classes.”

Another point of personal pride is having his artwork exhibited on a national level with other public collections. Kirchhefer’s plans were not always to become an artist. He started as an English history major at the University of Nebraska. “One day I cut through the art gallery on campus, and a couple pieces caught my eye and were wonderful.” What made him switch his major to art? “English history was an easy way to make a living, but art was the most exciting thing I could do. That’s what made me switch.”

The title of his latest work is “Jack dog and Bart watch Jesus build a boat.” While he works on his tan both dogs say he was an above average carpenter.

“Dogs can make a commitment. I can’t,” Kirchhefer explains.

He wants the message behind this piece of art to be: “You can take something from the past and make it personal.”

—Marissa Germann

—Lindsey Kiesling

Composition VI by artist Wassily Kandinsky, credited with painting the first truly abstract works.
The unconventional
Dr. Marc Childress.

Our Brains on Games
Dr. Marc Childress, professor and chair of the Instructional Design & Technology department (IDT), has unconventional ideas about how people learn. “I'm a firm believer that even in the best structured formal learning environment there is probably more learning that can go on outside that class than what goes on inside,” he explains. “If I could create my own school, 80 percent of it would be field trips and outside learning.”

And he believes that many learn better through other non-traditional ways, including gaming, virtual worlds and other instances of informal learning. “Games are amazing because they allow you to take students who are totally disenchant ed with school and learning in general,” he points out. “Yet, they will get on a game and spend several hours trying to attain a certain level. I still say we can learn a lot in education and in training by looking at games.”

As departments go, IDT is new. It was started in 1996, and Childress says the program was designed as a hybrid. Instead of making K-12 a singular focus, it also addresses areas of corporate, healthcare and military training. Students in the program come from different undergraduate and professional backgrounds, and the online structure also means that the cultural backgrounds vary widely.

Childress is also interested in the idea of classroom communities, particularly how they relate to online learners. He wrote an article with a student that looked at the sense of community in the IDT program. There seemed to be a strong connection between students and the faculty but almost no connection to the university.

To Childress, it’s important to make online students feel like they are a part of the university community. Eventually those online learners will be the people who are making contributions to the university as alumni and also creating networks for new graduates.

Yet another research interest for Childress is in the area of heutagogy. Heutagogy is an advanced form of self-directed learning, designed with broader goals so students learn more on their own. “It’s about actually letting the students create some of the goals and what they want out of the class. We sometimes call it ‘double-loop learning’ because they learn something then reflect about how that might impact what they are doing and it continues in a circle like that.”

Childress explains that heutagogy also takes into account the changing role of the teachers. “The role of the instructor has changed dramatically,” he stresses. “It used to be that we knew everything, and if it wasn’t in your textbook, you asked your professor and if your professor didn’t know, then you just didn’t know.”

The online classroom makes a huge difference for the students, according to Childress. “International students bring a whole other dimension to the program,” he says. “If you go to a typical program, you will have students who are just from that same general vicinity with the same experiences.

“Being online, I can have students with different backgrounds and experiences from anywhere in the world,” he adds. “You just can’t replicate that face-to-face.”

Ah-Ha Moments
Wearing cotton white gloves, John Sheridan, dean of the ESU William Allen White Library, delicately unwraps a masterpiece cocooned in tissue paper from the May Massee Collection. It’s a sketch from children’s book author and artist Robert McCloskey’s Make Way for Ducklings, a classic.

The pencil sketch is extraordinary. Its delicate graphite lines fly across the yellowed paper with the ducks in flight. The detail for a sketch is amazing as well. The May Massee Collection has to be the jewel in the William Allen White Library crown. Sheridan recounts the story of how the May Massee Memorial Committee, representing the children’s book editor, chose ESU to house the massive collection of 1,400 children’s book artworks. The famed Teachers College had a lot to do with the choice and artist Robert McCloskey’s Make Way for Ducklings, a classic.

Part of that keeper of the history charge is to “collect and identify the university’s past and how to keep it alive,” according to Sheridan.

When the restorers, for example, needed details on how the Granada Theatre originally looked, they came calling on ESU’s archivists. The restorers pored over dozens of Granada Theatre photos to help them recreate it. “One of our primary jobs is preservation,” asserts Shari Scribner, assistant archivist. “And that following up on questions from those who need rather odd information. For instance, someone called to find out when our students stopped wearing beanies.”

“Ah-Ha” moments for Dennis
For Dennis, working in health communication is a natural result of his life’s journey. “I was profoundly affected as a teenager by the experience of assisting my mother care for her cancer-stricken parents,” he recalls. “Then, while working on a graduate degree at Emporia University, Dennis encountered his first health communication class.”

“I was enthralled with just about every topic and issue (the professor) addressed in that class and knew that I had found my academic calling.”

—Gwendolynne Larson

EXPLORATIONS

Robert McCloskey’s artwork is part of the splendid May Massee Collection.

When you touch a document, an original photo or an original illustration, you’re making a three-dimensional discovery that no computer can replicate,” says Sheridan. “You use your senses when you visit the archives and view its works. You can feel the brittle- ness of paper from a medieval manuscript, and you can sense the musty smell when you first open it.

“We have billions of ah-ha moments in here!” —Bill Noblit

Health Language
What does communication theory have to do with college students making healthy choices?

Quite a bit, according to Dr. Michael Dennis, assistant professor in ESU’s Department of Communication and Theatre. Dennis studied which communication strategies were most effective at influencing a partner’s health-related behavior.

In other words, will a partner be more likely to make healthy changes when faced with threats (“I won’t be attracted to you if you are too overweight”) or caring statements (“I don’t want your weight to bother you; you should eat better?”)?

In “Social Control of Healthy Behavior Between Intimate College Students,” recently published in the Journal of American College Health, Dennis looked at eight different appeals — liking, threat, caring, responsibility, health information, direct, fear and pleasure.

He studied which communications were most effective based on different levels of intimacy — emotional, sexual, social, recreational and intellectual — and four health behaviors — diet modification, smoking cessation, safer sexual practices and exercise promotion. “My advice for practice is to be aware of the many options we have for constructing persuasive messages to enhance healthy behavior, or anything for that matter,” Dennis says.

“With some knowledge and a little extra effort, we can actually select and implement strategies embodied as messages that have far greater odds for success than whichever message or behavior occurred to us at first blush.”

Dennis, for working in health communication is a natural result of his life’s journey. “I was profoundly affected as a teenager by the experience of assisting my mother care for her cancer-stricken parents,” he recalls.

“Then, while working on a graduate degree at Emporia University, Dennis encountered his first health communication class.”

“I was enthralled with just about every topic and issue (the professor) addressed in that class and knew that I had found my academic calling.”

—Gwendolynne Larson

7
What’s the Problem with the E-Book?

BY BILL NOBLITT

If you had your choice, which would you prefer, to read a printed book or to read a book on an electronic device like an iPad, Kindle or Nook? With the printed book, you can feel the texture of its cover and the paper inside. You can easily flip back and forth with a printed book, and it’s usually portable and can be easily transported anywhere with you. But what about reading an e-book? It has its advantages, too. You can carry not only this book on your e-reader, but you can take more than a 1,000 other books on your e-reader. If you have vision problems, you can easily increase the type size. Furthermore, e-books are normally cheaper.

Dr. Andrew Smith, assistant professor in the School of Library and Information Management, weighs the pros and cons of these days. Smith enjoys telling the story about attending a concert where he struck up a conversation about e-books with a woman sitting next to him. “I gave my grandson an electronic reader. He didn’t like it,” she told Smith. “My grandson preferred a ‘real’ book.”

During his classes this semester, Smith had more than 50 students in two classes. Curious, he asked the students in each class how many had purchased the e-textbook. “Only one person raised her hand, and she said she went and bought the printed book too,” he recalls. Why? “There’s a difference between the two especially when studying. Students today aren’t willing to give up their printed books.”

Most of his students find it easier to take notes in a printed textbook and flip back and forth in that medium than using an e-book, according to Smith. Many older adults prefer e-books because they can increase the size of the text quite easily without having to purchase a large print edition of a book.

Two major questions in Smith’s research on e-books and e-readers, then, is will the technology survive and in what form? “I remember in the 1990s how we used to keep our electronic files on Zip disks that required special Zip drives,” he says. “That technology is no longer available. What happens to the digital information on those disks?”

“We’re told: ‘The Printed Book Is Dead, Long Live the E-Book.’ But how do we provide access to e-books to people who don’t have an electronic reader?” he asks. “We just don’t know the long-term storage of digital information. With an e-book, you need the hardware and software to read it and both can become obsolete over time.”

And there’s another important question: What’s the shelf life of an e-reader? Will the e-reader I use today be obsolete tomorrow and what happens to all the e-books I purchased for that device? “A paper book, especially one made with acid-free paper, will survive hundreds of years,” Smith declares. “Will the e-reader be around that long?”

Of course, Amazon has sold more e-books in the last year than it has paper books so it seems that e-readers and e-books are here to stay. On the other hand, more books are being printed than ever before. But the issues and questions still remain as well. “When you’ve bought a printed book, you own it and it can resell it if you want. The situation is not so clear with an e-book.”

Smith points to a current issue of e-books with Kansas libraries. “Their original contract for e-books said they owned the e-books they had purchased, but when the contract came around for renewal, the new contract said the libraries merely leased them,” he explains. “The whole idea of a library is changing, with a move from the library as a collection of items it owns to the library as a conduit for information that it may own or lease.”

Then there’s the whole environmental question. Obviously, trees won’t be cut to create an e-book. That would seem to help the environment and its ozone layer. Not so fast, says Smith. “The chemistry of the e-readers requires lithium batteries, which have proven to be harmful to the environment,” he points out. “And they do require electricity, which, more often than not, means the use of fossil fuels like coal.”

Smith also points out that at the moment we are still a print-oriented society. “Most of the people in the world, even those in developed countries, could not afford an e-reader,” he says. Until people have more access to the technology, Smith doesn’t see the world changing from printed books to the new technology.

The research on e-books vs. printed ones really takes off next semester when he and fellow researcher Sheila O’Hare work with students in their classes to interview people to find out why people prefer one medium over the other. This qualitative research is more in-depth than a paper survey, according to Smith, because it allows for more probing questions.

“I think you find out more this way,” he says. One final question: Is Smith biased toward printed books?

“Well, I have to admit I enjoy the sensation of holding a printed book. That’s a better experience for me, but I’m curious to find out how my students feel about e-books.”
ESU’s Rat Lab Plays a Major Role in Proving Research Theories

BY ELIZABETH McLAIN

If you asked Dr. Cathy Grover about her job, she might just say “Rats!” And she would really mean it. Not only is Grover an associate professor in the psychology department, but she also helps maintain the ESU Rat Lab. The rats are used for a variety of studies and research projects, and students at every level work with them. Grover’s own work with rats began long before she worked at ESU. She has found over the years that letting them venture into areas they are interested in helps them learn better and remain enthusiastic. “That probably wouldn’t be the case if they were just doing grunt work for me,” she says. “So the research that is actually done in the lab, especially in the last few years, has been diverse but still somehow connected to my research.”

The actual rat lab is a large classroom and computer lab surrounded by several smaller rooms. One room is specifically for the rats that will be used in the introductory psychology classes. Each student in the introductory class is assigned his or her own rat,” Grover explains. “They train the rats to climb a rope, do mazes and a variety of other things, and then at the end of the semester we have a contest for them. The rats, which are used in the intro classes, can be taken home by the students. Occasionally, we get students who don’t want to touch the rats. It’s usually those students who end up becoming really attached to them and take them home as pets. The under- grad students also get to name their rats. Graduate students usually don’t because there are so many rats in an experiment. However, graduate students will often have favorites because the rats do have their own personalities.”

The lab also includes a room for the research animals and a computerized operant room. The computerized operant room allows the researcher to track the actions of the rats in relation to the reinforcements they are offered. The computers can also track how many lever presses the rats perform or how many food reinforcements they get. The computers can also track the “lickometers” to see how many licks the animal will take to get the drink. These are used frequently in alcohol studies, for example, to see if the number of licks is reduced if the animal is already injected with alcohol.

There are also several instruments for the rat experiments in the lab. Some of the students are so inspired by the rats that they take the initiative to build their own versions of the experiment equipment. “We built our own Morris Water Maze from a cow watering tub and a platform that sits just below the surface,” she adds. “Then it’s filled with water and an opaque substance. You train the rats by putting them in the same spot every day and record how long it takes them to find the platform.”

It turns out the rats swim very well. “We have actually had rats that go to the platform but instead of getting out they go back and swim some more. It looks like they don’t know what they’re doing, but if you watch them, it is obvious they have touched the platform and now they are getting more exercise.” A lot of the equipment was built by former students and then donated to the lab. Being resourceful in that way leaves funding for other research. It might be surprising to some people to find out that the rats are quite a lot like humans in their reactions and interactions. Currently, Grover is working with a graduate student who is doing ex-
Rhyming Raps + Amusement Park = a ROCKIN’ Math Camp

This summer camp is an amusement park. Literally and figuratively. More not on the scale you’re thinking of, but an amusement park nonetheless.

It’s math camp, so it’s over the summer, like band camp, only with math—and, of course, an amusement park.

“We gave 11 mostly 7th and 8th graders at Turnaround Point Learning Center a pretest before camp began so we’d have a baseline,” explains Dr. Melissa Reed, an assistant professor for Early Childhood/Elementary Teacher Education in the Teachers College.

Her quest in her professional life is to put hard-nosed research into frontline teachers’ hands. “We wanted to see if their math scores improved by camp’s end.” The kids scored an average of less than 30 percent on the pretest. How would they do at camp’s end? There was nothing special about these students. None would be considered math whizzes.

Reed finds connections, even when those seem disparate. Her question: how does reading literature fit in with math? One uses words while the other uses numbers. “Well, you’re right, but we wanted the campers to connect the vocabulary of math with the numbers of math.” To put it simply, the barriers to math performance involve the lack of understanding the vocabulary of math, according to Reed. It’s math camp, so it’s over the summer, like band camp, only with math—and, of course, an amusement park.

“Tickets to Ride” were the assessments that were given to the students each day when they first arrived. The “Ticket to Ride” was a “check” of the previous day’s lesson. They received money for answering the problems correctly. And, of course, you can’t run an amusement park without electricity, and there’s a cleaning charge to keep it pristine. All this costs money. In this way, the students received a business and accounts payable and receivable education. They learned how to balance the books and look at their own data to make the amusement park run efficiently.

Creativity entered into the problem-solving activities too. Some of the names of the rides, eating places and other amusements took on a music theme. There’s “Hotel California” for, well, a hotel on the amusement park property. Then there’s the ‘40s Café and the “Ready to Rock” snow cone machine. “It was creative to see how they brought different pieces into the camp to create the amusement park,” Reed says.

“I’m a reading teacher and researcher,” she says, “not a mathematician.” Reed’s research interests include project-based learning, adolescent literacy, reading comprehension and literacy coaching. “We wanted to see how math and literacy relate to one another and how this connection might help these kids excel at math.”

Teaching, then, is her passion. “When I was little, I’d come home from school and make my brother sit for hours while I taught him what I’d learned in school that day,” she says. “It’s my 26th year teaching, and I’m always trying to improve what I do.” She spent the first 20 years of her teaching career as a teacher at various grade levels in both elementary and middle school classrooms.

“I want kids to love learning as much as I do!” she declares. Although she enjoys using new technology in the classroom and helps her teacher candidates do the same thing, she’s still partial to her books. Reed particularly enjoys introducing undergraduates like Jordan to action research. “We would debrief and reflect after each camp day and look at what worked and what didn’t. We’d then modify our plan for the next day.”

And the research will get wider play. Reed and Jordan presented their math camp research findings at the Kansas Association of Teachers of Mathematics and also at the Kansas Reading Association.

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Imagine coming from a culture of privilege and being totally immersed in one that has little. You experience what that culture experiences. You live and breathe the poverty of the people with whom you work.

That’s what took place for Social Sciences Associate Professor Dr. Ellen Hansen’s service learning class in Kenya. Hansen and a small group of students and volunteers spent three weeks helping the children and workers at Happy Life Children’s Home in Nairobi, Kenya. When they returned home, they did not bring with them corner-shop souvenirs, stomachs full of exotic food or even grand memories of sightseeing. In fact, the treasure they carried back to the states was far more powerful than they could have hoped for.

“Learning from experience is something you never forget,” she explains. “Three years from now my students may not remember what they learned in my classroom, but they will remember Nairobi and what it looked like and what it felt like to be there. I’m OK with that.”

As a professor, Hansen knows it’s ideal that her students grasp what happens in her classroom. But she knows that is not always the case.

“The lessons we learn from travel we learn in a completely different way,” she adds. “You learn by doing, by experiencing, by being immersed in a culture. That’s a type of learning that can never be replicated.”

Certainly, the students experienced what they had never experienced before. Simple things that we in the United States take for granted. Water, for example, had to be retrieved from a tank and hugged up to their rooms on the fourth floor. At times there was no running water for showers. Dr. Hansen and her students

made due with sponge baths. “We were dirty. We really were,” she remembers. “The streets were dusty, we would sweat a lot, and we had no way of really getting clean. But after a few days we didn’t notice anymore. We were just having so much fun with these children, things like showers kind of slipped into the background.”

The water went off several times during their stay and remained inaccessible for two to three days at a time. During that time, water had to be fetched from a tank on the roof of the home. Without warning, the electricity would fail—and frequently. Hansen explained that it really became a non-issue.

“The workers in the home and the pastor were so used to this situation that it never affected their routine. We learned to just follow suit.”

The days were exhausting for the students and their professor. Most of the work they did was just feeding and playing with the children. “We would wake up early in the morning. Some of the students took a liking to the older children, and they would go off to play with them. The rest of us spent most of our time feeding babies, holding them and playing with them.”

For a child who spends up to 20 hours a day in a crib, just being held by a pair of caring arms is a true blessing. The “mothers” of the home are assigned a room with 10 to 12 infants. By the time one round of feeding and changing was finished, they would have to start all over again.

“This is where we came in. We loved just playing with the kids,” she recalls. “Most days we got to take them to the playroom where we put several in walkers and entertained the rest.”

Ellen explained how the walkers were so important for these children. Because of their limited time out of their cribs, most were developmentally behind. “It was hard to see some of the kids struggling, but we knew they were better off here than anywhere else,” Hansen says. On seeing some homeless children in Nairobi, Hansen remarked to Pastor Peter Ndungu, director of the home, that those children should also be at Happy Life. “They should be,” Pastor Peter agreed. Many Kenyan orphans live on the streets of Nairobi, and many are addicted to sniffing glue. The ones at Happy Life are the lucky ones. “We are really privileged people living in this world,” Hansen says. “I don’t want my students to come away from a trip like this simply seeing how privileged we are. I want them to see how privileged we are and see that we have some responsibility to the rest of the world to do something with our privilege.”

What this service learning group took away from this experience was that the way we live is not the end-all be-all of the world. “In Nairobi, the way they lived was vastly different from how we live in the United States, even in Emporia, Kan.,” she says. “It’s so important to understand that people have many different ways of doing things that work just fine for them. We don’t need to try to make others do or think the way we do.”

As a specialist in geography, Hansen is constantly trying to further understand the cultures that she teaches her students about. Her goal is to travel to all of the places she shares with her classes. “We don’t have to go and dedicate the rest of our lives to helping orphans in Kenya, but I want us to live more consciously. Here in the United States, as a people of privilege, we owe it to the rest of the world.”
To get to Assistant Professor Dr. William Jensen’s office, I take a short cut through a dark pathway in Science Hall. There’s no light. Dark envelops me, which wouldn’t be so bad except I’m claustrophobic. It’s pitch black, and I expect bats to dive at my head. My heart races, but I stay the course. I see a lighted EXIT sign and feel for the door.

I tell Jensen about my experience.
“You have to be a bat to find your way through there,” he says with a bit of sarcasm in his voice.

Not so oddly enough, I’m here to interview him about the topic of bats, what they do for us, how they’re part of the web of life and why we’re so frightened of them.

It’s almost Halloween, and I’m in the mood to talk about the good side of bats, how they control the insect population (in central Texas 20 million bats eat 20 tons of insects in one night, for example) and how they help pollinate plants. It’s reasoned that if bats become extinct, we humans might lose our fight against insect pests like mosquitoes and the diseases they carry. But I also want to know why we’re so afraid of them. “There are many sources of mystery and fear,” says Jensen, although he’s quick to point out he hasn’t done a great deal of research on why we fear bats. “They’re nocturnal, and we humans have a disdain for nocturnal creatures. Some people feel the same way about owls.”

Vampire bats, a small number of the bat species, give the group a bad name too. But, according to Jensen, you have to go into Mexico and points further south to find them. “We don’t have those here, and even if we did, they likely wouldn’t be looking for us. They’d be pestering livestock.”

And then there’s rabies.
“Yes, some bats can carry rabies, but they’re not the only animals,” he explains. “Skunks get rabies too, but we’re afraid of them for a different reason.”

Jensen is an ornithologist and a mammalogist, and he teaches these subjects and other wildlife biology courses at ESU. His bat research was largely inspired by student interest. He and his students have studied two species of bat that are in need of conservation in Kansas.
“We developed a species recovery plan for these bats,” he says.

They visit caves in the Red Hills of Kansas to learn about bats in the region. They continued the research of a famed Kansas naturalist, ESU graduate Stan Roth, a former high school teacher in Lawrence. Stan’s research about the bats of the Red Hills goes back to the 1960s. Roth turned his bat data set over to Jensen and his students at ESU for analysis.

Jensen and his student, Jeff Prendergast, were able to analyze the change in bat numbers over time to determine whether the populations of these particular species were decreasing, increasing or remaining stable.

What causes these fluctuations in bat populations?
“An increase in the tree cover has occurred in the region,” explains Jensen. “We wanted to find out if this change might be affecting bat populations.”

The question then was how do these species respond to habitat changes.
“We studied nocturnal use of habitats by bats,” Jensen explains.

Their work was funded by a federal grant administered by the Kansas Department of Wildlife, Parks and Tourism to study imperiled species. Jensen’s graduate student, Jeff Miller, lived in the Red Hills for two summers examining the bats’ habitat, which meant a lot of night work, from sunset until after midnight. Jeff and an assistant strung nets over creeks to live-capture the bats for examination and eventual release. They also used an acoustic bat detector to scope out the occurrence of bat species.

“It picks up ultrasonic bat calls, which, when analyzed graphically, appear different from species to species,” Jensen explains.

Another question: How did Jensen get interested in wildlife research?
Jensen grew up in a St. Louis suburb, and some might not expect a scientist from the city to devote his life to researching the environment and wildlife habitat. He admits that he did go fishing sometimes with his dad, but it was his forays away from the city with his outdoorsy friends in high school that put him on this path.

“As the years passed, I’d notice land development, such as shopping malls and housing developments, that encroached on wild areas. I felt frustrated and wanted to find what effect this might have on the wildlife living there.”

Through their research, Jensen and his students hope to protect wild places and the wildlife that live there.

**BY BILL NOBLITT**
When ESU professors Drs. Joyce Zhou and Jun Yu joined the university in fall 2009, their goal was to give School of Business students a dose of business reality and show them the building blocks that can lead to business success.

“Students learn by doing, and they enjoy it far better than listening to a lecture,” Yu explains.

But how could they do that? Zhou and Jun’s research began with newspaper clips. They scanned the papers daily to find businesses that might use their students’ business expertise to put local firms on the road to success.

After seeing an article that caught their attention, they began by calling Newman Regional Health and finding out if their students could help the hospital with its market research.

“We thought of Newman after reading an article about their emergency room services in the Emporia Gazette,” explains Zhou. ESU’s students researched Newman’s business issues through focus group studies.

They would find customers who had experienced Newman’s healthcare offerings and asked them what they thought about these experiences by surveying them over the telephone.

The ESU Focus Group Lab, of which Dr. Kevin Coulson, another marketing professor, is in charge, has a one-way mirror that permits students in the adjoining observation room to observe the focus group while remaining invisible to group attendees. Students can watch their subjects’ facial expressions. Observation is the key to effective focus group analysis. The lab contains four video cameras and four computers for a full-range of views and ability to capture different angles. By using focus groups and the lab, research experiments can be conducted more efficiently with more resources at hand. It’s everything you need at your fingertips.

“The output of research was used as input into the School of Business ethical standards,” says Zhou, “and this helps students and faculty become more aware of what they thought was ethical and unethical, strengthening the School of Business program.”

“With our classes we plan to work with the ESU’s Student Recreation Center to help regenerate interest in sports clubs on campus,” he continues. “They want to promote and organize more clubs and increase student participation.”

Students will be interviewed and asked directly about their opinions and what improvements they want to see at Emporia State. This type of hands-on learning is what makes Emporia State different from other schools. “We hope to improve the customer service of students and faculty, as well as better community relationships,” Zhou explains.

Although most of their research pertains to their students, both have done outside research by studying consumers. “We explored the shopping styles of individuals. For instance, some prefer to look for the newest items while others prefer to bargain shop,” Zhou states.

Zhou and Yu’s outside experiment helped them discover how markets can design their promotions and advertisements to target individual buyers who have that specific shopping style. Earlier this year, the ESU professors sent out a letter to Emporia businesses through the Chamber of Commerce, and the team is optimistic about future partnerships. They want to involve more businesses in their research to help benefit the community and campus life. In addition, they are planning to work more with nonprofit organizations in the future.

The professors have teamed together to research outside of Emporia State’s walls and reach out into the community to bring back real-life situations for the students. The traditional textbook style of learning is not sufficient, they believe, and hands-on learning is critical to students’ learning experiences. Zhou and Jun have worked hard to strengthen ESU’s business program.

Their constant research and ties to the community have enhanced their students’ learning experiences while helping local businesses and non-profits become even more successful.
Fire and ice are required to form glass into art. In this way, glass is forged out of both hot and cold processes. Both, as the poet Robert Frost would say, “suffice.” And some might think that making glass is easy. All you have to do is balance a beaded, fiery bubble on the end of a pipe, insert air, help it take shape (watch out for the fire and the hot glass! and try to keep it from taking a shape you don’t want) and voilà you have a work of art. And by the way, you have to do all these things at the same time. Then you can sculpt cold glass by drilling, carving and cutting. Glass can become something as delicate as a fine piece of jewelry or as basic as, well, a drinking glass.

“IT must be finished in the same process,” explains Patrick Martin, interim chair of art, head of the ESU glass program and associate professor. “You have to become totally absorbed in the material.” The tools to turn glass into art, then, become extensions of the artist’s body and mind.

Not so easy, huh? That’s why it’s called art, and art is hard. And that’s why ESU’s intensive glass program, now more than 30 years old, is world-renowned. And in the ESU tradition, its famed glass program offers its students hands-on experience.

“I can say we have the strongest program in the region,” Martin adds.

How did Martin get so interested in working with glass? “It’s the physicality of it,” Martin says. “That’s why I became obsessed with working with glass.”

Martin didn’t take to glass immediately as a college student. It was just by happenstance that glass was forced on him. When he was in college, he wasn’t even an art major.

“I was actually working on my bachelor’s in economics and management,” he recalls. “I had to take an art class to graduate.” That’s a long way from becoming an artist. He took his first art class in ceramics when he was a sophomore. He took glassblowing the last semester of his senior year. “I found I was a natural pyro. Working with my hands, the physical activity hooked me,” he says.

After graduating from Centre College in Danville, Ky., he apprenticed with David Huchthausen at the Appalachian Center for Crafts and continued his art-work with glass. “I worked there for three years and then worked a fourth year with him in Seattle, Wash.”

That real-world experience extends to inviting to campus visiting artists who practice the art of glassmaking. And that’s another reason for the glass program’s success. “We have two to four visiting artists a year come to campus,” he says. “Our students learn from them in a hands-on way the little tricks and techniques of turning glass into art.”

This experience with the pros in the business exposes the young artists to the many opportunities in the field. In fact, many of them begin their careers after graduation working with these artists. “I have three former students working in Seattle now.”

And those who may not work for the visiting artists after graduation can put on their résumés that they collaborated with them on glass projects at ESU.

“When our students go out in the world, they have good connections,” he asserts. Through this mentoring and apprenticeship method, Martin knows that the heated crucible of his program turns his students into pros at glassmaking as art. It’s hot and cold, fire and ice that molds his students into successful graduates.

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Associate Professor Patrick Martin shows a student how to use fire to sculpt glass.

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Some say the world will end in fire, Some say in ice. From what I’ve tasted of desire I hold with those who favor fire. But if it had to perish twice, I think I know enough of hate To say that for destruction ice Is also great And would suffice.

—Robert Frost

Fire and ice are required to form glass into art. In this way, glass is forged out of both hot and cold processes. Both, as the poet Robert Frost would say, “suffice.” And some might think that making glass is easy. All you have to do is balance a beaded, fiery bubble on the end of a pipe, insert air, help it take shape (watch out for the fire and the hot glass! and try to keep it from taking a shape you don’t want) and voilà you have a work of art. And by the way, you have to do all these things at the same time. Then you can sculpt cold glass by drilling, carving and cutting. Glass can become something as delicate as a fine piece of jewelry or as basic as, well, a drinking glass.

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—Robert Frost

by bill noblitt

Associate Professor Patrick Martin shows a student how to use fire to sculpt glass.

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Transforming Physical Education

While Building Just the Right Curricula to Help Our Children Stay Fit

BY ELEIZTH MCLAIN

What do you get when you mix a math teacher, a dancer and a national jump rope champion? You get a team of collaborative visionaries who are university professors by day and practical researchers in their spare time (if there is such a thing).

Drs. Joan Brewer, Joella Mehrhof and Vicki Worrell are all members of the Department of Health, Physical Education and Recreation (HPER) at Emporia State University.

Let's begin the story of how this mix is transforming physical education. About 15 years ago and through several large grants, Mehrhof co-authored three curricula, which were introduced statewide. These curricula were Physical Dimensions (secondary), Physical Focus (middle school) and Physical Essentials (elementary). Numerous training sessions and workshops occurred across Kansas and soon other states became interested in securing the curricula and having their teachers trained.

Within five years, schools in more than 25 states had been introduced to the curricula. The shelf life of a curriculum is relatively short, however, and after several years, they needed updating. Shorter and relatively short, however, and after several years, they needed updating. Shorter books with a more targeted curricular focus were needed. While reviewing the original 250-page curricula, Worrell says: “It’s important to educate practicing educators, as well as our own majors,” says Worrell. For example, outdoor education activities in the original Physical Dimensions curricula used compasses. With the advent of GPS, compasses were replaced. Although the teaching strategies and classroom activities were similar, the new technology allowed for enhanced student involvement.

Because Brewer was the professor for the middle/secondary methods course, she introduced the new instructional techniques related to GPS units to the physical education majors during the capstone course. The majors took these skills to the local middle and high schools and presented lessons that interested the students. Often integration into geography classes was a natural approach. She also planned trainings with national Garmin associates and these show the applicability of the GPS technology.

In addition to the Garmin GPS technology, the group began to work with other corporate and special interest groups to develop curriculum for specific products. They wrote a curriculum for the Trkke Corporation to pioneer the use of the Trkke in numerous educational settings on both the national and international levels. The design of the curriculum takes into account the changes in physical education are not limited to emerging technology. “The physical education curriculum has become even more fitness focused,” Brewer explains. “We are finding that teachers want more activities to integrate the concept of fitness into the motor skills they are teaching.” This need spurred the writing of grants to secure equipment and offer professional development in the latest fitness trends.

As the current past president of the national organization of the American Alliance for Health, Physical Education, Recreation, and Dance, Worrell helped introduce the fitness initiative called Let’s Move in School to schools across Kansas and the United States. This initiative is associated with First Lady Michelle Obama’s Let’s Move campaign. The goal of this initiative is to help teachers find ways to implement physical activity throughout the day including before school, in the classroom and after school.

Helping schools with ways to incorporate more physical activity into the students’ day will hopefully begin to assist in addressing the issues of obesity and sedentary lifestyles. Physical education is constantly evolving, and currently there is a movement to promote physical activity in relation to brain-based learning. Worrell says: “It’s important to educate classroom teachers about the correlation between students’ physical activity level and academic performance.” Studies have shown that the more children are allowed to move during the day, the less potential there is for behavior problems and restlessness. Attention span is improved and learning enhanced.

Even the most self-motivated people do not work to their potential unless they are inspired to do so. “We are not scientific researchers,” says Mehrhof. “We are practical researchers who provide services through various types of resources. It is a hidden talent. In the last 8-10 years, among the three of us, we have made more than 500 presentations at confer- ences and workshops. The resources we provide are research-based but are offered with a degree of humor and positive energy.”

There is a great need to provide practicing physical educators with the tools to remain current and credible. Mehrhof, Brewer and Worrell have written such books as Two Left Feet and a Beat; Never Play Leapfrog with a Unicorn; and Flash Fitness and the Incredible Physical Activities. They are used by educators in more than 50 states.

The importance of physical activity and wellness are not only a concern when creating curricula for K-12, but also the impetus for offering a variety of physical activity classes at ESU. “The department has attempted to continue the integration of course work that students’ needs by introducing classes in yoga, spinning, Pilates, mountain biking, canoeing and boot camp fitness,” Mehrhof notes. “It is important to offer enough variety that every student can find his/her fitness niche.”

Brewer adds: “At the college level the physical activity needs and requirements should be met with activities that lead to a lifetime of active living. We often see the impact of students’ choices in physical activity and wellness. Even some of our non-traditional students are making positive choices to change unhealthy habits and as a result continue to take classes or establish their own personal wellness plan.”

For all three women, it is important to continue to challenge themselves to be on the cutting edge of professional contribution and involvement. What’s next?

“We just received grant money to purchase 50 iPads and 50 iPods and will begin the integration of these new teaching tools into departmental offerings,” says Brewer. “We now have a graduate level class on how to teach online physical education, and we introduced a pilot class for undergraduate majors to begin to develop online resources for their portfolios and distribution to professionals in the field.”

“We won’t forget those we serve,” Mehrhof adds. “We will continue to offer quality opportunities to our students, alumni and fellow professionals. We have already started to think what unique experiences we can create for ESU’s 150th anniversary.”
The Play’s the Thing

One of the most important components of a successful theater program is collaboration. The beautiful final production that you see on opening night is the result of months of work. Faculty and students work together during every phase including show selection, set and costume construction and the actual stage performance. Professors Theresa Mitchell and Susan Mai are an important part of that collaborative effort that brings an ESU show to life.

Mitchell has been at ESU for 12 years, and her work in the department includes teaching a variety of drama classes, as well as directing some of the ESU productions. She directed the summer production of Barefoot in the Park. Currently, she is preparing to direct the spring production of The Ladies Man, a French farce set in the early 1900s.

Directing is a personal passion for Mitchell, and her research focus is in the area of movement. Stage movement is complex, requiring fluidity and form. It also requires that the actor is true to the character, period and tone of the play. She acknowledges that her directing style is different from other directors in the department and that is largely due to her study of movement.

“I think that my history with movement leads me to direct the students with more physical exploration,” says Mitchell. If they get trapped in their head sometimes, we call it ‘paralysis by analysis.’ If you are thinking too much, you can feel it viscerally in your body, in your gut. And if you can physicalize it and let the physical abstraction melt away, you still have that residue.”

“There are several factors that have to be taken into consideration for stage direction, including language, time period and costuming. Mitchell says: "A lot of our movement comes from what we wear. If there are certain types of clothing that are important to a period then the actors have to rehearse in those clothes.”

That is where Mai comes in. She has been at ESU since 1987 and is responsible for theater design, which includes costuming, make-up and hair. Mai works with the students to design the shows and to help ensure the authenticity of the costuming. Mai explains that sometimes authenticity is difficult. “We take a theatrical license. For instance, there is a period in history where the armholes were cut much lower, and you can’t move your arms very much. That doesn’t work for the stage. We have to raise it up enough to get the period silhouette and still let the actors move their arms.”

The program also has a fairly extensive costume shop that houses clothes and accessories from several different shows. However, finding costumes for shows is not as simple as just pulling them off the rack.

“T here is a lot of revamping and repurposing involved; the designer has to find creative ways to use existing pieces. As with all parts of the theater program, she has the students do as much of the work as possible. “I work with students so that they are ahead of the game. Part of design and getting prepared is thinking ahead, thinking about what problems might come up. A lot of the problems are little things, but they have to be figured out. I help guide them. I think the best way to do that is to ask questions and let them work it out on their own.”

Both professors agree that the skills their students learn through theater are something they can take with them long after they have finished the program.

“Theater gives you skills in organization,” says Mai. “You have to be on top of your game. It teaches you how to work with people. You have to be able to talk and to listen and those are two of the hardest things for many people. Those people who can talk and can listen are the people who move up.”

Mitchell notes the collaboration and communication skills are another aspect of theater that students can apply throughout their professional lives.

“There is emphasis on collaboration and teamwork in most jobs that I see advertised. Also strong communication skills, both written and oral, are essential. So much of what we do in theater is collaboration, we build off of each other to get the best product. So for those going into theater, as a hobby or a career, it makes them adaptable to so many careers.”

Faculty work with students throughout the process to create that final production that you see on stage. The journey from play selection to the stage is different every year and different for every student. Mitchell explains: “We have goals and expectations for students, but you always have to be flexible. The students are bringing something as well, and the final result might not be what I expect. In fact, it might be better. That’s one of the attractions of doing theater is that there is no right way to do it. It is your way, your unique way and that’s the artistic side of how you view the world.”
You wouldn’t think that being an ESU faculty member was a family affair, but Dr. Carol L. Russell brings family into every aspect of her work. As a professor in elementary education/early childhood/special education, Russell’s research focuses on children and families, and her own family is the inspiration for her work. Whether her focus is on the children’s art gallery, children with disabilities, or changing family dynamics, she draws on her experiences with her own family. “We merge what we live and what we research and what we teach. I think it authenticates everything that we do,” she explains.

Russell collaborated with her husband, Fletcher Russell, on the children’s art gallery at ESU. As an adjunct art professor at the university, he points out that the gallery highlights the importance of introducing children to art.

“The idea is to teach children at a very early age,” he says. “If children are stifled at any early age, it may affect their creativity—or lack of it—throughout life. It’s important to let them create what they want. The process is what’s important—not the product.”

The art focuses on the progression of childhood art, from scribbling to actual shapes. The gallery also contains several pieces of sculpture and mixed media work done by children of various ages. The gallery is housed on the second floor of Visser Hall. A project that began as a way to cover up empty outdated wall space has turned into an important educational and instructional tool. The two do other projects together as well and say that their work together is “a balance of their interests, experiences and their personalities.”

Another area of interest for Russell is her work with children who have disabilities and their families. As with most of her work, this also has a tie to her family. The Russell’s youngest daughter, Tally, has spina bifida and a nonverbal learning disorder (NLD), and the family’s experiences have informed much of Russell’s work. “Life with Tally has taught me strength of the human spirit, and an attitude of ‘how rather than if’ we can do something,” Russell says. “There is always a way.” It is important that parents understand what their children are going through, but it is also equally important that the children understand their disability. “A child should know as much as possible about his or her own disability,” Russell says. “Being able to help yourself is important, but it’s also important that children have the knowledge and ability to show other people how to help them.”

Tally also plays a large role in Russell’s work. Mother and daughter often do presentations together. Tally talks about her personal experiences with NLD, and Russell provides the statistical and technical research. Two also recently wrote a children’s book together called I Like Rocks. The book is a picture history documenting Tally’s lifelong love of rocks, beginning when she was a small child up to the present time. It’s yet another example of the strong connection between Russell’s work and her family.

The Russells have three daughters, all of whom hold degrees from ESU. Tally graduated in May with a bachelor’s degree in interdisciplinary studies. The oldest daughter, Cassie, earned a master’s in psychology in 2006, and Mikelle graduated in 2008 with a BFA in art.

All three of them contributed to Russel’s 2009 book, Sandwiched! Tales, Tips, and Tools to Balance Life in the Sandwich Generation, which deals with the increasingly large number of people who are caring for a dependent child(ren) and an aging parent. Again, there is a direct link to her family because the Russells lived with and cared for her elderly mother for the past six years.

The book deals with the changes in family dynamics, and how different members of a family deal with the changes and issues surrounding the daily life and routines of “their sandwich.”

“I tried to get the feelings of other people around us about what we were doing,” she recalls. “Each of our daughters wrote a chapter section, reflecting on feelings about the process. I asked other family members to contribute as well. I wanted to know how different people felt about the situation, because I think that is helpful to someone else who might take on similar responsibilities within ‘their own sandwich.’”

However, Russell is quick to point out that the book is much more than a practical book. There are ideas for hiring caregivers, checking charts as well as suggestions and resources for collaboration, assistive technology, advocating and balancing finances.

“It really is more like a guidebook,” she continues, “but also addresses the research and emotional aspects. However involved and invested in the sandwich you are, there is something in the book for you. We are not devoting a lot of time or money to promote it. People who need a book like this are going to find it.”

Sadly, Russell’s mother recently died, and this experience with loss will provide another link between work and family. She is positive about upcoming projects. “Life continues to offer directions and opportunities, even in the midst of grieving.”

Russell is working with her sister on a project about hospice care. With her daughter, Cassie, she is also working on a project about the “importance of understanding the needs and responses of family members who have special needs—in the midst of grieving and family dynamics during the passing of a loved one.” She continues to bring her family into her work, while helping other families deal with loss as well.

All of the work that Russell does ties to her family in some way. She is grateful to her family for their support and for allowing her to openly share aspects of their lives.

“I really believe that it is the call of those of us who are experiencing certain things in life, who know about it firsthand, who can then research these issues and share with others,” she says. “I’ve met a lot of people who question that, and I wonder why? That’s what your life is about and where your passion lies. And, yes, you have to be careful to be objective, but at the same time, what you have to give authenticates who you are and verifies that you know what you are talking about. That encompasses much of what we do. Putting that together is a gift for me.”

“And it’s an opportunity given to me.”
In science as in life, it is the small things than can make a huge difference. For Dr. Yixin Eric Yang, focusing on something small can mean breakthroughs in the fight against cancer. Yang is an associate professor of biology and has been at ESU for the past six years. He took time to talk to QUEST.

Q. Tell us about the current research you are doing.

A. My research involves screening and examining the pharmacological effects of a number of standard preparations of plant extracts and individual constituents of the extracts on human malignant melanoma, the deadliest skin cancer. The chemicals extracted from plants are termed “phytochemicals.”

We explore the numerous bioactivities of naturally occurring phytochemicals on melanoma cells: cytotoxicity, cell growth inhibition, programmed cell death induction, cell cycle progression arrest, and re-duction in cell motility and invasiveness, which are a prelude to cancer metastasis. We investigate the molecular mechanisms through which phytochemicals exert their anti-melanoma activities. Our research aims to find plant chemicals that have powerful therapeutic effects on malignant melanoma with minimal side effects and elucidate the molecular mechanisms that contribute to the design of viable novel targeted therapy.

Q. Is it a specific group of phytochemicals with which you are working or do they come from a specific source?

A. We screened numerous phytochemicals that displayed anti-inflammatory and anti-tumor effects for the anti-melanoma activities. A few of the phytochemicals that we have found strongly inhibit the growth of melanoma include: Zerumbone, the main component of the essential oil of the rhizome of Zingiber zerumbet Smith, a wild ginger in Southeast Asia; leaf extract of Gingko biloba; Luteolin, a flavonoid found in dietary sources such as celery, green pepper, thyme, tea, carrots, olive oil, and rosemary; cinnamon leaf oil, and Oleandric acid, a phytochemical that is widely distributed in food and medicinal plants.

Q. What are some of the implications of this research?

A. Melanoma is currently the leading cause of death from cutaneous malignan-cies, and it is estimated that one out of 63 persons in the United States will develop malignant melanoma.

Metastasized melanoma is extremely aggressive, often fatal, and refractory to current therapies. It has a very poor prognosis: the median survival rate is six months, and the five-year survival rate is less than 5-15 percent. Therefore, there is a pressing need to seek powerful chemotherapeutic agents to cure malignant melanoma.

One of the few anti-melanoma drugs approved by the FDA, dacarbazine, is often associated with severe toxicity and does not provide significant benefits because malignant melanoma has one of the lowest response rates. The most recent FDA-approved gene-based medicine, vemurafenib, confines its efficacy to the patients who have specific genetic mutation called BRAF V600E, and is very expensive.

The reasons we are seeking new therapy from the naturally occurring phytochemicals are that they are usually much less toxic and less expensive than the chemotherapeutic agents that are currently in use, and from our observations, they tend to kill different melanoma cell lines.

Q. Can you tell us about some of the studies you have done in the past?

A. In the past, my research group studied how genistin, a chemical found in soybeans, inhibited genetic mutation, which is the molecular basis for cancer initiation, development and metasta-sis. We also investigated the interplay between some essential genes involved in DNA mismatch repair, which will help us better understand how cells correct the errors occurring in genetic material at the molecular level. The increasing prevalence of antibiotic-resistant bacterial infection has posed a significant threat to human health. My lab has screened and identi-fied soil bacteria that produced potent antibacterial or antimalarial agents -- substances that inhibit or kill bacteria and other disease-causing microbes. Our goal was to discover and identify more novel and powerful antibiotics that can be used to treat bacterial infection.

In addition, I was interested in the molecular response of bacterial cells to heavy metals widely present in the environment. We found that at low concentrations, the mercuric compound, which is toxic to cells, paradoxically protected the bacterial cells challenged by UV light or chemical toxic agents.

Our research contributes to the practi-cal application of bacterial control using physical or chemical antimicrobial agents with heavy metal present in the environ-ment at low concentrations.

Q. Are there other projects you are working on that are not related to the phytochemicals?

A. My dual backgrounds in molecular genetics and computer science allow me to develop a novel interdisciplinary research project. I am interested in designing genetic circuits and engineering bacterial cells that can be used to give solutions to the computing algorithm problem.

Utilizing engineered bacterial cells in computing mathematics is a new field, and the project can be a pioneer work in this field. This project may have a high risk of failure; however, the idea is intriguing and may lay some groundwork for em-ploying bacterial cells to solve problems in computer science and mathematics.

Q. How much of your work involves the students?

A. All of my work is in collaboration with the students. I develop a research idea and design the research project, and my students perform the experiment and implement the design.

My students learn laboratory tech-niques, troubleshooting skills, data ana-lyzing skills and scientific communication skills from our research. My students presented their research work at both regional and international conferences and received a number of awards. In the past three years, my lab has received seven presentation awards at the annual meet-ings of the Kansas Academy of Science. Two of my graduate students received prestigious travel awards from the general meetings of American Society of Cell Biology, the largest cell biology conference in the world. I co-authored articles with my students and always put my students as the first authors to honor their wonder-ful work.

All of my graduate students were admitted and awarded fellowships by prestigious national Ph.D. programs of pharmacology or pharmaceutical science. This year, one student chose to join the Ph.D./MBA-combined program at the School of Medicine at Pennsylvania State University. The other student chose the Ph.D. program of Pharmacology at the School of Pharmacy at the University of Minnesota, which is one of the top three pharmacy schools in the United States.

Q. Where does your research fall in the process of getting treatments approved by the FDA or other government bodies?

A. We do basic research, or fundamen-tal research, which is carried out to in-crease understanding of the fundamental principles. The findings in basic research needs to be translated from the laboratory experiments through clinical trials into actual point-of-care patient applications. The translation from basic research into medical practice is a very long process, and it can’t be done by one lab. However, without the basic research, the move “from bench to bedside” won’t happen. Our research provides the groundwork where the new therapy begins.

CANCER FIGHTER

BY ELIZABETH McLAIN

Dr. Yixin Eric Yang is one of ESU’s cancer fighters.
Robert McCloskey’s sketch for Make Way for Ducklings, part of ESU’s May Massee Collection.