Dr. Clark Beasley: A Scholar, a Teacher, and a McMurry Legend
Welcome! We hope you enjoy the new design of Resonance that we’ve developed as we usher in an exciting time of transition for McMurry sciences.

We are especially excited about the upcoming renovation of the Finch-Gray Science Center. The new science spaces were carefully designed to promote scientific research and learning while enhancing the interaction and cooperation between faculty and students. The renovated spaces support a more fluid integration of lecture and lab, science on display, and instrumentation and equipment used in contemporary research. The focus is on inquiry, the process of “doing science”, in a space that promotes both intellectual and social activity.

We will develop and disseminate exemplary course content. We expect to see a sharp increase in the number and quality of student research projects—deep and practical experiences that engage the imagination and teach appropriate skills and knowledge. For example, Drs. Benoit and Wilson are planning new experiments for their classes and long-term projects for students involving bioremediation of oil spills and study of estrogen-like contaminants in the environment. The Physics faculty—Drs. Bykov, Keith, and Renfro—have designed a new lower-division physics curriculum emphasizing active and social learning with integrated lab exercises and lecture content.

SNCS faculty members are embracing a research-rich curriculum, focusing on pedagogy that maximizes learning, and providing personal attention to the education of every student. Our programs pursue currency and agility by maintaining active research programs, cultivating relationships with industry and alumni, forming connections with other universities and agencies, and supporting innovative curricula and pedagogy that “works”. This renovation project positions our programs to stand toe-to-toe with many of the best small college science programs in the nation.

Looking Ahead:

A MESSAGE FROM THE DEAN

Dr. Alicia Wyatt
Dean of the School of Natural and Computational Sciences

Social media and networking applications—Facebook, Twitter, YouTube, the “blogosphere”—are frequently in the news! The School of Natural and Computational Sciences uses some of these tools to inform and build connections between students, faculty, alumni, and interested netizens. Facebook and weblogs: There are several SNCS Facebook pages. Want to keep up with the latest for the school? “Like” the page for the McMurry School of Natural and Computational Sciences. Interested in the Biomedical Science program? Do a search for McMurry Biomedical Science Program. Join the McMurry Society of Physics Students for news and photos of activities.

Two blogs provide information about the latest activities and successes for the SNCS community. The Biomedical Science Program blog (http://www.mcm.edu/~wyatta/wordpress/) is authored by Dr. Gary Wilson. Visitors come from all over the world. Dr. Wyatt publishes the main SNCS blog (http://blogs.mcm.edu/snscs/), chronicling the happenings. Both blogs also publish to Facebook pages, so subscribe to the rss feed or “Like” a page or two. We’d love to have you join us!
For Dr. Clark Beasley, his life’s work began with an interest in animals while he was growing up on a farm in Kansas. His interest sparked a lifelong passion for biology that resulted with a species of an organism being named in his honor.

“My mother was fine with me running around and collecting animals, as long as I didn’t bring them into the farmhouse,” Beasley said as he thought back on what prompted a lifetime in the study of science. “I even survived the time when a snake did get loose in the house.”

The world of biology is glad that Beasley’s mother didn’t dampen his interest in animals after the snake incident. He is now considered one of the world’s top experts on tardigrades, which are microscopic, water-dwelling, segmented animals with eight legs. Another name for the tardigrade is “water bear” because it resembles a bear’s gait when it walks.

“I’ve always liked the unusual,” was Dr. Beasley’s response when asked how he first became interested in Tardigrada. He wrote his doctoral thesis at the University of Oklahoma on the little organisms, which he says “can be found all over.”

Beasley says that tardigrades mostly can be found in mosses and lichens, which are plants that grow on trees and rocks, but the animals can live in a variety of places. More than once, he showed students the tardigrades that exist on the trees in front of the science building at McMurry.

Dr. Beasley arrived at McMurry in 1969, but he didn’t think he would stay long. He shares, “I thought I’d stay for a year or two because I wanted to go where there’s trees and water. But I was able to teach the things I wanted to teach and do the re-
search I wanted to do,” he said. “The school has good students and good people.”

The result was that he stayed for forty-one years, earning the title of Distinguished Professor of Biology. The school website notes that he has taught thousands of McMurry students in biology courses for majors and non-majors. His classes have been recognized for their high energy, interesting material, and his humor.

Dr. Beasley has been recognized for his work in the classroom and was awarded the 2009 Gordon and Lola Bennett Scholar Award for his continuing contributions to outstanding teaching, scholarship, and service to the university. Beasley has also earned grants to continue his study of Tardigrada, as well as authoring numerous research articles on the subject.

Dr. Beasley, who retired at the end of the spring semester, was honored at commencement exercises by Dr. Paul Fabrizio, who described Beasley as “an interesting person who does interesting things in interesting ways.”

Even though he has retired, Dr. Beasley is happy to see that renovations are in the planning stages for the science building. He said the school has had the same amount of space for all the years he taught science at McMurry. “A big problem was the organization of the science building because it was laid out in the 1960s,” Beasley said. “Classroom space has become an issue and the labs are old fashioned.”

The number of students enrolled in the science program has drastically increased over the years. Beasley believes the renovations will address the demands of molecular biology through upgrades in both classrooms and labs. He believes the new phases of molecular biology are “exciting” and that McMurry will be fortunate to have a molecular lab and teach students this kind of work.

In addition, Beasley explains that bright, clean labs are a must for molecular biology research, unlike what is seen on the popular CSI programs on TV. “Our labs won’t be dark like they are on TV, primarily because you can’t see in the dark,” he points out laughingly. “Not everything that you see on those shows is possible,” Beasley said. But he conceded, “It’s good that some students become interested in this field after what they see on TV.”

And while a potential McMurry student might become interested in science from watching TV, Beasley’s initial interest in Tardigrada began while he was doing his undergraduate work at Pittsburg State University in Kansas. “I thought they were fascinating, and there wasn’t a lot known about them,” Beasley said.

There is now a significant amount of information available on tardigrades, thanks to Beasley’s research. He has always enjoyed traveling to an area to see which tardigrades exist there. He’s been to China four times to collect and study tardigrades in that country, twice taking McMurry students with him. He’s also been to Greenland, Mexico, and Puerto Rico to conduct additional studies.

A large tardigrade will grow to 1.5 millimeters in length but, amazingly, it can survive in temperature extremes that would kill many other animals. There are reportedly a thousand species of Tardigrada, ranging from the top of the Himalayas to deep in the ocean. Dr. Beasley shared that recently tardigrades were taken on a space mission in low Earth orbit and were exposed to the vacuum of space. They survived, and one report indicated that they laid eggs that hatched normally afterwards. In addition, Beasley explains that tardigrades are...
normally active when it is wet, and they go into a cyst-like stage and contract when it dries out. He notes that tardigrades can stay viable in the cyst for several years.

His work in the area of Tardigrada has afforded Dr. Beasley a special honor. Dr. Xiaochen Li, a Chinese scientist, discovered a special species of tardigrades in his native country. Dr. Li wrote a paper describing the species, and then named it *Pseudechiniscus beasleyi* to salute the McMurry professor’s contributions in this field.

McMurry has made lab space available to Dr. Beasley, and he is appreciative of the support he has received. The University has purchased a special microscope for him and has helped with expenses so he could attend conferences and meetings.

Dr. Beasley is one of a handful of scientists in the United States who study Tardigrada. The internet has been a highly useful tool for him in corresponding with other specialists around the world. Recently, he’s been collaborating with an Australian scientist and two others in Poland on an article that has been accepted and will be published. “The internet is wonderful, and so much quicker,” Beasley marveled. “We can share information and discoveries.”

Even though Dr. Beasley is officially retired from McMurry, he says he’ll continue his research into Tardigrada because he now has a mini laboratory at his home. But he still plans to enjoy other activities like gardening and spending time with his grandchildren.

McMurry was more than a teaching job for Beasley. His son, Dr. Craig Beasley, graduated from McMurry and is now the physician in Throckmorton County. His daughter, Stacy Kuenn, also attended McMurry and is now the director of a hospital in the Dallas area. His wife, Barbara, is retired from the public schools after teaching science. Beasley chuckles, “We had some very interesting dinnertime conversations.”

But those conversations don’t compare with the one he remembers having when he convinced his mother to allow him to continue collecting animals after the snake escaped in that Kansas farmhouse years ago. If she had not acquiesced to his pleading, Dr. Beasley might never have become a big expert on a little animal.

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**STUDENT SPOTLIGHT**

**Erica Rawls: Biochemistry/Business Administration**

**What do you want to do after graduation?**

After graduation, I will be applying to at least three pharmacy schools, hoping to be accepted into the Texas Tech Pharmacy School here in Abilene, but any acceptance would be awesome! I may also weigh my options by applying for graduate school in Chemistry or Biochemistry.

**What research are you working on and why is it important?**

Since the summer of 2009, I have been working with Dr. Hyunshun Shin on developing and synthesizing inhibitors of the polyamine biosynthetic pathway, specifically ornithine decarboxylase and putrescine inhibitors. Based on other people’s work and preliminary studies, inhibiting this pathway is a novel anti-cancer research area. These inhibitors could be anti-cancerous because it has been noted that high concentrations of polyamines have much to do with high rates of proliferative diseases (cancer).

**What skills and knowledge did you gain from doing research?**

I have gained a great deal of confidence in the lab by learning and becoming much more effective and proficient in many lab techniques such as thin layer and column chromatography. I have significantly increased my ability to research specific topics by using scholarly articles.

**If you had any advice to give a freshman, what would it be?**

Majors in Chemistry and Biochemistry, among all other Natural and Computational Science majors, are difficult to obtain. Even though the coursework is difficult, the knowledge obtained is priceless. In order to do well, apply yourself, study hard, and take advantage of your professor’s knowledge. All McMurry professors are extremely helpful. Also, I encourage you to take advantage of research opportunities, for these are very useful and important in the learning process.
What do you want to do after graduation?
This fall, 2010, I am applying for pharmacy school and graduate school. I want to attend pharmacy school after I graduate, but if I do not get accepted I am going to attend graduate school. My field of choice at graduate school would be either organic or biochemistry.

What research are you working on and why is it important?
The research I work on at McM is the organic synthesis of a novel enzyme inhibitor to treat cancer. This research is important for a variety of reasons: it is a great learning experience, it helps prepare me for graduate or pharmacy school, and I have gained skill in presenting research to the community. It is also important—a lot of people die from cancer every year, so new treatments for cancer are in high demand.

What skills and knowledge did you gain from doing research?
Doing research has helped me become independent with the use of various lab techniques. In particular, the first method I learned was how to calculate and manipulate equivalents of various chemicals so that, when these were added to reaction mixtures, they formed the correct product. The second method I learned was how to use thin layer chromatography to determine whether or not a reaction has gone to completion. After the reaction is ready, we used purification techniques such as column chromatography. I did this in the summer of 2009. This summer, 2010, we plan to do biological testing with cancer cells. We will verify that the drug can enter the cell and confirm that it does have an effect on the cell viability.

If you had any advice to give a freshman, what would it be?
The advice I would like to give to a freshman would be: never give up! I have recently talked to one doctor and another graduate student, both of whom obtained a degree from McMurry’s School of Natural and Computational Sciences. They both said that general chemistry was the hardest and most discouraging course they took, but it prepared them for what was to come in medical and graduate school. So just remember this—At times it may feel like you will not make it out alive, but your coursework will help you achieve whatever you have planned in the future. Stick with it.
Oral surgeons use different methods to prevent *alveolar osteitis*. One common method is packing the extraction site with medicated material immediately after the extraction. According to Bloomer, medicated packing as a preventative measure makes no difference statistically. No one has found a method which eliminates the risk.

Bloomer finds the whole matter of drinking through a straw particularly interesting. Dry sockets occur when the clot in the socket either fails to form or becomes dislodged prematurely. So a patient drinking through a straw would seem to risk disturbing the clot. On the other hand, Bloomer notes, “In the broader field of wound care, doctors actually place suction directly on certain wounds to facilitate healing.” This fact stirred doubt in the conventional wisdom and sent Bloomer on his quest to decipher the dry socket mystery. He has conducted three separate studies on the issue. One study, in which he collaborated with Ryan Higley, D.D.S. (a McMurry undergrad at the time) took a look at the use of a chewing gum containing the antibacterial agent Xylitol as a preventative measure. The results indicated that Xylitol is not the answer.

Bloomer says, “I go on the assumption that it is caused by bacteria. No one has isolated a specific bacteria, so I have my patients thoroughly clean and disinfect their mouths before the surgery.”

Dr. Bloomer currently has a manuscript entitled, “Straws Do Not Cause Dry Sockets When Third Molars are Extracted,” which is under consideration for publication in the Journal of Oral and Maxillofacial Surgery. He has previously published articles in that journal and others in 1989, 2000, 2004 (two), and 2005. He plans to continue his research on the cause, prevention, and treatment of *alveolar osteitis*.

Dr. Bloomer provides leadership in his profession and his community, having served as President of the 17th District Dental Society and as a mentor to several dental students and interns. He has also served as a dental volunteer in Peru, Western Samoa, and Tanzania. The top item on his community service list is supporting McMurry students any way he can. Charles and Lisa love to host Ko Sari and Delta Beta functions at their farm. Whenever he needs to fill a position at his clinic, he always tries to hire a McMurry alum.

Bloomer is a true McMurry believer. He says, “McMurry prepared me very well for dental school. Having been an A and B student at McMurry, I shot to the top of the class in dental school. The Dean at University of Texas Dental School at San Antonio told me that other students from McMurry have had similar experiences. Dr. Bloomer is obviously proud of his alma mater and has become a generous donor to McMurry math and science programs. He states, “It’s been almost 40 years since I started at McMurry. There have been few changes to the science building since I was there. This renovation will draw more and better students. I only wish that I could give more to help build an even bigger facility.”

### STUDENT SPOTLIGHT

**Todd Neer: Physics/Mathematics**

**What do you want to do after graduation?**

I would like to find a regular 8-5 job that allows me evenings and weekends to focusing on furthering my senior project—a wristwatch-sized sonic dog deterrent. I have a provisional patent with the patent office giving me a year to perfect and submit a non-provisional application. I would like to focus on making an improved prototype and explore marketing my device.

**What project are you working on and why is it important?**

I have taken an existing ultrasonic device used to deter dogs and miniaturized it to fit in a watch case. The device can be used as an additional function for stopwatches as the sound emitted deters dogs from runners, bikers, mailmen, etc. My prototype is much smaller, in both weight and size, than the existing hand held sonic deterrent devices that run off of 9-volt batteries.

**What skills and knowledge did you gain from doing research?**

The project gave me the chance to gain hands-on electrical engineering experience. I had to study the circuit, manipulate, and move components. I learned how to apply the methods of research, data, and results through the many labs throughout my collegiate career to an original project idea.

**If you had any advice to give a freshman, what would it be?**

Entering college can be overwhelming, but I suggest that when choosing a major it should be a well-considered decision. Once the decision is made, don’t give up after one semester! Give it a chance and have faith in yourself. The McMurry faculty is very helpful and if you have a goal, they will do what they can to help you reach it.
Over the years, McMurry has enjoyed a legacy of producing successful science graduates who have made names for themselves through the practice of medicine and involvement in medical research. Others have committed their lives to the education of talented young professionals who will change the world through scientific breakthroughs and technological advances. Dr. DonnaJean Anderson Fredeen ’81 traveled the latter path to a career in higher education. Her love for science and her giftedness as a teacher led her to Southern Connecticut State University, where she currently serves as the Dean for the School of Arts and Sciences.

After graduating from McMurry in 1981 and receiving her PhD in Chemistry from Texas A&M University, Dr. Fredeen considered a career in industry. However, she felt a “calling” to return to the classroom, in part because of the influence of outstanding professors she remembered from her own McMurry experience. She recalls fondly Dr. Roy Sonntag who was “very encouraging and had a large role in convincing me I was capable of being a chemistry major.” She expresses a great degree of respect for Dr. Lindol Harris. “We all wanted to do our best in his classroom because he set the bar high and assumed we would all reach it.”

Through her tenure as Assistant Professor of Chemistry at the University of Bridgeport and later as Assistant Professor and Associate Professor of Chemistry at Southern Connecticut, she remembered her role models and emulated their techniques. “Dr. [David] Klassen explained the 2nd law of thermodynamics (the disorder of the universe is always increasing) by relating it to the condition of our dorm rooms. I remember him making reference to the fact that within fifteen minutes of cleaning our dorm rooms, they would be messy again. He also used balloons to describe the shape of atomic orbitals. Both of these examples were ones that I used in my own chemistry classes. He would try to help us relate what we were learning to the world around us.”

Dr. Fredeen has a personal interest in the planned renovation of the Finch-Gray Science Center since she is currently involved in the planning phase for a new science building at Southern Connecticut. She remembers when science labs didn’t have to be as concerned about safety and is pleased that McMurry is investing in upgrading labs and lab equipment. She explains, “We are now preparing students in facilities that are more closely aligned with what they will see in industry. State of the art equipment will insure that students will be prepared for what lies ahead, whether graduate school, industry, or medical research.”

As a dean at Southern Connecticut, she takes great satisfaction in her role in preparing future leaders in math and science. Dr Fredeen praised her strong liberal arts undergirding for the success of her journey to a position of considerable prestige in higher education. Her appreciation for a broad-based, liberal arts, “education for life” is reflected in her own McMurry core curricular experience. “The best course I ever took at any college wasn’t a science course, but rather a comparative religion course that I took in the spring.
What do you want to do after graduation?
I plan to attend a Texas Medical School to pursue a degree in medicine. I currently feel that I am drawn to the field of Cardiology, but I also enjoy Emergency Medicine.

What research are you working on and why is it important?
This last year, Dr. Benoit and I tried to isolate Chlamydomonas, a genus of green algae, from nature. Post isolation we planned to develop a way in which students could “race their pet Chlamy.” This would be possible due to the fact that this organism is phototactic, meaning that they migrate toward light. Due to some complications we encountered along the way, we decided to abort our mission.

This summer, I will be assisting Dr. Shin and Dr. Donnay as they collaborate with Baylor University and the University of Pennsylvania to create a novel antibiotic. The specific aim of this experiment is to design and synthesize an antibiotic complex that will inhibit the enzymatic activity of gram negative bacteria. If all goes well, we will be able to target some of the bacteria that are causing a number of major medical conditions. The pathogenic bacteria that are in our sights are the cause of an estimated 100,000 deaths in the United States each year due to septic shock. This investigation is expected to result in the development of novel anti-bacterial agents.

What skills and knowledge did you gain from doing research?
Getting involved in research is beneficial in many ways. First, it allowed me to apply the knowledge that I acquired throughout lectures into real world and hands-on projects. Secondly, it allowed me to learn to think like a scientist. There is no better way to learn problem-solving techniques than to work in the lab.

If you had any advice to give a freshman, what would it be?
I would advise freshman to get involved with their studies. Get involved with research. Some of the information learned in lectures can be useless unless you learn how to apply the material into everyday life. Also, you should be passionate about your education. Stop at nothing to reach your goals. Never be scared of a challenge; life will always throw challenges your way. Most importantly, study hard and don’t give up!!
Helping students is the purpose that undergirds every part of McMurry’s *Shaping the Future* campaign. The Science Center renovation, which will re-shape teaching spaces, add state-of-the-art technology, and upgrade both functionality and aesthetics, will radically improve the learning environment for students.

The new teaching spaces serving the Biology and Physics Departments were designed with flexibility in mind.

Multi-use spaces accommodate both lab and lecture so that a class can move seamlessly from theory to practical learning as the need arises. The biology teaching spaces include separate classroom and project space so that while one group of students is in the main classroom/lab, students from other classes can be outside in the incubation and project spaces checking results and conducting experiments. Physics spaces have movable walls and tables, accommodating large groups and small in a variety of configurations.

Windows and large screens will put science on display and promote community. Students, faculty members, and visitors will see exciting and interesting things happening, and those things will involve people they know. New equipment and instrumentation will allow students and faculty to venture into new territories of research and teaching. Faculty members are already designing new experiments and identifying research topics that would have been impossible prior to this renovation project.
Family Connections Benefit Science Building

This spring, just after final exams concluded, the hammering and sawing began on the much-anticipated renovation of the Finch-Gray Science Center. Gary and Ann Finch from Dalhart, Texas are key contributors to this project. The Finch connection to science education at McMurry spans multiple generations.

Gary’s grandfather, Orville Finch, Sr., moved to the northern panhandle of Texas from Kansas in 1913. At age 33 he had plenty of cattle “know-how” and established a ranch on 11,000 acres north of Dalhart. Some years the land received abundant rainfall. The grass thrived and so did the cattle. Other years were characterized by drought, sparse grass, lean cattle, and small calf crops. But Orville and his wife Olive managed well through the good times and the bad. His decisions were sound, and the ranch prospered. Today Gary and Ann love living and working on that same land. Ann says, “Gary doesn’t have a job. He has a lifestyle.”

Faith directed Orville’s life. He and his family joined the Methodist Church in Dalhart. The ministry of that church helped their faith grow, while their support and leadership helped the church grow. Gary and Ann still belong to the same church, Central United Methodist. Gary teaches the Friendship Class, the largest adult Sunday School class. Ann volunteers in the exciting “King’s Kids” ministry for children. Pastor Steve Patterson describes the Finches as “the epitome of what servanthood is all about.”

Orville Finch Jr., Gary’s uncle, remembers the generosity of his parents. “My parents were dedicated Methodists, and they contributed to other things, too.” There is a Finch House at Cal Farley’s Boys Ranch, and the Finch family has always generously supported the Dalhart United Methodist Church.

Around 1963 the Trustees and President of McMurry envisioned a new science building, with plenty of classroom space and state-of-the-art labs. Orville Finch caught the vision and stepped up with a major donation for the Finch-Gray Science Building. Now his grandchildren and great-grandchildren are adding to Orville Finch’s legacy.

Despite deep ties to McMurry, Gary tried not to influence his daughters’ choices for college. “They all visited several campuses before they made a decision.” Their oldest, Staci, attended Texas A&M. But Jennifer and Elizabeth chose McMurry. “They fell in love with it. Elizabeth planned to transfer after her second year, but McMurry was like home to her, so she stayed all four years. There’s a place for everyone, and McMurry was the place for them.” Today Jennifer Niemann ’91 lives in Wichita, Kansas and Elizabeth Maybin ’97 lives in Temple. Ann says, “Our girls loved it. They had a great time at McMurry.”

When asked about his support for the renovation of the Finch-Gray Science Center, Gary said, “I’m just glad to know it will help students. We’re interested in helping students have a great experience and get a great education at McMurry.” Thanks to generous support from the Finches and other donors, our students will benefit from a fabulous place to learn and grow and launch their futures.
Faculty Updates

Dr. Thomas Benoit, Professor
Department of Biology

Education: Ph.D. in Microbiology (Texas Tech University, 1987)

Joined the McMurry Faculty in: 1995

Recent accomplishments:
Dr. Benoit not only devotes himself to teaching and inspiring future biomedical science students, but he also serves the university as the Director of Institutional Effectiveness. He was an important contributor to the successful 2008 Southern Association of Colleges and Schools Commission on Colleges accreditation effort. Dr. Benoit also assisted in preparing and presenting a proposal for renovating the Biology lab and classroom spaces, funded by McMurry Capital Campaign contributions.

Future plans:
Dr. Benoit is currently working on an on-line lab manual for use in general microbiology courses.

Dr. Joel G. Brant, Assistant Professor
Department of Biology

Education: Ph.D. in Biology (Texas Tech University, 2005)

Joined the McMurry Faculty in: 2005

Recent accomplishments:
Dr. Brant is actively conducting field surveys of the mammalian fauna of the Southern Rolling Plains. He involves undergraduates, as part of their capstone research, in the field as well as taking them to scientific meetings (Texas Tech Annual Biological Sciences Symposium, Texas Society of Mammalogists). Dr. Brant also assisted in preparing a successful proposal for renovating the Biology teaching spaces, resulting in a more efficient use of space in the building that will propel our programs through the 21st Century.

Future plans:
Dr. Brant intends to continue encouraging students to attend scientific meetings and become involved in research. He will also move forward with his field surveys of the mammalian fauna of the Southern Rolling Plains, as well as seek external funding to support undergraduate research opportunities.

Awards received in the last 5 years:
KIVA Fellowship Award, 2009 & 2010
Sam Taylor Fellowship Award, 2007 & 2009
“Faculty for the 21st century”, Project Kaleidoscope, 2007

Dr. Anna Saghatelyan, Associate Professor
Department of Biology

Education: Ph.D. in Biology (Komarov Botanical Institute, St. Petersburg, Russia, 1983)

Joined the McMurry Faculty in: 2004

Recent accomplishments:
Dr. Saghatelyan has published an article on the Big Bend Region flora analysis in 2009, presented at the annual meeting of the Botanical Society of America, and participated in the International Biogeography Society Conference. Last summer, the renowned ethnobotanist, Dr. Nancy Turner (University of Victoria, British Columbia, Canada), requested Dr. Saghatelyan’s opinion on the migrational history and places of origin of very early plants used by peoples entering the “New World” via Beringia back in the Late Pleistocene era.

Future plans:
Dr. Saghatelyan will continue working on the analysis of the Edwards Plateau flora of south-central Texas. She has completed the collection of her materials and is now engaged in the analysis. A capstone student is assisting with this project. In addition to her research, “Dr. Anna” is revising her Biology of Plants course and co-sponsors an active McMurry Biology Club.

Awards received in the last 5 years:
Sam Taylor Fellowship 2006
Pacesetter Award of College of Arts and Sciences, Aug. 2005

Dr. Paul Pyenta, Associate Professor
Department of Chemistry and Biochemistry

Education: Ph.D. in Biophysical Chemistry (Cornell University, Ithaca NY, 1999)

Joined the McMurry Faculty in: 2002

Recent accomplishments:
Dr. Pyenta’s primary research project is an investigation into the Transient Transfection of GFP-Encoding Gene into Bacillus thuringiensis. He is working with Bradley Henry, an undergraduate student, on this project. In addition to research, Dr. Pyenta has written lab manuals for both semesters of Nursing Chemistry and created a substantial test bank for use in the Fundamental Chemistry courses.

Future plans:
Dr. Pyenta hopes to publish a paper or poster based on the GFP/Bt project and return to his earlier interest in biochemical fluorescent measurements on antibody IgE. He plans to collaborate with Dr. Edward Donnay, using inorganic constructs as markers on biological systems. Dr. Pyenta is planning to develop more on-line content and testing for student use, as well as writing lab manuals for Biochemistry I and II. In addition, he wants to write a PitConn grant proposal to purchase equipment for the biochemistry lab.
Dr. Larry G. Sharp, Assistant Professor  
Department of Biology

**Education:** Doctor of Chiropractic (Parker College of Chiropractic, 1995)

**Joined the McMurry Faculty in:** 2007

**Recent accomplishments:**
Dr. Sharp serves as the Pre-Med/Dent Advisor for the University. He was appointed the Joint Admissions Medical Program (JAMP) Faculty Director for the University, and this year the first McMurry student was accepted into the JAMP program. Dr. Sharp has been and remains instrumental in the creation and curricular addition of the Pre-Professional Seminar Series. He also co-wrote an articulation agreement for Biology and Biomedical Science majors seeking to pursue graduate education in Physical Therapy and is responsible for significant curricular contributions for the Biomedical Science major.

**Future plans:**
Dr. Sharp plans to continue encouraging students to become involved in research. He is working hard to secure articulation agreements with more professional schools in order to expand the opportunities available for McMurry students. In addition, Dr. Sharp will keep refining the Pre-Professional Seminars to better serve the future applicants to health professional schools, as well as to develop more diverse and advanced health-related coursework. He will also maintain his work with community organizations that provide health-related education content and services.

Dr. Gary R. Wilson, Professor  
Department of Biology

**Education:** Ph.D. in Microbiology (Texas Tech University, 1987)

**Joined the McMurry Faculty in:** 1990

**Recent accomplishments:**
Dr. Wilson recently returned to the faculty from 15 years of service as Dean. He has pioneered the teaching of microbiology lab knowledge and skills through involvement of students in real research projects, including a campus-wide assessment of MRSA prevalence in students last fall. Dr. Wilson contributed to a grant proposal to HHMI (Howard Hughes Medical Institute), a proposal for the McMurry MURI program, and a funded proposal for McMurry’s “Shaping the Future” lab renovation competition. He also wrote an article for the Council on Undergraduate Research. Dr. Wilson led the compliance certification team charged with putting together the successful 2008 SACS Reaffirmation Report.

**Future plans:**
Dr. Wilson is back in the lab working in recombinant protein production for a local biotech company, Receptor Logic. He is busy developing a new online version of VirtualUnknown™ Microbiology software and creating on-line support materials. With Dr. Benoit, he is continuing the design of a freshman-to-senior research program which will involve undergraduate students in various stages of a single project through their enrollment in several connected courses in the BIMS program.

Dr. Edward Donnay, Assistant Professor  
Department of Chemistry and Biochemistry

**Education:** Ph.D. in Chemistry (Washington University, 2002)

**Joined the McMurry Faculty in:** 2006

**Recent accomplishments:**
Dr. Donnay has contributed to the effort to revise the curriculum in core chemistry courses. One exciting innovation is the creation of a collaborative group project between Physical Chemistry II and Advanced Physics. In addition, he crafted a successful proposal for the new BA in chemistry degree to support the chemistry teaching field.

Dr. Donnay has also developed a new idea for a research project and synthesized a new compound in the initial stages of this project. He directed the purchase and installation of two major pieces of equipment, a High Performance Liquid Chromatograph (HPLC) and an electrochemical analyzer. This equipment supports research efforts by faculty as well as students.

**Future plans:**
Dr. Donnay would like to increase the number of students who are involved in conducting a variety of synthetic inorganic projects. He would also like to strengthen communication and potential collaboration between chemistry faculty members at the three universities in Abilene.

Mr. Richard Brozovic, Instructor  
Department of Computer Science

**Education:** MS, Computer Systems (Air Force Institute of Technology, 1980)

**Joined the McMurry Faculty in:** 1996

**Recent accomplishments:**
Mr. Brozovic is a primary contributor to the development of the computer science curriculum. He teaches a wide variety of coursework for the Computer Science major and also serves as the faculty sponsor for AITP (Association for Information Technology Professionals).

**Future plans:**
Mr. Brozovic plans to return to his research on cloud computing as he works toward completing his dissertation at Texas Tech University.

**Awards received in the last 5 years:**
Sam Taylor Fellowship Award, 2006
Faculty Updates

Dr. Hyunshun Shin, Assistant Professor
Department of Chemistry and Biochemistry

Education: Ph.D. in Organic Chemistry (Drexel University, 2001)

Joined the McMurry Faculty in: 2008

Recent accomplishments:
Dr. Shin is actively working with students doing summer research. Last spring, one of these students, Heather Whitehead, presented a poster on her research project “Synthesis of Ornithine Analogs with Oxime Functionality targeting Arginine Biosynthesis” at the 22nd Annual Student Research Week at Texas Tech University Health Sciences Center (TTUHSC).

Drs. Shin and Pyenta have worked collaboratively to redesign and deliver a forensic science-themed chemistry course for non-science majors. Students have enjoyed the blend of chemistry and hands-on laboratory work related to forensics.

Future plans:
Dr. Shin’s research interests include the application of structure-based drug discovery towards the design and synthesis of bioactive substances targeting cancer and bacterial infection. Her research has been centered on arginine biosynthesis related to cell proliferation. She and her students will continue designing and synthesizing new molecules and investigating the biological activities with synthetic molecules against different cancer cell lines and gram negative bacteria.

Dr. Richard E. Schofield, Professor
Department of Biology

Education: Ph.D., Geological Sciences (Rutgers University, 1982)

Joined the McMurry Faculty in: 1985

Recent accomplishments:
Dr. Schofield is known for his geology field trips to various locations in Texas: the Llano area, Mineral Wells, Dinosaur Valley State Park, and Palo Duro Canyon State Park. Dr. Schofield has also revised and updated the lab manual for Environmental Geology.

Future plans:
Dr. Schofield intends to continue teaching and taking students on field trips in order to give them a personal perspective on geology and geologic principles.

Alicia T. Wyatt, Professor
Department of Computer Science

Education: Ed. D., Instructional Technology (Texas Tech University, 1988)

Joined the McMurry Faculty in: 1999

Recent accomplishments:
Most recently, Dr. Wyatt and pre-service teachers designed, deployed, and participated in a library scavenger hunt using student-created video and QR codes. McMurry students equipped with tablet PCs or internet-capable cell phones assisted 5th grade magnet school students in completing the scavenger hunt by locating and scanning the QR code, launching the linked YouTube video, and recording the “secret” information on a worksheet.

Dr. Wyatt also works with Moodle, a major open source software project. She serves as a “Particularly Helpful Moodler” in the international moodle.org community and often presents at Moodle conferences. She was a member of the group who designed the first iteration of the Moodle Teacher Certification program.

Future plans:
Dr. Wyatt is interested in learning management systems and how students and faculty can design and benefit from personal learning environments supported by personal learning networks. The social web is fluid, under the control of the user, and employs a variety of information and communication technologies. Harnessing the scope and power of the “read/write web” for academic advantage is an exciting and rapidly developing field of study.

Awards received in the last 5 years:
The Gordon R. and Lola J. Bennett Award for Outstanding Teaching, Service, and Leadership, 2005
McMurry Exemplary Service Award, 2009
KIVA Fellowship Award, 2006
Co-winner of McMurry Scholarship of Teaching Poster Competition, “Blackboard 5.5 and Moodle 1.5.3, A Comparison in Three Areas: System, Instructors, Students.” (March 2006)
Dr. Cynthia A. Martin, Associate Professor  
Department of Mathematics

Education: Ph.D. in Applied Mathematics (Texas Tech University, 2003)

Joined the McMurry Faculty in: 2003

Recent accomplishments:
Dr. Martin is extremely involved with students and in shaping the mathematics curriculum. Not only does she sponsor a social club, she assists with the Math Club, and regularly chairs honors theses. She is called upon to serve on Judicial Review Boards, University and Board of Trustee committees and taskforces, to conduct honors interviews, and to serve as a consultant for schools who are interested in P-16/college readiness issues.

Dr. Martin collaborated with Drs. Keith and Veltkamp to design and teach a Leadership in Science and Mathematics course. Students enrolled in this course worked with students at an area high school to build and launch Estes model rockets, learning about mathematics, physics, and chemistry along the way. She also worked closely with the Developmental Studies program to design and teach an intensive semester long course where students could complete the requirements for both Intermediate Algebra and College Algebra in a single semester. This successful program has enabled a large number of students to avoid delayed entry for coursework requiring completion of College Algebra as a pre-requisite.

Future plans:
Dr. Martin most recently took on a leadership role in the Expeditions course, a new first-year seminar for entering freshmen. Involved from the initial planning to the final assessment, Dr. Martin is the faculty shepherd for a program that introduces some 300 entering freshmen to McMurry and the collegiate experience.

Awards received in the last 5 years:
Spotlight on Teachers: A Celebration of Teaching Excellence (May, 2009)
Co-winner of McMurry Scholarship of Teaching Poster Competition, “Collaborative Learning, Snapshots across the Curriculum” (March 2006)
“Sponsor of the Year”, 2005 and 2006, Sponsor of Gamma Sigma, McMurry University
“Faculty for the 21st century”, Project Kaleidoscope, 2005
Faculty Updates

Dr. Tikhon Bykov, Associate Professor
Department of Physics

Education: Ph.D. in Physics, with a specialization in “Theoretical Physics” (University of Nebraska at Lincoln, 2003). Candidate of Science, specialization in “Theoretical Physics” (Degree awarded by the Highest Attestation Commission of Russian Federation based on the resolution of the Doctoral Dissertational Council of St. Petersburg State University, Russia, 2001)

Joined the McMurry Faculty in: 2004

Recent accomplishments:
Dr. Bykov’s research interest include physics education and theoretical research on liquid droplets and liquid-vapor interfaces. His most recent paper is “Homogeneous nucleation at high supersaturation and heterogeneous nucleation on microscopic wettable particles: A hybrid thermodynamic/density-functional theory”.

Dr. Bykov has delivered several presentations at national and local American Physical Society meetings on the results of his efforts to modify the teaching of introductory physics courses with active use of tablet PC technology.

Future plans:
This fall, the physics department will be conducting research on the efficacy of a pilot modular physics curriculum integrating lecture, lab, newly renovated spaces, and tablet PCs to teach University Physics and General Physics.

Dr. Bykov will also continue his theoretical work and perform numerical calculations to study disjoining pressure in the thin curved liquid films.

Awards received in the last 5 years:
“Faculty for the 21st century”, Project Kaleidoscope, 2007
Sam Taylor Fellowship Award, 2006
Sam Taylor Fellowship Award, 2005

Dr. Robert G. Watson, Assistant Professor
Department of Computer Science

Education: Ph.D., Computer Science (Texas Tech University, 2006)

Joined the McMurry Faculty in: 2008

Recent accomplishments:
Dr. Watson developed an extension to correct software architectural modeling methods. His work allows for more efficient modeling of the complex architectures needed to construct simulators for NASA’s manned exploration program.

Future plans:
Dr. Watson will continue working with colleagues at the University of Texas on the NASA project this year.

Awards received in the last 5 years:
Jack A. Barnes Engineering Excellence Award, Texas Tech University, 2006.

Dr. Timothy E. Renfro, Assistant Professor
Department of Physics

Education: Ph.D. in Physics (University of Texas at Dallas, 2004)

Joined the McMurry Faculty in: 2008

Recent accomplishments:
Dr. Renfro supervises an ongoing series of senior capstone projects. From the design of a cyclotron to the creation of a prototype hydrogen fuel cell, McMurry physics students under Dr. Renfro’s direction are engaged in productive research.

Dr. Renfro contributed to the successful proposal for renovating the physics spaces and acquiring new tools for the machine shop. He is also engaged in constructing and maintaining a small weather station on the roof of the science building. The data produced by this weather station can be used in a variety of projects.

Future plans:
Dr. Renfro will be teaching a new Automated Experimental Measurements class this fall. In this exciting new course, students will use LabVIEW to see multi-stream logic as it is happening in the software, as well as observe how their programming can manipulate electronics.

He is working toward making the weather data collected from the rooftop station publicly available as well as to determine the feasibility of electrical power generation. The McMurry physics department is interested in alternative energy projects, such as a hydrogen fuel cell golf cart. The primary goal of this research is to reduce individuals’ reliance on the public energy grid.

Mr. Mike Swanson, Associate Professor
Department of Mathematics

Education: M.A., Texas Technological College, 1965

Joined the McMurry Faculty in: 1966
Dr. Wayne Keith, Assistant Professor  
Department of Physics

**Education:** Ph.D. in Space Physics (Rice University, 2001)

**Joined the McMurry Faculty in:** 2006

**Recent accomplishments:**
Dr. Keith regularly conducts summer research on the Earth's Magnetic field interaction with the solar wind using Cluster satellite mission data. He involves students when possible, traveling to the Lowell Observatory in Flagstaff, Arizona. Dr. Keith has presented several talks and published one paper related to his work with satellites and astronomy.

Dr. Keith collaborated with Drs. Martin and Velkamp to develop a new course, Leadership in Science and Math, as part of the McMurry Center for Mission Outreach with Science and Technology (MCMOST).

**Future plans:**
Due to the reduction in NASA funding, Dr. Keith will likely be winding down his research with the Cluster satellite mission. He expects to continue his magnetospheric research at a lower level until he can acquire new funding.

He will be engaged in a thorough reevaluation of equipment used by and recently acquired by the Physics department as part of the renovation this summer. He particularly hopes to significantly improve the departmental machine shop to help support senior capstone research projects.

Dr. Keith will also be re-designing the Solar System Physics course to add a component of astrophysics to increase the breadth of knowledge of McMurry physics students.

**Awards:**
Outstanding Alumnus for the School of Science and Technology, Tarleton State University (March, 2010)  
Spotlight on Teachers: A Celebration of Teaching Excellence (May, 2010)

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Dr. Kelly McCoun, Associate Professor  
Department of Mathematics

**Education:** Ph.D. in Mathematics (Texas Tech University, 1989)

**Joined the McMurry Faculty in:** 1993

**Recent accomplishments:**
Dr. McCoun is active within his department and in the larger mathematics community. He serves as the Corresponding Secretary for the Texas Iota Chapter of KME (Kappa Mu Epsilon, a national mathematics honor society). One of his primary interests is cryptology, and Dr. McCoun chaired a 2009 honors thesis entitled, “Using Classical Ciphers in Secondary Mathematics.”

Dr. McCoun is an active sponsor of the Math Club, and he attended the Mathematical Association of America Texas Sectional Meeting in the Spring of 2010 as well as the Student Math Calculus Bowl. McMurry students attended and participated in mathematics competitions at both events.

**Future plans:**
Dr. McCoun is working to improve his battery of online teaching materials as well as integrating student use of tablet PCs in his courses. He provides students with online solutions to tests and practice tests by using Microsoft One Note, Microsoft Word, and the Microsoft Equation Editor.

He intends to continue his research in the field of Cryptology and related areas of mathematics, e.g. Number Theory, Abstract Algebra, Probability and Statistics, and Computer Science. He hopes to work with more students interested in pursuing honors projects in the area of Cryptology.

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Ms. Amy Riordan, Instructor  
Department of Mathematics

**Education:** MS in Mathematics (Tarleton State University, 2005)

**Joined the McMurry Faculty in:** 2006

**Recent accomplishments:**
Ms. Riordan covers much of the basic math curriculum for McMurry students. She not only teaches at both the developmental and collegiate level, she uses technology effectively to provide supplemental materials for both face-to-face and online math courses. She is an integral part of the modular math course, which is designed to help students complete both Intermediate and College Algebra in a single semester, and she works with airmen who need to complete basic math courses while deployed.

**Future plans:**
Ms. Riordan continually seeks to develop her teaching skills. She would like to conduct research on students’ ability to learn mathematics and find ways to increase student success in the courses she teaches.
What do you want to do after graduation?
I am currently applying to medical schools across Texas. I want to attend medical school and I hope to get an internship in internal medicine upon completing medical school. I dream of being an Ophthalmologist and specializing in the retina. I hope to live in my hometown, San Antonio, and having a partner practice.

What research are you working on and why is it important?
During the fall of 2009, I did some research in Dr. DiFrancesca’s molecular and cell biology lab. We did a study on the different effects of some chemicals such as steroid sulfatase on various lines of breast cancer cells. This study is important because it can potentially lead to the discovery of a therapeutic agent for halting cell proliferation in malignant breast tissue.

What skills and knowledge did you gain from doing research?
I learned various techniques and skills while working in the molecular and cell biology lab. I learned aseptic technique in terms of molecular biology and how to work in a sterile environment under a hood. I learned how to use an electric pipette, how to wash cells, change media, dilute cells, and to keep a fresh cell line going.

If you had any advice to give a freshman, what would it be?
I would tell freshmen to keep their eyes and ears open for new opportunities that expand their knowledge and stimulate their interest. It’s important to be interested in what you do. I have found a great interest in studying the human body and all the biological and chemical processes associated with it. My interest gives me additional determination and drive to work hard and succeed in my studies.

Have goals for yourself, keep refining those goals, and keep them always in sight. Remembering my long term goals, such as being an outstanding doctor who helps diagnose and treat patients with eye conditions, keeps me focused on my short term goals, such as getting good grades in my classes and doing well on my MCAT.

Lastly, find activities that provide a good way to relieve stress and find a good support system. Discover activities that give you an enjoyable break from school such as going to a park, running, biking, playing sports, or painting. Find a source of support, whether it be from a social club, family, friends, professors, or your faith in God. It’s important to have that extra push along the way in getting through college.

College is a great time, and yet probably the most challenging time of your life. Having support, in my opinion, is vital to your happiness and success in college.

Dr. Tierney Brosius will be joining us as a new faculty member in the Biology Department. Dr. Brosius recently completed her dissertation and defense at the University of Nebraska, Lincoln. Dr. Brosius conducts research on the Salt Creek tiger beetle as well as pursuing her interests in developing effective ways to educate the public about issues surrounding conservation.

An accomplished artist and illustrator, Tierney provided illustrations for a textbook co-authored with Dr. Michael Samways (University of Stellenbosch, South Africa). The textbook focuses on the conservation of invertebrates within multiple unique ecosystems around the world and is scheduled for publication in 2010.

Tierney served as the curator for the exhibit “Salt Creek Environment: Local and Endangered” featuring the work of twenty-seven artists in the US and Canada. Dr. Brosius developed the Haydon Art Gallery exhibit (2009) and a related workshop that used art to promote the conservation of the Salt Creek tiger beetle and the saline wetlands of Lancaster County. An art catalog and educational publication accompanied the exhibit.

According to Dr. Brosius, “My involvement with conservation outreach has increased my interest in how communities perceive conservation efforts, specifically how the arts can be combined with science to help develop emotional connections.”

SNCS welcomes Dr. Brosius and is looking forward to her innovative ideas combining student research, conservation science, and art!
Greetings to McMurry alumni of the generation of Old Main/Quadrangle laboratories, the generation of those who saw the construction and optimum use of the Finch-Gray Science Center, and the present generation who observed the aging and now current remodeling of Finch-Gray.

We are delighted to see this edition of Resonance, a newsletter of the School of Natural and Computational Sciences. We believe that it tells the McMurry Science story well. I, Girvin, have seen the excitement in working with the faculty and students in the renovation. The renovation process has shown us that Finch-Gray has “good bones”. The structure is sound. The faculty has designed spaces to “learn and do science” in a 21st Century fashion. I, Ralph, saw the same spark in the eyes of inquisitive students when I visited campus and lectured them on the importance of the basic sciences. In this publication, you’ve read about the engagement of other alumni that has been critical in making the McMurry science experience something special.

We invite you to consider the next generation of students and faculty for whom 1) a completely refurbished Finch-Gray is critical, and for whom 2) a Finch-Gray laboratory annex is necessary for the University vision of gathering all of the science and mathematics programs into an integrated community.

The latter goal was the original centerpiece of the current Shaping the Future capital campaign. The current science/math faculty, working with a consulting architect, produced a detailed conceptual design report as an early campaign milestone. 2008 construction costs exceeded the original $20M projection just as the economy started a downturn, thus science building plans were reversed: remodeling now, new construction later.

The current opportunity for alumni is to support the current and projected upgrading of Finch-Gray. The future requires new construction and enthusiastic alumni support. The 2008 planning process and report remains a useful first step and head start. We invite your interest, your direct financial contributions, and also any contacts with foundations and major donors who value the benefits of a McMurry liberal arts education just as you do.

Girvin Harkins, B.A. ‘60
Chemistry & Physics
Chair of the McMurry Buildings and Grounds Committee
McMurry Board of Trustees

Ralph J. Turner, B.S. ‘74, B.A. ‘76
Chemistry & Biology
Chair of the Alumni Phase of the Capital Campaign “Shaping the Future”
Member, McMurry Board of Trustees

SMAB Wall of Honor

Current Honorees:

Dr. Roy Sonntag
Dr. A.C. Sharp
Dr. Bill Dulin
Mr. Roger W. Ward
Dr. Richard Dana Moore

New inductees will be announced in the Fall.

Look for upcoming information, and make plans to attend the induction!

Want to connect with SNCS? Join us on Facebook!
Name: McMurry School of Natural and Computational Sciences

For direct access, use a QR code reader on your smart phone to scan this code:

What is a QR code?
QR Codes are square barcodes that hold a URL and can be attached to a location or object—think window decal, postcard, t-shirt, signage—and link to web accessible content. To view the video, you must install decoder software on your smartphone or tablet. The integrated camera on the device is used to scan the code, and the decoder software translates the barcode into a URL that can be loaded into a browser window.
2010 Renovation of the Finch-Gray Science Center is Underway!

“This renovation project positions our programs to stand toe-to-toe with many of the best small college science programs in the nation.” — Dr. Alicia Wyatt, Dean of SNCS