Welcome to the Spring 2015 edition of EUREKA! A Newsletter of the School of Science and Technology at Georgia Gwinnett College. This semester has been enormously busy for us in SST, and so many great things have been going on. First, the Board of Regents recently approved us to offer a B.S. in Environmental Science. This degree will start in the Fall of 2016. Part of the reason I am excited about this degree is because it is an interdisciplinary degree between SST and the School of Liberal Arts. This degree was designed with a realization that a study of environmental science should include not just a study of biology and chemistry, but also a study of environmental law and policy and ethics. All students in this program will study the science and liberal arts perspectives of environmental science but will be allowed to choose whether to focus more on the science or more on environmental policy. I believe an interdisciplinary program like this is one of the reasons GGC is a special place. Our interdisciplinary culture allows us to think beyond the normal disciplinary silos to design educational experiences that best meet the needs of our students.

As we come to the summer, I wanted to mention SST efforts in outreach to our community. We offer three separate weeklong technology camps and three weeklong math camps. These camps are offered to middle and high school kids. This is all part of a coordinated activity we call STEM Academy. Recent research has indicated that extracurricular STEM experiences are a major reason kids choose to major in STEM when they attend college. We in SST are certainly doing our part to excite these young boys and girls in STEM.

If you have suggestions for content or alumni updates or have any questions for us you can email us at scienceandtech@ggc.edu.

Enjoy our celebration of discovery,

Tom Mundie
Dean
Follow me on Twitter (@tommundieSST)
Georgia Gwinnett College’s student chapter of the Association of Information Technology Professionals (AITP) has demonstrated a record of impressive achievements in its 4-year existence.

The chapter was created in October, 2010, with 10 members, and now it has over 80. Since its infancy, AITP has quickly achieved some notable milestones. Dr. Lissa Pollacia, AITP faculty advisor and professor of Information Technology, arranged for several members to attend AITP’s 2011 National Collegiate Conference (NCC) in Orlando. This conference featured a range of competitions, such as Database, Networking, Java, and Mobile Application Development. The newly formed GGC team was up against 700 students from over 60 U.S. colleges and universities, including Purdue University, Brigham Young University, Texas State University, and many more of the finest information technology schools in the country. Student teams vied for 42 trophies in 14 categories, which means that many teams went home empty-handed.

The GGC team surprised the competition by winning third place in Java Programming and fourth place in Database Design. Over the last three years, GGC teams have consistently won trophies, once again besting some of the top teams in the nation. The first exciting moment came in 2013, when the team of Kevin Jones and Joe Armendariz brought home GGC’s first national championship in Database Design, from the NCC held in St. Louis, Mo.

The ultimate highlight came at the 2015 NCC, which was held Omaha, Nebraska, March 26th through March 29th. The team of Aida Syrkett and Matt Berger won an unprecedented three national titles in Database Design, Java Programming, and Mobile Application Development. “This is so incredible! I have never seen a team take home 3 first place trophies,” says Pollacia. “We are so proud of these talented and motivated students.”

In addition, the team of Yury Park and Quan Tran won second place in a new type of contest, called Code-a-thon. Teams are given a large number of problems to code in only 4 hours. The winning team is the one that codes the most correct solutions. A second place trophy, out of all of the teams present, is an outstanding accomplishment for these two GGC students.

To prepare for the stiff competition, faculty advisors Pollacia and Dr. Evelyn Brannock, also a professor in Information Technology, mentored AITP members in the evenings and on weekends. Practice sessions enabled the students to hone their skills under the same conditions as in the conference competitions.

In addition, membership in AITP permits students to network with IT professionals. “Being a modern IT professional is not just about being technically competent, it’s also about networking with people in the field,” Brannock said. “The AITP motto is, ‘No matter how sophisticated the technology, it is still all about people.’ AITP shows students the importance of soft skills in addition to technology competencies.”

“AITP is all about providing opportunities for our students to excel,” said Pollacia. “Our GGC students that participate in AITP are the future leaders in information technology.”

Georgia Gwinnett College’s 2015 national AITP Conference delegation included (standing) Jordan Nguyen, Raquel Lawrence, Jonathan Mayran, Dr. Shuting Xu, Abner Ortiz, Ryan Alexander, Yury Park, Quan Tran, Tyler Thornton, Lissa Pollacia, and Christina Davis, (kneeling) Matt Berger and Aida Syrkett.
Faculty Accomplishments

Faculty author book chapter

In March 2015, the book *Implementation and Critical Assessment of the Flipped Classroom* was released. Mathematics faculty members Natasha Brewley, Priya Boindala, and Jennifer Sinclair were contributing authors. Their chapter, entitled “Ideation to Execution: Flipping an Undergraduate Pre-Calculus Course to Create Significant Learning Experiences”, is based on their ongoing Scholarship of Teaching and Learning (SoTL) study, which is funded by a SST STEM mini-grant as part of the USG STEM Initiative II. Their ongoing work examines the ways in which an undergraduate mathematics course, namely Pre-Calculus, can be restructured using the Flipped Classroom model in order to create a robust learning experience for students. The Flipped Classroom model is primarily known for moving the lecture component outside of a course so that students can review materials on their own time. The in-class time is replaced with more hands-on activities to promote deeper learning. The chapter discusses their process of developing the course over several semesters and the key components that have helped to guide their work with students. Student responses to this pedagogical approach are also provided in the chapter.

Faculty collaborates in Department of Energy funded project

Assistant Professor of Physics Dr. Neelam Khan collaborated with researchers at Kansas State University to work on a Department of Energy funded research project. In their studies, silicon carbide (SiC) was explored as a potential substrate to improve boron phosphide (BP) epitaxial film properties. Cubic BP have high thermal conductivities and have the potential for electronic devices due to its proven ability to have both n and p type conductivities. Moreover, 10B isotope has a large thermal neutron capture cross-section that is attractive for solid state neutron detector devices. It is important to grow high quality BP films with low dislocation density and unintentional impurities. In this study, BP films were deposited using chemical vapor deposition. Different characterization tools such as x-ray diffraction, atomic force microscopy, scanning electron microscopy, synchrotron white beam x-ray topography, and Raman spectroscopy were employed to study the surface morphology, crystalline quality, and grain size. Their results showed single high quality films were successfully grown on 4H and 6H-SiC (0001) substrates. Their work has been accepted for publication in the journal *Solid State Sciences*.

Dr. J.B. Crabbe elected as President of the Gwinnett County High School Swim and Dive Booster Club

In fall of 2014, Dr. J.B. Crabbe was elected President of the Gwinnett County High School Swim and Dive Booster Club (GCSDBC). The GCSDBC oversees all of the Gwinnett High School swim operations, including pool access, swim and dive dual meets, and rules management. In addition, the board runs several large scale high school swim and dive meets as well the county championships. Gwinnett County has 18 high schools (19 starting next year) with over 1000 swimmers participating in the winter season.
sport. J.B., as he prefers to be called, says that about half the funding comes from the county and the balance is financed by parents and funding drives. Crabbe stated, “This is a massive volunteer effort. There is no way this operation would run without huge input from parents, coaches, and even the swimmers themselves.”

The board is populated with about 10 other volunteers at the county level and a paid county employee, Susan Moody, who, “...is worth every penny.” “Indeed,” asserts Crabbe, “Susan does most of the work, I am merely a figure-head. My job is to promote swimming in the area, and I settle rules interpretation issues in the large meets. I also oversee the operations of the County Championships in early February.” Parenthetically, Crabbe notes that he is proud of the program, and the level of volunteerism, the sportsmanship of the area swimmers, and the high level of accomplishment of the Gwinnett High School swimmers. “This year at the state meet we had seven state champions out of 24 events. That makes Gwinnett the dominant county in the state.” That said, Crabbe is even more impressed with “…the improvement I see throughout the season. I love to see the smile on the face of a swimmer at the end of a race. The smile of a job well done and an improvement well earned. That is why I love swimming! No other sport melds hard work and talent so meaningfully.”

This year was the first year that GCC was able to get involved in Gwinnett high school swimming. “I would like to thank our Provost, Dr. Lois Richardson, and our Dean of Students, Thomas Jimenez, for their instrumental role in opening our pool for the high school swimmers...” states Crabbe. He further clarifies, “Pool time is at a premium because there are not enough pools in Gwinnett.”

Dr. Crabbe is an Associate Professor in Exercise Science at GGC. He is a former swimmer and triathlete and now cycles for fitness. Next year he will begin his fifth year.

Dr. Patrice Bell publishes journal article

In summer 2014, Dr. Patrice Bell published an article entitled “Design of a Food Chemistry-Themed Course for Nonscience Majors” in the Journal of Chemical Education, which is co-published by the American Chemical Society (ACS) Publications Division and the ACS Division of Chemical Education. This paper (DOI: 10.1021/ed4003404) presented the course curriculum design and highlighted laboratory experiments (designed and adapted) and field trips for a one-semester food chemistry course for nonscience majors. Laboratory assignments were embedded with the general topic curriculum to align a practical experience with learning a scientific concept. This course spanned several facets of chemistry, including organic, physical, solid state, materials, and industrial chemistry. Topics included the scientific method, unit conversion, solution chemistry, crystallization, saturation, radiation and structure of water, lipids, and proteins.

The textbook used for the course was What Einstein Told His Cook: Kitchen Science Explained by Robert L. Wolke. The cover image of the Wolke text (skillet over a Bunsen burner) was the inspiration for the experimental setup for most experiments. The figure collage on the next page shows some experiments. Panel A shows the experimental setup with an aluminum saucepan placed on a tripod above a Bunsen burner. Typical utensils in the saucepan include a high-heat nylon stirring spoon and candy thermometer. Panel B shows the laboratory setup from “Lesson Module 4:
Continued from previous page

Achieving Hard Crack Temperature with a Sugar Solution: Making Lollipops”. The students select their food coloring and flavoring for their sugar solution and pour lollipops on aluminum foil. Panel C shows the laboratory experiment from “Lesson Module 6: Peanut Oil Saturation of a Potato: Pan-frying Potato Chips”. In this picture, a student monitors the frying process. Panel D shows the laboratory experiment from “Lesson Module 9: Coagulation of Egg Proteins: Making an Omelet”. Students have the option of bringing a precooked filling for their omelet; here, a student folds an omelet filled with precooked ham.

Supplemental resources accompanied the published paper, including a course syllabus, lecture slides, laboratory experiments, grocery store scavenger hunts, alternate assignments for field trips, and project presentation guidelines with grading rubric. For more information, access the Journal of Chemical Education.

Top Claw Award winners

Georgia Gwinnett College (GGC) recently presented the newly developed Top Claw Award to eight individuals who go above and beyond to make exceptional contributions in supporting the educational mission of GGC. The winners included three SST faculty: Dr. Evelyn Brannock and Dr. Binh Tran in Information Technology and Dr. Benjamin Shepler in Chemistry.

This was the inaugural presentation of the Top Claw Award and is part of the Grizzly Recognition Program committed to fostering an “attitude of gratitude” through informal and formal recognition.

The award recipients were nominated anonymously by their peers, and the winning candidates demonstrated excellence by consistently going above and beyond the call of duty, actively contributing to the success of the college and his or her department, supporting and reinforcing the values and mission of Georgia Gwinnett College, and exemplifying core values of integrity, excellence, accountability, and respect.

Dr. Awong-Taylor elected ASB VP

GC’s Associate Dean and Professor of Biology Dr. Judy Awong-Taylor was elected Vice President of the Association of Southeastern Biologists (ASB) at the annu-
This spring’s Biology Seminar Series kicked off with a special presentation by GGC students Angela Burrow, Miranda Gulsby, Brandon Seay and Adan Oviedo titled “Frogs, Salamanders, Fish, and Neuroprotective Oils, or How We Spent Our Summer.”

ASB has been promoting biology through research and education for over 75 years and is the largest scientific professional organization in the southeastern United States. This year’s meeting brought in nearly 1000 participants and over 500 presentations. Faculty, graduate students, and undergraduate students presented research from all disciplines of the biological sciences from conservation biology and ecology to ichthyology, herpetology, microbiology, and cell and molecular biology. Researchers also presented work in the Scholarship of Teaching and Learning (SoTL) and scientific pedagogy.

When speaking about the recent ASB meeting and her position as Vice President, Dr. Awong-Taylor thanked her colleagues. “Ricky (Fiorillo) and Chris (Assistant Professor of Biology, Dr. Chris Brown) are both on the Program Committee and did an outstanding job of putting the ASB program together! Kudos also to Ricky for his work on the Executive Committee, Jennell (Assistant Professor of Biology, Dr. Jennell Talley) for her work on the Meritorious Teaching Award Committee, and to the many GGC faculty who served as judges! They were all instrumental in making this meeting one of the most successful that we have had in a long time.”

Dr. William Lutterschmidt, a professor of Biology at Sam Houston State University and Director of the Texas Research Institute for Environmental Studies (T.R.I.E.S.), discussed how habitat choice in snakes may be in part determined by species specific rates of cutaneous water loss.

Dr. William Lutterschmidt, Dr. Ricky Fiorillo, and son Luca Fiorillo

GGC Associate Professor of Biology Peter Sakaris presented a seminar titled “What You Always Wanted to Know About Fish Otoliths but Were Afraid to Ask”. Dr. Sakaris explained how ear bones of fish are used to determine age and the importance of this information to fisheries scientists as they manage fish populations in our state.
Community Events

Georgia sub-regional middle school science bowl

On February 7, 2015, the GGC School of Science and Technology hosted a sub-regional middle school science bowl tournament. This tournament is a highly competitive science education and academic event among teams of high school and middle school students who compete in a fast-paced verbal forum to solve technical problems and answer questions in all branches of science and math. Each team is composed of four students, one alternate student, and a coach.

Regional and national events encourage student involvement in math and science activities of importance to the Department of Energy and the nation. 11 teams of 4 students each participated in the tournament, representing Carrollton Junior High School, Central Middle School, Dean Rusk Middle School, Malcolm Bridge Middle School, Mill Creek Middle School, Wesleyan School, and Woodstock Middle School.

To make it a success, 11 GGC students and 23 GGC faculty members volunteered as moderators, score keepers, judges, timekeepers, and event planners. They worked with science bowl experts Ana Lauer and Donna Mullenaux. The competition was conducted from 10 am to 3 pm. The top three teams were Woodstock Middle School (first place), Wesleyan School (second place), and Malcolm Bridge Middle School (third place). The top two teams moved on to the regional competition held on February 28th, 2015, in Savannah, GA.

Students win award at robotics competition

Physical Education professor Dr. Jeong Dae Lee took a team of elementary and middle school students to compete at the robotics regional tournament RoboMustang First Lego League® Qualifier on December 13, 2014, in Norcross, GA.

Calling themselves “McGinnis Robotics,” the team had two elementary school students (4th graders at Robertson ES, Suwanee) and three middle school students (two 6th and one 7th grader at North Gwinnett MS, Suwanee). The team was a student-led effort in building a working robot and conducting technical research on a real-world problem. Dr. Lee assisted the team by providing guidance on the team’s research, programming, and presentation efforts and by coaching the team’s robot battles.

The competition was a great success since the team finished first and received a “Teamwork Award” at the Creekland FLL Super-Regional (Lawrenceville, GA) on January 17, 2015. Finally, the team advanced to the state-level tournament at UGA on February 7, 2015.
New Additions

Digital Media lab with state-of-the-art equipment

Straight down the first-floor hallway of the newly-completed H Building sits the Digital Media Lab, a state-of-the-art media workshop that opened for business this spring. Inside the lab is a wealth of equipment that includes a 4K TV, two 3D printers, a sound-proof recording booth (aptly dubbed the “Whisper Room”), several Oculus Rift SDK2 virtual reality helmets, and some two dozen high-end Mac workstations loaded with professional media creation software. Visitors to the lab will also see several storage cabinets full of cameras, microphones, lighting equipment, and other professional-level media capturing devices for check-out.

Students and faculty have already started to put the Lab to good use. One of the first projects to come out of the Lab is GGC’s First Fish, which uses the 3D printers to create a tactile picture book for visually impaired children. The project, whose stated goal is to “provide an accessible and inexpensive alternative...to create durable books with images and Braille”, has already yielded at least one successfully printed page from the book Sam’s First Fish by Leonard W. Shortall. The student team of Jessica Bui, Kyle (Timothy) Brooks, Alexander Gonzalez, and Raquel Lawrence, backed by sponsors Dr. Evelyn Brannock and Dr. Robert Lutz, presented their work at the Consortium for Computing Sciences in Colleges Southeast Conference in November 2014. The team advanced to the finals and placed in the top five in the overall competition.

Also completed using the Lab’s equipment was GGC’s entry into the Near-Peer Mentoring Challenge. Sponsored by the Obama administration, the Challenge encourages colleges and universities across the country to submit videos that reach out to high school students to motivate them to pursue higher education. Winning campuses will earn a chance for First Lady Michelle Obama to speak at Commencement.

To meet the Challenge, Dr. Danielle Williams took her Video Production class and Dr. Jennifer Wunder’s Honors students and divided them up into five teams. Each team carried out the entire production process from scratch—including scripts, camerawork, and editing—and assembled their final product using the Lab’s equipment. Dr. Stas Preczewski reviewed each submission and chose the final one to submit to the Challenge.

The Oculus Rift helmets have also been put to use as part of Dr. Sebastien Siva’s Video Game Development course. There, students built immersive virtual reality games using the Unity Game Engine and were showcased as part of STaRS in April.

The lab is open from 1:00 pm to 5:00 pm on Tuesdays and Thursdays for faculty, students, and visitors.

Students working with video in the digital media lab
Student Accomplishments

Exercise Science graduate publishes research, moves on to Masters program at UGA

Derek Randolph, a student of Exercise Science, completed a research program as part of his graduation requirements. His research, presented at the CREATE symposium in December 2014, was published in the 13th volume of the *Undergraduate Research Journal for the Human Sciences*.

The research, titled “Increased Blood Glucose Leads to Increased Sleepiness and Heart Rate Without Change to Autonomic Tone”, indicated that meals that result in a large increase in blood glucose are indeed associated with enhanced feelings of sleepiness and an increase in heart rate. These two hypotheses were confirmed. However, the third hypothesis—that the glucose shift would also result in greater parasympathetic nervous system activity, a possible factor in feelings of sleepiness—was not confirmed. The study was conducted with a counterbalanced no-meal condition.

Derek collaborated with his mentor, Dr. J.B. Crabbe, and some students from Oglethorpe University, most notably Shelby Pressler, a co-author. Further collaboration with Dr. Jeff Pasley opened the doors for him at UGA.

Derek is now in his second semester at UGA studying Exercise Psychology with the guidance of Dr. Patrick O’Connor.

The full research article is available at http://www.kon.org/urc/v13/randolph.html

ACS chapter receives award

Drs. Gillian Rudd and Rebecca Kalman recently returned from the American Chemical Society (ACS) National Meeting in Denver with three of GGC’s ACS student chapter members. The ACS student chapter received a Commendable Student Chapter Award for 2013-2014, making two years in a row that they have won a commendation. This award is a special recognition given on the basis of student clubs’ programs and activities.

For the full press release, please visit http://www.acs.org/content/acs/en/funding-and-awards/awards/community/sachapter.html

IT graduate success story working at Gwinnett Medical Center

Georgia Gwinnett College’s alumnus Steven Spohn graduated in 2014 with a Bachelor’s Degree in Information Technology with a concentration in Software Development. During his time at GGC, Steven worked as an intern at Gwinnett Medical Center (GMC), and his successful performance helped him obtain a full-time job.
When asked to describe his current position, Steven stated “I am currently a desktop technician. My job requires me to provide preventative maintenance and installation services where applicable, utilize imaging software to build and monitor systems within the hospital network, follow established client services guidelines, and demonstrate integrity and honesty in relationships with customers, visitors, and coworkers.”

Steven believes that the instruction received at GGC was essential to succeed in his professional career. He said, “My years at GGC helped prepare me for the real world by allowing me the opportunities to work on many projects that furthered my knowledge base. I took a keen interest to data analytics towards the end of my time at GGC, which sparked my interest to continue with my education.”

He continued, “My internship, which turned into a job with Gwinnett Medical Center, provided me with the business projects that have helped guide me to where I am today. The experience I gained working on a high-volume project allowed me to gain great teamwork skills and great interpersonal communication with technical and non-technical users. My time at my internship further sparked my desire to go further into my educational career by deciding to try to obtain an MBA in either Marketing or Business Analytics, which I will begin sometime next year.”

GGC alumna receives prestigious CDC Fellowship

Georgia Gwinnett College alumna Katie Duneman received the Oak Ridge Institute for Science and Education (ORISE) fellowship from the Center for Disease Control (CDC) in Atlanta, GA. Katie graduated from GGC in June 2011 with a B.S. in Biology.

According to the CDC, the ORISE fellowship enables participants to gain experience in a state-of-the-art laboratory while working on projects of public health significance. Katie is working at the Newborn Screening Branch in the Molecular Quality Improvement Program (MQIP). While state labs routinely conduct newborn screening tests, Katie explained, “MQIP is researching ways to make the newborn screening tests better at detecting mutations and diseases.” Specifically, Katie is working on improving newborn screening tests for Cystic Fibrosis.

While a student at GGC, Katie studied the effects of eco-friendly herbicides on the mortality of Culex pipiens larvae (otherwise known as the common house mosquito) in the laboratory of Dr. Bagie George. After graduating, Katie worked for two years as a lab technician at Merial, an animal health company with a branch in Gainesville, GA. This spring, Katie will graduate from Georgia State University with a Master’s Degree in Cellular and Molecular Physiology.

When asked about her career, Katie said, “Working at the CDC is my dream job!” The ORISE fellowship can be renewed for up to four years, after which Katie may continue working at the CDC in another capacity.

As far as advice she would give current students who also dream of working at the CDC, Katie said, “Keep in touch with your professors and fellow students. They may be the ones that find out about opportunities like this one! Try to get training on a variety of lab equipment while in school or if you get a job as a lab tech somewhere. Work experience can also help you to shine above the other applicants.”
Students Present at ASB Meeting and Emory

Twelve GGC Biology students and 18 faculty authored and co-authored 19 research talks and posters presented at the Association of Southeastern Biologists (ASB) annual meeting this April in Chattanooga, TN. ASB is the leading professional biological organization in the southeast; this year’s meeting had nearly 1000 participants and over 500 poster and oral presentations.

Associate Dean and Professor of Biology Dr. Judy Awong-Taylor attended and, along with Drs. Chris Brown and Ricky Fiorillo, played a large role in organizing this year’s meeting. Dr. Awong-Taylor considered the meeting a great success and said, “I am so very proud of our biology students who attended. They were awesome and did a fantastic job at their talks and posters.” Dr. Ricky Fiorillo added, “I am happy that our students were able to attend. For many of them, this was their first scientific meeting. They worked hard all year and put together some great presentations. I do want to thank GGC’s administrators for providing the critical research lab space that allows our students to work closely with GGC faculty and produce such great quality work.”

Two students who work with Assistant Professor of Biology Dr. Melissa Caspary gave talks at the meeting. Patrick Smallwood spoke about the genetic structure of Louisiana Bluestar populations in Georgia and Angela Burrow spoke about plant pollinator networks of the Coosa Valley prairies. Patrick said his experience giving a talk at the meeting was fantastic and added, “ASB was a great opportunity for me… this was the largest crowd of people I had ever presented to.”

Assistant Professor of Biology Dr. Fengjie Sun attended the meeting with two of his students, Macy Key and Samantha Reese. Macy gave a talk and Samantha presented a poster. In Dr. Sun’s lab, students study the evolution of RNA structures in non-coding RNA molecules. Specifically, the group would like to understand how the phylogenetic signal embedded in RNA secondary structures could be used to reconstruct the evolutionary history of RNA structures. When asked about her experience at the ASB meeting, Macy said, “It was extremely refreshing to be in a place of like-minded individuals who value and love science as much as I do.”

Richard Yi, a student of Assistant Professor of Biology Dr. Chris Brown, in collaboration with Dr. Ricky Fiorillo and physics faculty, Drs. Joseph Ametepe and Sairam Tangirala, presented interdisciplinary research on the strength of snail shells. Richard compared the shell strength of snails stored in alcohol, frozen, and dried to that of live snails. His preliminary results have shown that freezing significantly lowers shell strength. These results will contribute to developing optimal preservation methods for Physa and Pseudosuccinea snails.

Dr. Ricky Fiorillo collaborated with student Luke Cunningham and Dr. Bill Ensign, both of Kennesaw State University, on a poster investigating the abundance of parasites in fishes from streams with varying levels of human impact. Student Betsy Cuenca and Dr. Michael
Drs. Jennell Talley, Rebeka Ward, Christopher Brandon, and Chris Brown presented two talks and a poster about their research on improving the assessment of the Biology program at GGC. “We are trying to better understand in what areas our Biology program is excelling and what areas need tweaking,” explained Dr. Talley. “Our pilot assessment approach weighs less on multiple choice answers, which allow student guessing, and places a stronger value on being able to explain and analyze data using free response questions”.

Dr. Erin Quinlan attended the conference with students Sarah McDonald and Trisha Cordillo. Both presented research on the distribution of an invasive freshwater clam in Georgia and its potential use as a bioindicator of environmental quality.

Dr. James Russell’s students, Amber Kincaid and Victoria Burgess, presented research on the population genetics of a parasitic wasp and the effects of a bacterial parasite on the reproduction of this wasp. Student Jeremy Kitchen collaborated with Dr. James Nolan and Chemistry faculty Dr. Neville Formalu on a project investigating enzyme structure.

Dr. Pratima Darr and Wendy Dustman presented their research on engaging high school and college students in authentic research through the investigation of a deadly pathogen of hibernating bats. The project exposed students to a diversity of laboratory techniques, and student testimonials indicated an appreciation for teamwork and tackling real-world issues. Drs. Rebekah Ward, Wendy Dustman, Lee Kurtz, Julia Shearer, and Pratima Darr presented their work on The Small World Initiative, a project in which students in undergraduate laboratory courses search for new antibiotics by examining products produced by soil microbes.

Earlier this spring, Kaitlin Pearce presented work at Emory University’s STEM Symposium. The work was performed in the laboratories of Assistant Professor of Biology Dr. Rebekah Ward and Associate Professor of Biology Dr. Lee Kurtz. Kaitlin’s presentation was on the bacteria Bacillus megaterium, a bacterium that can uptake and store lead intracellularly. The group is studying the effects of the addition of B. megaterium on soluble lead in soils from contaminated urban gardens. Their studies may eventually contribute to simple methods for enhanced bioremediation.
Activity Trackers in the Classroom

If any Anatomy & Physiology I students have ever wondered about their daily caloric burn or sleep efficiency, at least a handful of them needn’t wonder any longer. Ten students from Dr. Gabrielle Fundaro’s A&P I course had the chance to wear a BodyMedia SenseWear 8.0 Professional Armband for five days while it recorded their skin temperature, heat flux, galvanic skin response (or sweat production), and movement. From these parameters, this high-tech, low-profile gadget was able to calculate several health parameters including energy expenditure, steps taken, sleep efficiency, and time spent performing vigorous activity versus sedentary time.

The SenseWear 8.0 Armbands were purchased through a STEM Mini-Grant in order to research the effects of non-traditional instructional methods on students’ comprehension and retention of challenging concepts in A&P I courses. Dr. Fundaro, Dr. Jeff Pasley, and Dr. Karen Perell-Gerson worked together to write the grant and design this research project to span across three sections of A&P I and examine effects in several content areas. In this case, the armbands were intended to illustrate the relationships between skeletal muscle contraction, energy systems, and homeostasis.

During the five-day wearing period, students posted hypotheses on the BrightSpace (D2L) discussion boards. Hypotheses such as “Heat flux is directly correlated with body temperature during exercise. When a person is more active, the increase in body temperature will also cause more sweat (which carries water to release heat) and heat is transferred out of the body” illustrated that students were on the right track toward understanding homeostatic mechanisms during exercise.

Upon returning to the lab after the five-day period, students were once again asked to use PollEverywhere to anonymously share their experiences wearing the SenseWear 8.0 armbands. All of the responses were positive, and one student was even motivated by the armband, stating, “I would like to see how many calories I actually use...[the armband] made me work a little harder.” Students were able to upload their data so they could produce simple graphs of specific parameters in Excel. Students were instructed to examine correlations between parameters such as galvanic skin response and heat flux, or heat flux and metabolic equivalents (METs) which indicate exercise intensity. Based on this information, students had to determine what homeostatic mechanisms were in place to maintain thermoregulation during exercise and where the heat even comes from in the first place. Additionally, they made predictions about muscle fiber types in their peers based on their knowledge of muscle physiology and metabolism. They were even asked to apply this information to determine dietary recommendations for athletes, further applying these sometimes-abstract concepts to something many of them are familiar with, given that the class contains student athletes.

Ungraded pre- and post-assessments were administered to the students to determine their comprehension of the material. These same assessments were administered to two other sections of A&P I which did not use the SenseWear 8.0 Armbands in order to determine the effect of the lab activities on student comprehension. In addition to formal assessment data, Dr. Fundaro asked for informal feedback from the students regarding their experience performing the lab. Were the armbands truly a learning tool, or simply another gadget? “I thought the armband was a great idea,” said one student, “and seeing the data was nice because we were able to see what we actually did and how hard we worked. The armband was motivation when I was at the gym because I knew I was going to see the results...The lab we had was helpful to actually understand what was going on in our body when we exercise....I see how things relate now.” One student in the class remarked that “...labs are fun when they make sense!”
Georgia Gwinnett College biology professors and students have launched a peer supplemental instruction (PSI) program for students taking introductory biology courses. GGC offers assistance to students outside of the classroom in many forms, such as free tutoring at the Academic Enhancement Center and one-on-one meetings between students and professors. The brand new PSI differs from many other programs in that the instructors are students rather than professors. Victoria Burgess, Janyne Musso, and Danielle Martin have blazed a trail as the first peer instructors of the very successful program.

The PSI program was launched in the Fall of 2014 to help freshmen and sophomores enrolled in BIOL 1107, an introductory course required for biology majors that covers the molecular and cellular aspects of biology. The program continued in the Spring of 2015 and is open to all BIOL 1107 students. According to Associate Professor of Biology Dr. Allison D’Costa, PSI is the first peer supplemental instruction for BIOL 1107 lecture and study skills. Historically, BIOL 1107 has been a challenging class for many students. Peer supplemental instruction has been aimed at improving students’ understanding of fundamental biology and chemistry concepts.

Approximately 30 students have taken advantage of the opportunity to attend PSI sessions throughout the semester. Assistant Professor of Biology Dr. Cindy Achat-Mendes stated that the success of the program is largely due to the exceptional peer instructors who teach the sessions. “Victoria, Janyne, and Danielle have been a valuable resource to the PSI students and the program! They were selected based on performance in BIOL 1107 and other STEM courses, strong communication skills, and an interest in sharing learning and study strategies. Our peer instructors are respected by their junior peers who return for supplemental instruction in BIOL 1107 twice weekly”. Drawing on past experiences as model students, the peer instructors use a variety of active learning techniques such as concept mapping, drawing for optimal understanding, and metacognition. Each peer instructor also underwent best tutoring practices and professional training with Associate Professor of Biology Dr. Latanya Hammonds-Odie and Assistant Professor of Biology Jennifer Hurst-Kennedy.

The peer instructors are on the cusp of graduation. Danielle is working toward attending pharmacy school, Janyne has aspirations of pursuing a doctorate in Biophysics and Victoria plans to further her studies in graduate school and ultimately teach as a college professor of biology. Dr. Achat-Mendes noted that BIOL 1107 professors are currently recruiting peer instructors for Fall 2015 and welcome recommendations. Interested students should contact Drs. Cindy Achat-Mendes, Latanya Hammonds-Odie, Jennifer Hurst-Kennedy, or Allison D’Costa. The PSI program was generously funded by a STEM mini-grant.
Behind the Scenes

Betty Wood, Elizabeth Moale-Himmelein, and Keri Hurney are the fuel that make the SST engine run. These three ladies are rarely seen, but they are a huge part of the school’s success. Have you ever wondered about the person that is behind the emails you receive? Here is a little insight on each of them in their own words:

**Betty Wood:** I was born and raised in the Baltimore, Maryland area and enjoyed my teenage years on the Chesapeake Bay crabbing and boating. I moved to Missouri and went to school there until I married and then moved and raised two great daughters in the Quad Cities, IL area.

I moved to Georgia in 1986. I began working for UGA in 2003 as an Administrative Assistant and enjoyed three years of UGA football ticket access! I gave the tickets up in 2006 to become an Administrative Assistant for this new experiment known as GGC and have loved every minute of it! I love my faculty and staff and every day of my time watching the creation of GGC.

I currently get to pretend I’m mothering all of my SST faculty as well as my two daughters and son-in-laws and seven (soon to be eight) grandchildren! My ideal vacation is walking on the beach with no frills.

**Elizabeth Moale-Himmelein:** I am a Gwinnett County native. I started at GGC as the first freshman class accepted in 2007. While at GGC, I was the Founder and President of GGC Habitat for Humanity (four years), Co-Founder and President of Polis (two years), and Senate Chair of the GGC Student Government Association (one-year term). I was awarded the first Student Leadership award at the inaugural GGC Convocation.

I graduated in the Summer of 2011 and began working at GGC in September 2011. I have been proudly working with GGC ever since and plan to continue for the future.

My primary responsibilities in SST include providing customer service to all who arrive in the office and/or call on the phone. I also purchase or reimburse faculty for any supplies/equipment needed for all disciplines and travel expense reports. I organize all SST related events and maintain the daily office madness.

I have three wonderful rescue cats. I volunteer at Duluth High School Chorus performances, and, in my downtime, I watch “reality” TV shows (my guilty pleasure).

**Keri Hurney:** I was born and raised in Ohio. I completed my Bachelor’s degree in Math Education at Bowling Green State University and my MBA at the University of Toledo. I was an Adjunct Instructor at the University of Toledo for six years where I taught Intro to Microcomputers and Business Statistics. I also worked in data processing at a marketing research firm and as an actuarial assistant for Blue Cross Blue Shield of Ohio.

I moved to Georgia in 2000 and attended UGA for a few graduate courses in Secondary Math Education in order to teach high school math. Then, I worked for Gwinnett County Public Schools for about eight years.

I started at GGC in January 2014 as an Academic Advisor for SST where I am primarily responsible for our master class schedule. I also help with student advising, run reports for the Dean, and do whatever else comes up.

I am married and have three daughters and two grandchildren. What do people not know about me? I was a professional dancer (ballet & contemporary) and taught ballet part time for 20 years.
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