All Wheels on the Tarmac!

For the past year, Dr. James Yates has been likening his upcoming retirement to a plane coming in for a landing. First the flaps came down, then the landing gear was lowered, the rear wheels touched down, and finally, as of May 2011, the plane has landed and Dr. Yates, who has been teaching biology at USC Aiken since 1990, will have disembarked!

Dr. Yates was born in Hammond, Indiana, but grew up in upstate New York, graduating from high school in the small town of Windham. He attended the State University of New York Oneonta on a scholarship, majoring in biology with aspirations of becoming a doctor. But, as so often happens with undergraduate students, his focus changed midstream to invertebrate zoology under the influence of an inspiring professor. Upon graduation, he faced a tough job market and went to work with his father, who was a carpenter and building contractor. He built houses for eight years. Dr. Yates says he can remember the exact moment he decided to go back to school: “It was a day in March, about 35 degrees, the wind was blowing 20 miles per hour, I was standing ankle deep in mud in a ditch laying cement blocks, and I decided graduate school looked like a really good idea!” This time he attended SUNY Albany, earning a Master’s degree in cell biology. He went to work for the New York State Department of Health in Albany, performing basic research on the molecular biology of viruses. When the funding for this position ran out after three years, he moved on to the Research and Development Center at General Electric, where he was to remain for eight years. It was here that he began the work he was to continue for the rest of his career on PCBs (polychlorinated biphenyls) and the environment. In particular, Dr. Yates has studied a group of bacterial genes called the bph cluster which are necessary for breaking down PCBs. During his time at GE, he was encouraged to begin doctoral studies at SUNY Albany. He came to USC Aiken in January 1990 after completing his Ph.D. in molecular genetics in 1988.

(Continued on p. 6)
From The Chair:  

by Dr. William Jackson

The 2010/11 school year has been a busy one for the Department of Biology and Geology. It began in August with the realization that we soon would be losing a longtime member of our faculty – Dr. Yates. Although he had made his intention to retire known in the previous year, his final two semesters seemed to fly by. Soon after the school year began, we initiated a search to find a replacement for the retiring Dr. Yates. That search ended successfully with the hiring of Dr. Nathan Hancock. Dr. Hancock’s tenure at USCA will begin this August and he has, without a doubt, big shoes to fill. Dr. Hancock is completing a Post-doctoral Fellowship at the University of Georgia’s Center for Applied Genetic Technologies where he continued his work on transposon tagging, using the soybean as his model organism. He earned his PhD in Biochemistry from the University of Missouri – Columbia.

Another important event that occurred this past year was the development of a new biology concentration for those pursuing a Bachelor of Science degree. This concentration is in environmental remediation and restoration, which was initially proposed as part of a DOE grant proposal.

We were successful in obtaining funding and will implement the USCA Environmental Remediation and Restoration Program this fall. An important part of this program is the addition of a new faculty member. Our second faculty search of the year was therefore initiated this past semester and culminated in the hiring of Dr. Virginia Shervette, who will be joining our department in January. Dr. Shervette is currently a member of the University of South Carolina’s Arnold School of Public Health where she serves as Director of Student Services and Graduate Director for the Department of Environmental Health Sciences. She earned her PhD from Texas A&M University and conducts research on wetland ecosystem restoration and health.

It is an exciting time for the department, although a bit bittersweet since Dr. Yates will not be back with us to initiate a new class this August. We wish him the best in his retirement and hope that he will not be a stranger to our halls!
Angela Arthur, this year’s Biology Student of the Year, has kept up the family tradition of attending USC Aiken. She is the seventh of nine children--her five older sisters and one brother all preceded her, and a younger brother is set to matriculate in the Fall. One of those sisters, Connie, was also a biology major, and is currently pursuing a Ph.D. in biochemistry at Emory University in Atlanta. Angela came to USCA undecided about her major, but was fluctuating between Education and Biology. Angela says Connie did not try to influence her to go into biology, but at the time she was thinking about the medical profession and she liked how biology “tied in to everything about life,” so her choice was made!

She began working in Dr. Bill Jackson’s lab as a sophomore (also walking in Connie’s footsteps), and became intrigued with the research on HIV going on in the Jackson lab. The project she has been working on involves inducing apoptosis in HIV positive cells, which would cause these cells to die and render the virus unable to replicate. While she has had some success with her experiments, she plans to continue her work this summer, hoping to confirm some preliminary results. Angela’s work has earned her recognition at the South Carolina Academy of Science meetings in both 2010 and 2011. In 2010 her poster was chosen as best poster in the molecular biology, microbiology, cell biology and physiology area and she also won the Horace Byrne Explorers Club Award for outstanding frontier science. And in 2011 her oral presentation was a co-winner in the Cell and Molecular Biology section. She was also a recipient of the prestigious Magellan Award in 2010 which funded her work during the Summer of 2010 and provided necessary supplies.

Angela has been an extraordinarily successful student in the classroom as well as the laboratory, graduating magna cum laude in May with a Bachelor of Science degree. She has been a student worker in the department for three years, helping with the teaching labs and in the departmental office for the past two years. She has been accepted into a Ph.D. program in Biomedical Research at Georgia Health Sciences University (formerly MCG) beginning Fall 2011. We hope to hear great things from another Arthur graduate from our department in the future!
The list of Magellan Scholars in the department just keeps growing! The Magellan Scholar program, begun at USC in 2006, was designed to provide undergraduates an opportunity to explore an area of research in-depth with the help of a faculty mentor. Last Fall, Ryan Stoffko and Kaitlyn Edgington were named Magellan Scholars and this Spring, Virginia Kopald has also received an award. These students all submitted proposals to the program developed with the help of their faculty mentors.

Ryan Stoffko, a senior graduating in May, has completed his project entitled “Diet and Obesity in Rats: The Effects of Sucrose, High Fructose Corn Syrup, and Exercise on Increases in Weight, Body Fat Composition, Triglycerides, and Blood Glucose Levels.” He was mentored by Dr. Michelle Vieyra. His grant proposal asked only for supply money to cover cages, exercise wheels, food, and data analysis kits needed to complete this study. With 36 rats divided into 6 groups, Ryan was able to compare two control groups with two groups given a sucrose solution and two groups given a high fructose corn syrup solution. One group in each set exercised and one group was sedentary. Among the conclusions Ryan reached from his study: on average, rats who consumed HFCS did not gain more weight than those who consumed sucrose; rats who consume sugar have higher triglyceride levels than control rats; access to exercise greatly reduced body fat in all groups. Ryan is grateful for the experience he has gained in writing a competitive grant proposal, working with the rats, presenting his results in both poster and oral presentations, and participating in the South Carolina Academy of Science annual meeting, as well as USC Aiken Research Day. He will begin a Ph.D. program in cancer cell biology at the Albany Medical College this summer.

Kaitlyn Edgington, a sophomore with aspirations of becoming a pediatrician, will begin work on her Magellan project this summer—“The Response of Phytoplankton Communities to Nonpoint Source Pollutant Impact in an Impaired Watershed in Aiken County, SC.” Her award, mentored by Dr. Michele Harmon, includes a summer salary and supply funds. Kaitlyn will be taking water samples in Langley Pond to investigate the nutrient/phycoplankton dynamics in the pond. Her project is part of a larger study being conducted by Dr. Harmon to assess the upper reaches of the Horse Creek Watershed for non-point source pollutant impacts and to identify the most likely sources of these pollutants. She will also be taking classes in Wetlands Ecology and Environmental Health at SRS through South Carolina State University this summer, and is excited to get started working on her Magellan project.

Congratulations to Dr. Allen Dennis, named a Carolina Trustee Professor in 2010. Only one such award is given to the system campuses each year. Faculty eligible for the Professorships are those who hold the rank of tenured full professor and demonstrate a record of teaching excellence as well as a record of outstanding performance in research and in public service activities.
Jeremy Johnson, a graduating senior minoring in Geology, has been named Geology Student of the Year by our geology faculty. Jeremy hails from Graniteville and attended Midland Valley High School. He is what is known as a "non-traditional" student, having returned to finish his degree after a hiatus of eleven years. In the intervening years he married, had two sons, and worked in the cable construction and installation industry. His original goal was to work as a game warden or park ranger, and he still finds that an intriguing possibility. But a job search in today's economy leaves him open to any and all possibilities! Jeremy found that he was a much better student this time around, that he understood the value of an education and didn't procrastinate as he had when younger. He says he would advise students to take 2 or 3 years off to mature before coming to college. The time off made him realize he wanted to do the best he could at his coursework.

Jeremy did his independent research with Dr. Derek Zelmer examining the parasite communities of redbreast sunfish in the Edisto River. He especially enjoyed the field work collecting specimens. He names Herpetology with Dr. Hanlin as his favorite class, particularly the collecting field trips to Highlands, NC and Edisto Island. As you can tell, Jeremy likes to be outside!

A quote from the statement about Jeremy made at the Academic Convocation sums it up: "In class, Jeremy is one of the rare students who is there to learn the material for the sake of learning. He asks pertinent questions because he is trying to get a deeper understanding of the concept being covered, and he asks challenging questions because he places the material within the framework of the information he has learned in other classes. He engages other students with the material as well with his 'let's go for it' attitude. Jeremy was chosen for this award because of his enthusiasm in the pursuit of knowledge in geology and, indeed, of all subject matter pertaining to nature." Congratulations to Jeremy, and thanks to his wife, Dana, and sons Carson and Corben for their support.
Research continued to be an important part of his work here at USC Aiken. He received funding through SCUREF (South Carolina Universities Research and Education Foundation) to work on bioremediation of TCEs (trichloroethylenes), as well as continued funding from GE to work on PCBs. A great many of our alumni came through Dr. Yates’s lab and can attest to the countless hours he spent in the lab each week. At one time there were as many as twelve students working in the lab, but more often the numbers averaged three to five. Jonathan Dennis, brother of our own geology professor Dr. Allen Dennis, served as lab manager for two years during the busiest time. When these funding sources were no longer available, Dr. Yates was able to continue his research through some internal university funds and a three-year grant from the National Institutes of Health (NIH). Every year has found Dr. Yates training a new group of students in the molecular techniques required for this work. Over the years they have discovered such things as how many other kinds of bacteria have the bph cluster, how it can travel from one bacteria to another, and how enzymes are made from the genes. As the students learn the particular techniques involved in analyzing and cloning these genes, they are learning how to do experiments from start to finish and decipher the data they collect.

Dr. Yates’s teaching assignments over the years have included a non-majors biology course, Biological Science I, Cell and Molecular Biology, Genetics, and Biochemistry. In the early years, Genetics and Biochemistry were team-taught with Dr. Garriet Smith. Dr. Yates explains his teaching as another kind of experiment. “In the first years I think I expected too much of the students,” he says. “I didn’t know how to present the difficult concepts, but when something didn’t work, I changed it.” He also notes that the South Carolina students did not know what to make of this professor with the New York accent and bluntness! Over the years he refined his teaching techniques and the student body has changed as well. He has become a fixture in the department who will be greatly missed. He names Cell & Molecular Biology as his favorite class to teach, but has found the most fulfillment in the mentor-apprentice relationship developed working with students one-on-one in the lab. He sums it up, “I enjoy seeing students who have been in the lab for a while start to mature and understand how things work. They can learn things in lab they could never learn in lectures.”

Another place on campus Dr. Yates has been a fixture is at the tennis courts. He has been the assistant tennis coach since 1994 when he helped Ruth Troyer start the tennis program here at USCA. He works with both the men’s and women’s teams during practices and attends most of the matches. USCA Tennis coach Steve Dahm comments, “Dr. Yates has selflessly contributed countless hours to the tennis program with no expectation of reward. Much of our success can be attributed to the time he has spent mentoring the student-athletes on our team.” Dr. Yates is an avid tennis player himself and has played since he was in high school. Another of his passions is woodworking. He enjoys making furniture and small boxes from American hardwoods such as birch, cherry, and walnut. Retirement will allow him more time to spend in the woodworking shop in his garage.

Dr. Yates is married to Distinguished Professor Emeritus Dr. Maggie Riedell, former Dean of the School of Education. We in the department hope that Dr. Riedell will get tired enough of having Dr. Yates home all the time that we will still see him in the Science Building with great regularity!
Fall 2010-Spring 2011 Independent Research

Research continues to be an integral part of our department’s program. Students pursue independent study projects under the tutelage of faculty members. Those pursuing a B.S. degree are required to complete a senior research project. Listed below are projects for Fall 2010 and Spring 2011.

Fall 2010 Senior Research Projects

Summer Al-Emam: The ability of a constructed wetland to improve aquatic conditions for the support of 'Ceriodaphnia dubia'. Advisor: Dr. Michele Harmon.

Tara Beam: Determining whether colubrid snakes use vomeronasal system or olfactory receptor system to detect odors using a y-maze. Advisor: Dr. Michelle Vieyra.


Victoria McMillan: A comparison of blood glucose levels and weight gained in Sprague-Dawley lab rats with access to high fructose corn syrup compared to rats with access to sucrose. Advisor: Dr. Michelle Vieyra.

Hillary Page: A survey of the invertebrate community along a second-order blackwater stream system. Advisor: Mr. Brad Reinhart.


Kathryn Stanford: A survey of the benthic macroinvertebrate community along a second-order stream system located on the Savannah River Site. Advisor: Mr. Brad Reinhart.

Spring 2011 Senior Research Projects

Amel Abdulaziz: Adaptive phenotypic plasticity: testing whether 'Cyperus esculentus' places tubers in high nutrient patches. Advisor: Dr. Andy Dyer.

Renee Albano: Production of recombinant retroviruses in a transient system. Advisor: Dr. William Jackson.

Angela Arthur: Inducement of apoptosis in a tat-dependent manner. Advisor: Dr. William Jackson.

Allyshia Childs: Mapping pGreen TIR. Advisor: Dr. James Yates.

Jessica Cochran: The redistribution of non-native plant species in commercial potting soil: the potential for creating new agricultural pests. Advisor: Dr. Andy Dyer.

Lawanda Dandy: Comparison of grooming behaviors between solitary and social birds in captivity. Advisor: Dr. Michelle Vieyra.

Jena Dowd: Seasonal changes in the parasite fauna of black sea bass from Palmetto Ledge, SC. Advisor: Dr. Derek Zelmer.

Jamie Flores: The redistribution of non-native plant species in commercial potting soil: Identifying possible candidate species for biological control. Advisor: Dr. Andy Dyer.

Carrie Garvin: Peer bonding and maternal interactions between captive bred 'Giraffa camelopardalis'. Advisor: Dr. Michelle Vieyra.

Jeremy Johnson: Short-term changes in parasite communities of 'Lepomis uritus' from the Edisto River. Advisor: Dr. Derek Zelmer.

Gerald Kirk: Insertion of pGEM4A2a.1 and GFP into 'E. Coli' cell. Advisor: Dr. James Yates.

Richard (Ben) Lynn: The toxicity of landscaping products to terrestrial invertebrates. Advisor: Dr. Michele Harmon.

Destiny Murph: Cloning an anti-HIV-1 tat hammerhead ribozyme into a retroviral vector. Advisor: Dr. William Jackson.

Christopher Perry: A comparison of seed longevity and viability of 'A. barbata' from two similar, semi-arid Mediterranean climates. Advisor: Dr. Andy Dyer.

Nakia Pinkney: Effects of dietary sugars and exercise on markers of obesity in rats. Advisor: Dr. Michelle Vieyra.


Steven Scott: Saturated biphenyl uptake in the LS2 strain of 'Burkholdeira xenovarans'. Advisor: Dr. James Yates.

Nicholas Sigwald: Monitoring pollution in Horse Creek in Aiken County, SC. Advisor: Dr. Michele Harmon.


John Strayer: Using dietary sources as possible avenues of bioavailability of metals to non-target organisms in a site polluted by a coal-burning power plant. Advisor: Mr. Brad Reinhart.

Adam Tisdale: Analysis of p1 promoter from the bph cluster. Advisor: Dr. James Yates.

Jalisa Williams: Insertion of pGEM4A2a and GFP into 'E. coli' cells. Advisor: Dr. James Yates.
Virginia Kopald, a senior Bachelor of Interdisciplinary Studies major, also begins her work this summer on her project entitled “An Inquiry into the Possible Existence of Karst in Aiken, Allendale, Barnwell, and Burke Counties.” Mentored by geology professor Dr. William Pirkle, part-time geology instructor and senior geologist with Fugro William Lettis & Associates Dr. Frank Syms, and history instructor Ms. Alexia Helsley, Ginny will be attempting to identify specific areas where depressions have been reported in order to develop a historical basis for the conditions or actual occurrence of karst activity, particularly in the areas that include SRS and Plant Vogtle. She will be reviewing public records for other accounts of surface depressions or subsidence, interviewing and surveying prior residents of the Dunbarton Community who were relocated at the time of the establishment of SRS, and identifying likely depressions and karst activity through available LiDAR and surface topography maps.

Alumni Update Online
Did you know?
You can update your address and let us know what you’ve been doing since graduation online! Just go to http://web.usca.edu/biology/alumni.dot. We’d love to share your news!
2011 SCAS Winners

L-R Dr. William Pirkle, SCAS representative, Dr. William Jackson, Renee Albano, Angela Arthur, Priscilla Simon, Alex Jureka, Dr. Tom Hallman

Students in Dr. William Jackson’s research lab distinguished themselves at the 2011 annual meeting of the South Carolina Academy of Sciences meeting in Orangeburg, SC on April 16th. Renee Albano and Angela Arthur shared the honor of best oral presentation in the Cell & Molecular Biology section, and Priscilla Simon and Alex Jureka’s poster took home best poster in the Cell & Molecular Biology section. Congratulations, Jackson Lab!

Campus Improvements

During the Spring semester, new signs were erected all around campus reflecting the school colors. These signs are a great improvement, with every building identified and way-finding signs located at strategic points to help new students and visitors find their way around campus. A new sidewalk was also added running from the dorms (Pacer Commons and Pacer Crossings) all the way up to the quad with emergency call boxes conveniently located. If you haven't visited campus lately, stop by and see how beautiful it looks!

Faculty Activities (con't from p. 5)


Dr. Karen Wehner, Biology Student of the Year for 1996, earned her Ph.D. in Genetics at Yale University, moved on to Stanford University for a post-doc, and in 2010 became a Research Scientist at Johns Hopkins University School of Medicine. In her "spare time" she is also an adjunct professor at Stevenson University where she teaches Biochemistry and Introduction to Molecular Techniques. And where did this remarkable young woman get her start? Right here in the research labs of Dr. Garriet Smith and Dr. James Yates!

Karen was raised in Augusta, GA and attended Westside High School. Her interest in biology began in her freshman year in high school, and her participation in the Young Scholars Program introduced her to USCA. She learned that she could be actively involved in research here, and the Independent Study Research classes she took were her favorite classes.

"I know that my time at Aiken prepared me for my career. The training I received gave me the confidence to tackle many difficult biological questions and experiments that many of my peers weren’t pre-equipped to deal with," said Dr. Wehner. She worked closely with retiring professor Dr. James Yates and credits him with teaching her the valuable molecular techniques that she still uses and teaches to her own students today. "I’m still finding it hard to believe that Dr. Yates is retiring. As a mentor, he had a lot to do with who I became as a scientist as my time in his lab set the stage for everything I would even dare to attempt in graduate school."

She remembers a coffee mug Dr. Yates used to have that said "Life’s on the edge." "He always used to say that to me when an experiment didn’t work. Just a reminder that when you work on the edge of possibility sometimes things don’t work, so don’t get too worked up about it," she remembers. She also remembers the music he liked to listen to in lab--"Actually over time I came to appreciate it, and I now have ‘Dixie Chicken’ on my lab music playlist, but I haven’t yet tried to convince any of my students to like it!"

Dr. Wehner lives in Baltimore with her husband and their orange tabby cat. When not working in the lab or teaching, they spend time refurbishing a 1935 stone Dutch Colonial home and traveling.