

EVOLUTIONS

A Newsletter of the Department of Biology & Geology

FALL 2004

Volume 3, Issue 1

Alumnus as New Chair**Inside this issue:**

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*Outgoing chair Dr. Allen Dennis with Dr. Jackson*

You may have already read about it in the *Aiken Standard*, *Pacer Times*, or *USC Times*. Our own Dr. William Jackson has made history here at USC Aiken by becoming the first graduate of our school to be named chair of a department. Succeeding Dr. Allen Dennis, who served as chair from 1998-2004, Dr. Jackson began his new duties on July 1st.

Truly a local boy, Bill was born in Johnston and attended Strom Thurman High School before coming to USCA in the Fall of 1979. His interest in biology had been sparked by his 7th grade teacher, Willie Andrews, and he had taken all the biology, chemistry, and physics courses available in high school. He earned a Bachelor of Science degree in Biology from USCA in 1983. Returning to the classroom at Strom Thurman High, he taught biology and physics for seven years, one of the first teachers to obtain alternative certification through the State Department of Education.

He was then accepted into a Ph.D. program at the Medical College of Georgia and earned his Ph.D. in immunology in 1995. Working in the lab of Fred A. Garver, his dissertation project involved an HIV study, researching how to inhibit virus replication in model systems. The next stop on Dr. Jackson's educational journey was the University of Alabama-Birmingham,

where he did post-doctoral work for two years in oncology at the Comprehensive Cancer Center.

Dr. Jackson ended up back at USCA by what he calls "sheer luck". He made a call to Dr. Harold Ornes, who was then chair of the Biology department and discovered there was a position for a part-time instructor and technical assistant. Happy to be returning home, he held that position for two years before being hired in a tenure-track position in 1999. And now, in 2004, having received tenure, Dr. Jackson is serving as chair to some of the very professors who taught him many years ago! Drs. Hugh Hanlin, Harry Shealy, and Garriet Smith all had Jackson in class. Dr. Smith remembers: "He was great—interested, eager to try new techniques. I put him on a project that was just about impossible to do and he made really good progress. He was the first student to get academic credit for research work."

In addition to his duties as chair, Dr. Jackson teaches introductory biology, genetics, virology, and immunology and maintains an active research lab. With funding from a National Institutes of Health grant, he continues research on HIV, involving several undergraduates each semester in the project.



*Jackson Lab—Front (l-r), Erin Walker, Carol Journey, Jaina Patel
Lesley Duffie, Mindy McDonald, Katie Anderson
Back, Dr. Jackson, Connie Arthur, Dr. Michele Harmon, Zach Wilson
Not pictured -Shelley Blackmon*

Important Dates

- Final exams—Dec 8-14
- Dec convocation—Dec 16
- New student orientation & registration—Jan 6-7
- Spring classes begin—Jan 10
- Martin Luther King, Jr. holiday—Jan 17
- Spring break—Mar 7-11

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Student ed: Katie Anderson

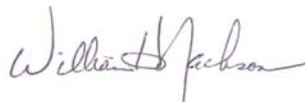
FALL 2004

From the Chair...

Welcome to the third edition of the USCA Department of Biology and Geology newsletter *Evolutions*. Changes are once again shaping our department. After six years, Allen Dennis has stepped down as Chair of the Department. In his place I was named Chair and began my service on July 1, 2004. One of the first orders of business taken up by the department this semester was to hire a new faculty member to replace David Strom, our former physiologist. As you may be aware this has been an ongoing process for several semesters. This past August a new search committee was formed with Allen Dennis as Chair. Over the course of the past three months, 27 applications were reviewed and from this group three individuals were invited for on campus visits. I am pleased to announce that an offer has been made to and accepted by Dr. Michele Harmon, who will be joining

the faculty in August 2005. Michele received her BS in biology from USCA before obtaining her PhD in Environmental Toxicology from the USC School of Public Health. We are pleased to have Michele aboard and you can look forward to hearing more about her in future editions. There are other changes afoot as well. Many of you may remember the gray AO student microscopes that we use in many of our labs – in particular ABIO 101 and 102. These microscopes have been on their last leg for some time! Fortunately, we recently obtained \$36K from the University to replace the entire class set of 24, which through attrition was down to about 20 working microscopes. I am hopeful that the new set will be in place early in the spring 2005 semester. We have also secured funding to purchase new spectrophotometers for the microbiology lab. If you take a tour of the Science Building, you will quickly note that space has become a critical issue. To help alleviate this problem, we are reorganizing several areas to make more efficient use of existing space. For example, the old animal room is now dedicated to tissue culture. We are in the process of creating a microscopy and imaging facility in the adjacent room. In addition, we are renovating two rooms, a former prep room and a research lab, to generate new office space and provide research space for Dr. Harmon.

While it is wonderful to have ample space, it is ultimately the people that make a department successful. I believe that our faculty, staff, and students are second to none. In fact it is the hard work of each of these groups, both in the class and in the lab that make this a great place to work and study. Check the following pages to learn more about some of the people that make the USCA Department of Biology and Geology special. If you are a graduate, we would love to hear from you. Drop us a note using the alumni update form in the newsletter or visit our web site at <http://www.usca.edu/alumni>. Finally, congratulations to our December graduates. We wish you continued success in your future endeavors!



“...it is ultimately the people that make a department successful. I believe that our faculty, staff, and students are second to none.”

Congratulations December Graduates!

Shelley Marie Blackmon
Rebecca Anne Blizzard
Leighann Marie Broske
Philip Brandon Busbee—*cum laude*
Chauncey Neville Gary
Holly Routh Hair
Allison Leigh Newby

Zane Allen Prosser
Marlon Mancini Smith
Melissa Allison Wright Taylor
Erin Rachel Walker
Heather Naomi Wilson



Chauncey Gary, Brandon Busbee, Allison Taylor,
Zane Prosser, Rebecca Blizzard

Focus on Geology



Karin Willoughby, Allen Dennis, Bill Pirkle

While a student may not be able to earn a bachelor's degree in Geological Sciences here at USCA, the Geology part of the Department of Biology and Geology is a thriving discipline. With three full-time faculty members, Dr. Allen Dennis, Dr. William

Pirkle, and Professor Karin Willoughby, and three to four part-time faculty teaching each semester, students can take the first three years of coursework leading to a Bachelor of Science degree in geology, earn a Bachelor of Interdisciplinary Studies with a concentration in geology and some other area of study, earn a minor in geology, or take courses that satisfy general education science or cognate requirements. Physical Geology, Historical Geology, Environmental Earth Science, and Integrated Earth Science all fill up quickly as students seek to fulfill their general education requirement. A recent curriculum change in the School of Education requires that most education majors take Integrated Earth Science. The demand has led to an increase in the number of sections offered, and in fact this Fall Karin Willoughby's entire teaching load consists of four sections of this course.

Professor Willoughby, a Senior Instructor who has been on our campus since 1992, also teaches Environmental Earth Science and Environmental Geomorphology. She earned a B.A. in Geology at the University of Wisconsin-Oshkosh, an M.S. from Virginia Polytechnic Institute and State University, and did advanced coursework at Indiana University, the University of Kansas, and the Smithsonian Institution. She taught one and a half years on our campus in 1981-82 before serving as Curator of Natural Sciences at McKissick Museum on the Columbia Campus for 9 years. She returned to our classrooms in 1992. Karin is coordinator for the Earth Science portions of the South Carolina Science Olympiad. She spearheaded the first efforts for recycling on our campus in 1995-96 and was Co-PI in the 2003-04 academic year on a grant from the Sustainable Universities Initiative, the goal of which project was "to increase awareness about the benefits of recycling and inspire action by the campus community to make conscious, positive choices to preserve the environment." Her husband, Ralph Willoughby, is one of our part-time evening instructors.

Dr. William Pirkle came to USCA as an assistant professor in 1972 after completing M.S. and Ph.D. degrees in geology from the University of North Carolina, Chapel Hill. His B.S. in geology was earned at Emory University. Dr. Pirkle teaches Physical Geology, Environmental Earth Science, and Environmental Hydrogeology. He has served in many capacities over the

years, including Chair of the Division of Natural Sciences and Dean of the College of Sciences. Since 1993 he has also held the position of Director of Sponsored Programs on our campus. He is active and has held offices in such organizations as the Geological Society of America, South Carolina Academy of Science, CSRA Geological Society, and Sigma Xi. His ongoing research involving groundwater studies is done in collaboration with Gary Iverson and David Tuck, both of whom have been part-time geology instructors. He also remains actively involved in research on heavy mineral sand deposits in the Atlantic Coastal Plain. He is PI overseeing a DOE grant providing summer internships for students from USCA and South Carolina State University.

Readers of our newsletter are familiar with Allen Dennis as our former department chair, serving from 1998-2004. But he is first and foremost a geology professor, beginning his teaching career on our campus in 1988 as an instructor and progressing through the ranks to full professor. His B.A. degree in geology from Colgate University was followed by an M.S. and Ph.D. from USC Columbia. Dr. Dennis teaches Physical Geology, Historical Geology, Structural Geology, and Southern Appalachian Geology. Active in the national and local organizations of the Geological Society of America and the CSRA Geological Society, he has served in many offices and was elected Fellow of the GSA in 2002. He served on the GSA SE section Student Research Grant committee from 1995-2004, and was appointed to the National Committee in 2004. In Summer 2004 he led a day of the 4-day International Basement & Tectonics Association field trip across the Southern Appalachians. The IBTA meets once every four years and this was its first meeting in the SE United States in many years. Dr. Dennis's research interests concentrate on mountain building processes and his most recent work, funded by the NSF, has involved eclogite and granulite facies metamorphism of the Carolina arc terrane.

Field work often takes center stage in this discipline. USCA's vans are frequently seen coming and going from the front of our building as students venture out on field trips taking them into the world to learn firsthand about geological formations and environmental processes. Quarries, Hitchcock Woods, water treatment plants, and a favorite trip in downtown Aiken are among the destinations. All three of our faculty members recently returned from the annual meeting of the Carolina Geological Society in Charleston and enjoyed a field trip of their own which included sites at Magnolia Plantation, downtown Charleston, and Hollywood, SC (pictured below).



Diego L. Gil-Agudelo, Coral Reef Ecologist

by Katie Anderson

Diego Gil, born in Costa Rica, lived in Colombia, South America until 2000 when he moved to South Carolina to pursue his Ph.D. degree in Marine Science at the University of South Carolina. Diego became interested in marine science, and more specifically corals, while living in Colombia near a coral reef area in Santa Marta.

While living in Santa Marta, Diego worked for three years as an assistant researcher for the Colombian Coral Reefs Monitoring System Project of INVEMAR (Colombian Institute for Coastal and Marine Research). During this time, he described Dark Spots Disease, a coral condition, and, together with Dr. Jaime Garzón-Ferreira, performed the first study of the incidence and distribution of Dark Spots Disease. He also helped establish and implement SIMAC (Colombian Coral Reef Monitoring System).

In 1997, Diego began his collaboration with USCA's Dr. Garriet Smith on researching the microbiology of coral diseases Dark Spots, White Band, Bacterial Bleaching, and Aspergillosis. After moving to the States in 2000, he began his current research assistantship in the University of South Carolina Aiken's Laboratory of Coral Diseases. His research there includes the identification of coral pathogens and characteristics of the microbial communities associated with corals. Since 2002, Diego has been teaching Microbiology here at USCA. He has also lectured in Genetics and Society, Marine Microbi-

ology, and Introduction to Marine Biology.

In September, Diego successfully defended his dissertation, titled *Microbial Communities Associated with Corals and Changes During Coral Diseases*. He will be awarded his Ph.D. in December and will begin a microbial ecology postdoctorate in the Dept. of Environmental Health at the University of South Carolina in collaboration with Dr. Marjorie Aelion.

In addition to earning his Ph.D., Diego's publications have been featured in the following journals: *Diseases of Aquatic Organisms*, *Coral Health & Diseases*, *Hydrobiologia*, *Bulletin of Marine Science*, *Revista de Biologia Tropical*.



Diego Gil

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://www.usca.edu/biogeology/alumni.asp>. We'd love to share your news!

Lisa Durden, 1997, has just completed her 5th year of teaching biology at Midland Valley High School. She also finished her IMA in Natural Science Education this past May.

Heather Brant, 1998, is Research Coordinator for an analytical environmental toxicology lab at Savannah River Ecology Laboratory and graduated in August '04 from the University of Georgia with a master's degree in environmental toxicology.

Cindy (Hollingshead) Culpepper, 2002, is in her third year of Veterinary School at Mississippi State University. She has worked in a summer research experience program which entails virology/pathology/biology. She says she still misses USCA!

Johnny Liles, 2002, is currently working for one of the largest engineering firms in Atlanta. They have seven offices in five states and specialize in geotechnical engineering, environmental consulting, and materials testing.

Recent Faculty Publications

Nugues MM, **GW Smith**, Rvan Hooionk, M Seabra and R Bak. Algal overgrowth as a trigger for coral disease. *Ecology Letters*: 7: 919-923. 2004

Harvell D, R Aronson, N Baron, J Connell, A Dobson, S Ellner, L Gerber, K Kim, A Kuris, H McCallum, K Lafferty, B McKay, J Porter, M Pascual, **G Smith**, K Sutherland, J Ward. The rising tide of ocean diseases: unsolved problems and research priorities. *Front Ecol Environ*: 2: 375-382, 2004.

Cervino JM, Hayes R, Goreau T, **Smith GW**. Zooxanthellae regulation in Yellow Blotch/Band and other coral diseases contrasted with temperature related bleaching: *in-situ* destruction vs expulsion. *Symbiosis*: 37:63-86, 2004.

Weir, J.R., V. Garrison, **G.W. Smith** and E.A. Shinn. The relationship between gorgonian coral (Cnidaria: Gorgonacea) disease and African dust storms. *Aerobiologia* 20:119-126. 2004

Cervino, JM, RL Hayes, TJ Goreau, SW Polson, SC Polson, RJ Martinez, **GW Smith**. *Vibrio* spp. Infection and elevated temperatures as links to Yellow Blotch/Band disease in the Caribbean. *Appl. Environ. Microbiol.* 40(11): (in press). 2004

Alumni Focus: Renee Hamlet

According to Dr. Hugh Hanlin, 1988 Biology Student of the Year, Renee Hamlet, is one of this department's greatest success stories. "She was very bright, but she also had the most remarkable work ethic of any student I've ever taught," said Hanlin. Raised and educated in public schools right here in Aiken County, she began her work as a biology major in 1985, after earning an associate's degree in technical nursing. Encouraged by Professors Hanlin and Pariyadath (Chemistry) to pursue a career in medicine, she was accepted to the Medical College of Georgia, and graduated with an M.D. degree in 1992. She first did an internship in internal medicine and then served her residency in dermatology, both at the University of Michigan in Ann Arbor, where she

served as a Melanoma Fellow and then Chief Resident. She was certified by the American Board of Dermatology in 1996 and is licensed to practice in Michigan, Florida, Georgia, and South Carolina. She then served as a Lecturer and Interim Residency Program Director in the Dept of Dermatology at Ann Arbor for a year before going into private practice in Alma, Michigan. She



returned to Aiken in 1999 and is in private practice at MedSouth Specialties, P.C. in general, cosmetic, and surgical dermatology. Dr. Hamlet sees all age groups and says she loves meeting and helping patients with their skin care and diseases. She enjoys the variety of dermatology and the visual orientation of the specialty. The biggest challenge facing her is the malpractice insurance crisis in South Carolina with its soaring rates and decreasing reimbursement.

Many of the professors who taught Dr. Hamlet are still with the university. She remembers her premedical courses being taught by Drs. Hanlin, Spooner, Smith, Willbrand, Pariyadath, and Gurr. Dr. Hanlin's regard for her is definitely reciprocated as she remembers him as her mentor and his classes as her favorites.

Fall 2004 Independent Research Projects

Research continues to be an integral part of our department's program. Students pursue independent study projects under the tutelage of faculty members, and those pursuing a B.S. degree are required to complete a senior research project. Listed below are projects for Fall 2004.

Independent Study Projects

Katherine Anderson: *Design and cloning of a hammerhead ribozyme targeted to NL4-3 HIV-1 gene Vif at nucleotide 5154.* Advisor: Dr. William Jackson

Connie Arthur: *Characterization of pCMV-VifFLAG expression.* Advisor: Dr. William Jackson.

Erin Brown: *Soil characterization for structural fill material use.* Advisor: Dr. William Pirkle.

Lesley Duffie: *Synthesis and cloning of HIV-1 Nef 8787 Ribozyme.* Advisor: Dr. William Jackson.

Dwight Jones: *Use of Geographic Information System to develop a digital model of SRS.* Advisor: Dr. Allen Dennis.

Carol Journey: *Characterization of the expression vector pCMV-TatFLAG.* Advisor: Dr. William Jackson.

Jaina Patel: *Design and cloning of anti-HIV hammerhead ribozymes targeted to the Rev ORF.* Advisor: Dr. William Jackson.

Carl Williams: *Culture of cephalopods and introduction to histological technique.* Advisor: Dr. Heather Bennett.

Christina Wilson: *Effects of microbial and phosphate amendments on lead contaminated soil.* Advisor: Dr. Garriet Smith.

Zachary Wilson: *Construction and characterization of a eukaryotic expression vector encoding an HIV-1 Rev/FLAG fusion gene.* Advisor: Dr. William Jackson.

Senior Research Projects

Lee Atkinson: *Lethal combinations of temperature and moisture for chufa tubers.* Advisor: Dr. Andy Dyer.

Patricia Barber: *Competition and resources affect Brassica phenology.* Advisor: Dr. Andy Dyer.

Shelley Blackmon: *Design and cloning of hammerhead ribozyme targeted to HIV-1 Rev.* Advisor: Dr. William Jackson.

Rebecca Blizard: *Resource availability and annual grass performance.* Advisor: Dr. Andy Dyer.

Leighann Broske: *Development of a system to analyze the bph A promoter.* Advisor: Dr. James Yates.

Brandon Busbee: *Introduction of genes into non-enteriobacterial species.* Advisor: Dr. James Yates.

Chauncey Gary: *Seed germination suppression by goatgrass leachate.* Advisor: Dr. Andy Dyer.

Erin Walker: *Cloning of anti-HIV-1 Nef ribozymes.* Advisor: Dr. William Jackson.



Brandon Busbee working in the lab

University of South Carolina Aiken

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ALUMNI UPDATE

We would love to include information in future issues about where our graduates are and what they are doing. Please take a moment to send this form to: EVOLUTIONS, Dept of Biology & Geology, USC Aiken, 471 University Parkway, Aiken, SC 29801, or e-mail the information to carolc@usca.edu.

Name _____ Year graduated _____

Current Address _____

Email address _____

Current position or program of study _____

What news would you like to share with USCA and other former students? _____

You can also update your information online at: <http://www.usca.edu/alumni>

SEMINAR SERIES

In an effort to improve our Friday Seminar Series, we hope to create an endowment that will allow us to enhance our current series. Attending the seminar series is a requirement for our Senior Research students, but the lectures are free and open to the public. The current schedule is available on our website at <http://www.usca.edu/biogen>.

Enclosed is my contribution of \$ _____ (Please make checks payable to the Aiken Partnership with Biology Seminar Fund on the memo line). You can double your gift if you or your spouse is employed by a company having a "Matching Gift Program." Please enclose your company's matching gift form, available from your Human Resources Office.

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