GREETINGS FROM THE CHAIR

Dear Alumni and Friends,

We were pleased this past year to hire biophysical chemist, Dr. Vijay Rangachari; another biochemist, Dr. Anthony Bell, joined us in August. Both are working on disease related research and are featured in this newsletter. Unfortunately, longtime joint faculty member, Dr. Charles Hoyle, died unexpectedly this fall. Charlie was a great friend of our department and collaborated with many of our faculty over the years. David Creed, who knew Charlie longer than any of us, has written a fitting tribute to Charlie for this newsletter.

As you can see from the listing in the newsletter, we had 15 BS, 2 MS, and 6 PhD graduates this past year. As usual, a number of our undergraduate and graduate students received awards and recognition. I want to single out for particular recognition one of our graduating seniors, Jessica Shackleford, who received a prestigious NSF Graduate Fellowship as part of a national competition. Jessica received numerous other awards and honors while an undergraduate at USM, and we are very proud of her.

The department had another very good year of external funding, again bringing in roughly 3.5 million dollars. Of particular note is the NSF Research Experiences for Undergraduates grant which Dr. Jeffrey Evans and I received to support summer research in our department by undergraduate students from other institutions. This program is highlighted later in the newsletter.

Don’t forget about our two events this fall celebrating the 50th anniversary of the founding of our department. First, our department will host the college Hospitality Corner before the Tulane game on October 24, which is also Homecoming. It promises to be a good game. Please stop by and see us. There will be good food and many door prizes. Second, we will be hosting a Medical Alumni Symposium on October 29 in which a cohort of graduates from the mid-90’s will come back and talk about their careers in medicine and veterinary practice. All are welcome to attend; more information can be found on our departmental website. I hope to see you at one or both of these events!

Robert Bateman
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OUR 2008/2009 GRADUATES

Bachelor of Science Degrees:
Ashley Deaton, Christina Edwards, Lakeshia Gibson, Lacey Harris, Phillip Jenkins, Juliya Maslenikova, Lauren MacGowan, Akina Mizowaki, Daniel Murin, Leslie Myrick, Alyssa Robson, Jessica Shackleford, James Shows, Sarah Sullivan, Jimmy Villareal.

Master’s Degrees:
Jun He, Tommie Pittman.

Doctoral Degrees:
Zhicheng Dou, Jolanta Marszalek, Balaraj Menon, Amanda Parker, Jacob Strawbridge, Bing Yu.

ALUMNI NEWS

Christopher Anderson (BS ’95, MD Emory University) recently joined the faculty at Washington University in St. Louis as Assistant Professor of Liver Transplant and Hepatobiliary Surgery. Chris is engaged in research of mechanisms of ischemia and reperfusion as it relates to liver transplant. He is also pursuing some liver cancer-related projects. Chris completed his General Surgery Residency and a two-year research fellowship at Vanderbilt University from 1999-2006 and received transplant surgery training at Washington University from 2006-2008. Chris is married to USM alumna Theresa (BS ’95, MS ’97). The couple has two children, Adeline (7) and Burkitt (4).

Rachell and Chad Booth (PhD ’01 and ’00, respectively) announce the birth of their third child, Delaney Taylor Booth, on May 26, 2009. As of September 2009, Rachell and Chad are tenured, associate professors at Texas State University in San Marcos.

Allison (“Allie”) Levy was born December 29th, 2008 to Kathleen Burns (BS ’97, MD and PhD Baylor College of Medicine) and husband, Michael Levy.

Tricia Coleman (PhD ’04) has

The Booth Family: Rachell holding Delaney, Hunter, Samantha and Chad (l. to r.).

Chris, Theresa, Adeline and Burkitt Anderson.

Kathy Burns and daughter Allie.
been promoted to the position of Medical Advisor at Abbott Labs, a position that is usually held by an employee with a MD. She will move to Stockholm, Sweden shortly and be responsible for the company’s nephrology products in Sweden, Norway, Finland, Denmark, Ireland, the Netherlands and Belgium.

Jin (“Jessie”) He (MS ’08) recently accepted a job as a lab specialist at Virginia Commonwealth University in Richmond, VA.

Sara Johnson (BS ’07) worked as a research assistant at the Research Institute for Children at Children’s Hospital in New Orleans, studying a transcription factor of fetal neuroendocrine tissues and tumors for a year. Since 2008, she is pursuing an MS degree in science education with dual emphasis in biology and chemistry education at USM’s Center for Science and Mathematics Education.

Tommie Pittman (MS ’08) recently incorporated his company, ELUM Scientific. Current projects are the development of biodegradable disposable food ware and industrial packaging, and biodiesel production from algae.

Jay Russell (BS ’01) obtained his PhD degree from Pennsylvania State University this summer. This fall, he joined Dr. Graham Walker’s lab at Massachusetts Institute of Technology to pursue postdoctoral research in microbial genetics.

Harn Cherng Shiue (BS ’99; MD University of Texas Southwestern Medical School at Dallas) completed his internal medicine residency in 2006 at Duke University. He is in his last year of a general cardiology fellowship at Baylor College of Medicine in Houston and will pursue another fellowship in interventional cardiology there.

Paulin Wahjudi (BS ’00; PhD University of Southern California) is currently a postdoctoral researcher at LA Biomedical, where she is immersing herself in mass spectrometric analysis of clinical samples.

Amanda Winters (BS ’04) is in her 6th year of the MD/PhD program at Tulane University in New Orleans. In that time, thanks in part to Hurricane Katrina, she has managed to move 6 times, live in 3 cities, and study at 3 separate institutions! Her PhD project involved the study of a poor-prognosis subtype of pediatric leukemia, mixed lineage leukemia (MLL), particularly the elucidation of the mechanism of toxicity of a new peptide therapy. Amanda successfully defended her dissertation recently and is finishing her last two years of medical school. After graduation, she plans to pursue a career in academic medicine and biomedical research. We love Amanda’s (unsolicited) assessment of her undergraduate education at Southern Miss: “And I still love telling people I came from Southern Miss – they are always so surprised, although they really shouldn’t be! I think our Chemistry/Biochemistry program is a little-known pearl in a state not always credited for its academic achievements!!!”

Doctoral student Shawna Balof was awarded the $10,000 Innovation Award of the Trent-Lott National Center in 2008 for her involvement in the development of pH-responsive ruthenium-based olefin metathesis catalysts that change their solubility profile in the presence of acid and allow easy removal of toxic ruthenium from the product. In 2009, Shawna received the first prize, $10,000 and a trophy, in the Invent Your Own Future competition for Southern Mississippi.

Graduate students, Fei Cai (PhD ’09) and Bing Yu (PhD ’09), had their first child, Zoe, on December 11, 2008. After pursuing research in Dr. Andrew Lowe’s lab, Bing obtained his doctoral degree in May. Fei, who was a member of the Cannon/Heinhorst research group, will officially graduate in December and is starting her postdoctoral stint in Dr. Cheryl Kerfeld’s lab at the University of California Berkeley and the DOE Joint Genome Institute this fall.

Zhicheng Dou (PhD ’09) performed his research in the Cannon/Heinhorst group. He went on three postdoctoral interviews with prestigious labs at the University of Washington in Seattle, the Biomedical Research Institute in Seattle and the University of Michigan. After receiving offers from all three places, Zhicheng chose to join Dr. Vernon Carruthers’ lab at the University of Michigan this spring to study the mechanism of Toxoplasma pathogenesis.

Suzanna Ellzey was chosen as Phi Kappa Phi Emerging Scholar and was awarded a Phi Kappa Phi Study Abroad grant.

Mary Alice Mackey (BS ’07), a doctoral student in the Stevenson lab, spent her summer at the University of California in Davis, where she worked in Professor Alan Balch’s research lab and participated in his X-ray crystallography course. Mary’s graduate studies at Southern Miss are supported by her own NSF Graduate Fellowship.

Balaraj (“Raj”) Menon (PhD ’09) and his wife, Vinitha Muralleedharan (MS ’07, Computer Science), announce the birth of their first child, son Akash Balaraj Menon, on June 11, 2009. Raj graduated in May and will be joining Dr. Ilene Gipson’s lab at Harvard Medical School as a postdoctoral researcher in January, 2010. In the meantime, he is continuing his carboxysome research in the Cannon/Heinhorst lab.

Jessica Shackleford (BS ’09) was awarded one of the prestigious NSF Graduate Fellowships. After a well-deserved
break this summer following her graduation, Jessica is joining Jeff Johnston's lab in the Department of Chemistry at Vanderbilt University to pursue a PhD degree. As an undergraduate student at Southern Miss, Jessica received numerous honors and awards, the most prestigious of which was her national Goldwater scholarship. Jessica’s research career began early, when she joined Dr. Douglas Masterson’s group as a freshman – a step that has prepared her well for a career in chemical research. Jessica spent the summer of 2007 in Dr. Mukund Sibi’s group at the University of South Dakota and worked with prominent organic chemist, Dr. Scott Denmark, at the University of Illinois during the summer of 2008. Clearly, Jessica loves chemical research and is well on her way to becoming a research chemist. We expect to hear of many more accomplishments from Jessica in the future.

DEPARTMENTAL NEWS AND INITIATIVES

ACS Project SEED students Simon (l.), Daniel (m.) and Jonathan (r.) with their mentors, Drs. Masterson (l.), Heinhorst (m.) and Wallace (r.).

Project SEED: The department began offering Project SEED to local high school students during the summer of 2008. This American Chemical Society (ACS) program is designed to encourage high school students to consider careers in the chemical sciences and was selected by the National Science Board (NSB) for the 2009 NSB Public Service Award. Project SEED students conduct research with a faculty mentor for a total of eight weeks during the summer semester and receive a generous stipend. Students who successfully complete the program are then eligible to apply for SEED scholarships administered by the ACS. A total of three high school students have participated in Project SEED; two of those students have come back to USM to pursue their college degrees. The Project SEED coordinator is Douglas Masterson, who has also served as mentor to one of the three students. Drs. Sabine Heinhorst and Karl Wallace served as mentors to students this past summer. The department intends to continue supporting the efforts of Project SEED for the foreseeable future. The Project SEED program at USM is funded by a grant from the ACS Project SEED office with matching funds being provided by the local ACS chapter, the Department of Chemistry and Biochemistry, and the Provost’s office at USM.

Two Great Summers for SURE: Last year, the department began to revive a successful graduate student recruiting initiative from the past, the Summer Undergraduate Research Experience (SURE). During the summer of 2008, undergraduate students from colleges and universities throughout the U.S. were engaged in various research projects at Southern Miss. Maureen Smith, who hails from Albany, NY, must have liked her research experience here; she is a first-year graduate student in our department this fall. Likewise, Evan Roberts from Mayfield, KY decided to return as a graduate student, despite the fact that his car fell victim to one of the infamous torrential downpours in Hattiesburg. We must be doing something right!

The summer 2009 SURE students were supported by an NSF Research Experience for Undergraduates (REU) grant to Drs. Jeffrey Evans and Robert Bateman. We hope that we will be successful again this year in recruiting some of them as graduate students.

Chemistry in the Caribbean: Five students participated in Dr. Alvin Holder’s Study Abroad Course “Natural Products Chemistry in the Caribbean” last winter. The two-week course, now in its second year, covers coordination chemistry, as well as extraction and use of medicinal products from plants that are native to Jamaica. Students also learn first-hand how life and work in the Caribbean are different from those in southern Mississippi.

Mississippi Biophysical Consortium: Investigators using biophysical techniques in the state of Mississippi have formed a user’s consortium to facilitate the sharing of instrumentation and analysis capabilities. Dr. Vijay Rangachari from our department is the newest addition to this consortium. The mission of the Mississippi Biophysical Consortium includes advertisement and sharing of biophysical instrumentation, topical seminars, organizing workshops, and facilitating collaborations and grants (http://biochemistry.umc.edu/MissBiophysConsortium/MissBiophysConsortium.html).

FACULTY AND STAFF NEWS

CAREER Grants Galore: Following in the footsteps of our colleague, Dr. Steven Stevenson, Drs. Douglas Masterson and J. Paige Phillips were each awarded one of the prestigious National Science Foundation CAREER grants this spring. Their accomplishment is testimony to the caliber of scientific research being pursued by our junior faculty and to the quality of our departmental research program. It is
also unprecedented at Southern Miss to have three faculty within one department hold CAREER grants!

Grandbabies Galore:
Dr. David Creed and his wife, Dr. Sherry Bain-Creed, welcomed their first grandchild, Adeline Claire Bain-Creed, who was born Sept. 12, 2008 to parents Ben and Tonya Bain-Creed. Dr. Jeff Evans and wife, Dixie, also became grandparents. On February 5th, 2009 their eldest daughter, Sarah, and husband, David Miller, became parents to John Derek Miller.

Drs. Sabine Heinhorst and Gordon Cannon organized the first ever symposium on microbial protein microcompartmental at the 109th General Meeting of the American Society for Microbiology in Philadelphia this summer. They also received a collaborative NSF grant with colleagues at Williams College in MA and the University of California Berkeley/DOE Joint Genome Institute to study carboxysomes in the marine cyanobacterium *Prochlorococcus*, the phytoplankton species that contributes an estimated 20-50% to primary production in the world’s oceans.

Dr. Alvin Holder visited The University of Trinidad and Tobago this spring to deliver a lecture on new developments in the fight against cancer, as part of the university’s Distinguished Lecture Series. Together with Co-PI, Dr. Robert Bateman, Dr. Holder received an NSF grant that allowed the faculty to expand its major equipment holdings through the purchase of a state-of-the art EPR spectrometer. This summer, Dr. Holder took Southern Miss student Dorothy Horton and a student from Alcorn State University to Argonne National Laboratory, where they synthesized supramolecular complexes for use as photocatalysts. The trip was funded through the Faculty and Student Teams (FaST) program, a joint initiative of the Department of Energy and the NSF that seeks to broaden the research experiences of undergraduate students that belong to traditionally underrepresented groups and encourage them to consider careers in science.

Dr. Yan Ling was unanimously awarded the title Research Assistant Professor by the departmental faculty. Dr. Ling is married to Dr. Yong Zhang. Dr. Vijay Rangachari was awarded a New Investigator Research Grant (NIRG) by the Alzheimer’s Association to characterize the interactions between amyloid-β (Aβ) and human Granulin, proteins that are involved in Alzheimer’s disease and in frontotemporal dementia (FTD), respectively. A study of their interactions may provide insights into mechanisms of Alzheimer’s disease progression.

Dr. Karl Wallace, who co-authored the book “Core Concepts in Supramolecular Chemistry and Nanochemistry” (published in 2007) found out that his book will be translated into Russian.

Mr. Frank Woodruff, General Chemistry Lab Coordinator and the university’s Director of Science Safety, retired after 36 years of service. The department’s going-away bash for Frank, which was held at one of the local restaurants, was an excellent opportunity to catch up with old friends. Pictures, videos and stories of events from the past and of the many practical jokes Frank has played on the rest of us over the years provided great entertainment. To honor Frank’s service, the chemistry lab wing in the Walker Science Building has been re-named the Homer Frank Woodruff Chemistry Teaching Laboratory Wing.

Dr. Yong Zhang earned an Academic Research Enhancement Award (AREA) from the National Institutes of Health (NIH) in his first year as a member of the Southern Miss faculty. As our Chair, Dr. Robert Bateman, pointed out in the Hattiesburg American, “This is particularly noteworthy because he was funded on the first attempt, and because NIH funds few computational chemists.” Dr. Zhang also secured a Southern Miss Summer Faculty Research Grant in 2008 and an Aubrey Keith Lucas and Ella Ginn Lucas Endowment Faculty Excellence Award in 2009. One of the peer-reviewed papers from Dr. Zhang’s group was selected as cover art in the prestigious *Journal of Physical Chemistry Part A*.

NEW FACULTY

Dr. Vijay Rangachari joined our department as an assistant professor in the fall of 2008. He writes: “I was born and raised in the fourth largest metropolis in India, called Chennai (formerly Madras). After my high school, I moved to the second largest one, New Delhi, to pursue my undergraduate study in Chemistry. At that time, I was not aware how New Delhi would shape my career. I ended up doing B.Sc (Honors) in chemistry and M.Sc in organic chemistry from the University of Delhi. After this, I managed to get admitted to India’s top medical university called All India Institute of Medical Sciences (AIIMS) in New Delhi to pursue my Ph.D in Biophysics. I was lucky to get a ‘visiting scientist’ position at Friedrich Schiller University in Jena, Germany, before moving to the Institute of Molecular Biophysics at Florida State University as a postdoctoral fellow. I then moved to the Mayo Clinic in Jacksonville, FL for a second postdoctoral appointment and, later, an assistant professor position. It was here that I became interested in neurodegenerative diseases, particularly Alzheimer’s disease. My research interests broadly include, understanding protein misfolding and aggregation involved in amyloid diseases and structure-based drug designs targeting protein aggregation. My wife, Hema, is an environmental engineer and is taking care of the family at present. We have a four-year old daughter, Ananya, and are expecting a boy in October, 2009.”

Biochemist, Dr. Anthony J. Bell, Jr. is our newest colleague, who joined the faculty this fall. Dr. Bell received his undergraduate education at Millsaps College, obtained his PhD...
degree from New York University and worked as a postdoctoral researcher in Dr. Jack Schostak’s lab at Harvard Medical School. He writes: “As a native of Biloxi, I am very excited to be back in Southern Mississippi and working in such a dynamic and multi-faceted department. I believe that my combination of training in biochemistry and molecular/cell biology provides me with a solid background to develop my research program here at USM. My research interests are focused on developing new methods to improve peptide therapeutics. Peptides have long been sought as drug molecules due to their high specificity, potency and lower toxicological profile. Despite great interest from the pharmaceutical industry and academe, peptides have shown limited use as drug molecules. The dearth of peptide therapeutics is largely attributed to their low oral bioavailability and reduced metabolic stability. My approach, to enhance peptide bioavailability and stability, is based on taking clues from the chemical composition of nonribosomal peptides (NRPs). NRPs are a class of natural products that contain a number of modified and unnatural (i.e. not L-amino acids) residues. Unnatural amino acids supply NRPs with enormous chemical complexity and enhanced bioavailability. Noted therapeutic NRPs are the antibiotics penicillin and bacitracin. My long-term goal is to use a reconstituted E. coli translation system that uses L- and unnatural amino acids as building blocks to isolate NRP-like peptides to treat endothelial disorders (i.e. Sickle Cell Disease and Atherosclerosis). My short-term goal is to establish a set of biophysical criteria between components of the translation system and amino acids to serve as a threshold for translation. A clear set of criteria will provide predictive insight to more rapidly screen unnatural amino acids as potential substrates for translation.

One of Dr. Bell’s research interests: protein synthesis.
together. They were indeed happily married for 33 years until Charlie’s untimely death on September 7, 2009.

After finishing at Northwestern Charlie spent two years as a postdoc with the late Jim Guillet in Toronto and then five years at Armstrong World Industries. These two experiences led to his lifelong interest in polymer photochemistry and photo-polymerization. In 1983 to my surprise and delight, Lon Mathias in Polymer Science (PSC) gave me the exciting news (photochemist’s pun – sorry!) that Charlie was being interviewed for a faculty position at USM! Despite my personal knowledge of his considerable talents, I had nothing directly to do with his being recruited or hired, although Charlie did tell me later that my being at USM as a possible research collaborator was a factor in him accepting the position. Indeed within a few years of his arrival we were able to obtain a nanosecond laser flash photolysis system through an NSF equipment grant and then a major NSF EPSCoR grant, initially entitled ‘Transient Spectroscopy,’ which was ultimately renewed in various forms for twelve years (1987-1999). The young faculty who eventually benefitted directly from this grant included Bob Bateman, the late Rajive Khanna, John Pojman, Joe Whitehead, and Alan Guymon (PSC). In the early years Charlie invited me to participate in his work on photodegradation of polymers. Eventually he suggested that he, Andy Griffin and I pool our talents and work on the photochemistry of liquid crystalline (LC) polymers. Ultimately this became the major research project in my lab. Charlie and Andy’s involvement was invaluable in keeping me research active (and sane!) while I was department Chair from 1987-93.

Charlie Hoyle was one of the most dynamic and talented scientists I had the privilege of working with. His productivity in terms of publications and external funding was outstanding. He mentored numerous PSC and quite a few chemistry (CHE) masters and doctoral graduates, the latter through his joint appointment in CHE. He never forgot the principal responsibility of a Professor is towards his or her students. He went to extraordinary lengths to match his students’ talents with their projects and with their eventual employment outside the university. Social interactions were not forgotten. He and Karen hosted numerous parties for our research groups. Graduations of students were always celebrated! He was generous with his time in helping new faculty members. He cooperated successfully with many different colleagues within and outside of USM. He gave invited seminars and lectures all over the world. He talked enthusiastically about his work in all kinds of places from elementary schools to private companies to Gordon Conferences! He was an extremely kind and modest man, utterly devoted to his family and his work. He managed to achieve great things while being completely transparent and guileless in his dealings with others. I cannot recall him ever saying an unkind word to anyone or doing anything that could remotely be considered devious or underhanded. The foundation of his behavior was his strong Christian faith yet he was not sanctimonious and he never proselytized. He lived his life by the Golden Rule (‘treat others as you would wish to be treated by others’). He had some eccentric yet endearing habits. Misquoting a person’s first name was one. Collecting toy armadillos was another. Not arriving at airports until just before a flight was another. Not filing claims for travel expenses for months or even years was yet another! Anyone who knew him well will recall some ‘Charlieism’ (Hoyleism?)! In many ways he was the quintessential brilliant yet eccentric and loveable professor. I shall miss him terribly and I will not see his like again.