

# GRICE LOGBOOK

A NEWSLETTER OF THE GRICE MARINE LABORATORY AND THE GRADUATE PROGRAM IN MARINE BIOLOGY, COLLEGE OF CHARLESTON

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## UNDERGRADUATE RESEARCHERS IN MARINE BIOLOGY

Eight undergraduate researchers from across the U.S. called the Grice Marine Laboratory their home for ten weeks during the Summer of 2009 as part of the Fort Johnson Summer Undergraduate Research Program. Selected from the largest applicant pool in the program's history, the students conducted independent research under the guidance of mentor scientists



drawn from the five Fort Johnson partners: the College of Charleston's GML, the Marine Biomedical and Environmental Sciences Program of the Medical University of South Carolina, NOAA's Center for Coastal Environmental Health and Biomolecular Research, the National Institute of Standards and Technology, and the Marine Resources Research Institute of the SC Department of Natural Resources. Whether measuring molecules, organisms or populations, the students' research reflected the excitement and the breadth of research in marine biology at Fort Johnson. **Robin Garcia** and **Jace Jensen** tested the impacts of hypoxia on metabolism in crustaceans, but in very different ways. Robin hooked up blue crabs to heart rate monitors, then measured beat frequency and hemolymph lactate under low oxygen conditions, while Jace used NIST's 800 MHz NMR to identify which metabolites change in the tissues of hypoxic shrimp. **Audrey Marrah** tested the sensitivity of mammalian heart, lung and immune cells to the effects of domoic acid, a potent neurotoxin produced by marine diatoms. Using DNA microsatellite markers, **Melody Young** pro-

## JACK DiTULLIO RECEIVES NSF GRANT

**Dr. Jack DiTullio** received a \$1.27M NSF grant for a multi-user, high speed, cell-sorting flow cytometer and sea-going laboratory facility to support research, training, and education in the field of biogeochemical oceanography. The new facility will impact and be used by a variety of researchers from different institutions residing at the Hollings Marine Laboratory (HML). Strong emphasis will be placed on the training of undergraduate and graduate students. A custom-designed laboratory van for shipboard use is being specifically built to house the high-speed cell-sorting instrument and ancillary support equipment. The DiTullio lab will use the equipment to measure cell-specific dimethylsulfoniopropionate (DMSP) levels at sea in taxonomically diverse phytoplankton communities in various oceanographic provinces. In addition, the new state-of-the-art technology will open up exciting new research areas involving the use of various functional probes in phytoplankton physiology and ecology.

## LAB MOVES AND SHUFFLING FISH GENES

**Dr. Ana Zimmerman's** laboratory recently relocated from the downtown College of Charleston campus to the Hollings Marine Laboratory at Fort Johnson. Ana and her students work on a range of projects centered on genes involved in immune responses of bony fishes. A major goal of their work is to better understand the origins of the adaptive (memory) immune system in vertebrates. Fishes are



Dr. Ana Zimmerman

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## In Memoriam

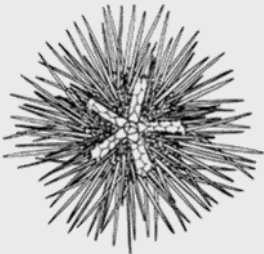
### A Classical Naturalist: Dr. Julian Harrison

**D**r. Julian Harrison, III (1934-2009) was Professor Emeritus of Biology at the College of Charleston and was fascinated with natural history from a young age. He volunteered at the Charleston Museum where he helped with Nature Trailers, an afterschool program for children. He graduated from the College of Charleston in 1956 and completed a Masters degree at Duke University and was awarded a PhD from the University of Notre Dame. In 1963, he became a Biology faculty member at the College of Charleston where he served with distinction until 1994 when he retired but remained an active member of the scientific community.

Long-time faculty member at the College, Chip Biernbaum, remembers his friend and colleague. "The College of Charleston family suffered a major loss Friday, May 15th with the passing of Julian Harrison. A native Charlestonian and alumnus of the College (class of 1956), Julian joined its faculty in 1963. He was a classical naturalist, beginning his scientific exploration of natural areas of the Carolinas as a ten-year-old with the Charleston Museum, serving as an important volunteer at the Museum up through his college years. He focused his research on amphibians and mollusks of the two regions he loved the most, the South Carolina Lowcountry and the southern Blue Ridge Mountains -- he was a highly respected authority on the salamanders of the southeastern United States. A quiet, unassuming, hard-working gentleman, Julian was respected and admired by his fellow faculty members and his many students. He and I were very close, frequently doing research together in a variety of habitats. I learned a great deal from him as he served as a very important friend and mentor while I matured as a faculty member at the CofC. Julian was a very special person and will be sorely missed."



Dr. Julian Harrison, III



### Remembering Clifford R. Davis

**C**lifford Ridgeway Davis, USAF (RET) passed away on December 11th, 2009 from pancreatic cancer. He donated his shell collection to the Grice Marine Laboratory in 2000 for display, enjoyment and study.

During his outstanding military career, he served throughout the world, including Vietnam, Japan, Guam, Hawaii, Turkey and several other locations in the Mediterranean. A decorated combat veteran, his assignments included being a combat medic and a member of the U.S. Air Force Underwater Rescue and Recovery Team during the Vietnam War as well as serving in the Special Operations/Delta Force. He collected all of the shells while enjoying one of his many professional responsibilities, Dive Master and underwater photographer for the USAF from 1966 to 1977. Most of the shells in his collection are from the western Pacific, especially Okinawa.

Mr. Davis also served as the Manager of the College of Charleston Motor Pool from 1992 to 1996. After his retirement, he was an active volunteer in the Charleston community and Veterans Affairs. Grice Marine Laboratory has lost a dear friend and he will be deeply missed.

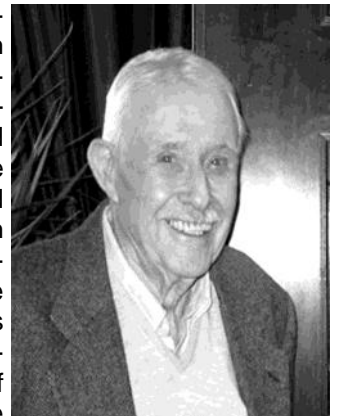


Clifford R. Davis (left)  
and Lab Director  
Lou Burnett (right)

### Remembering Dr. Victor Burrell

**D**r. Victor Burrell, an alumnus and adjunct faculty member of the College of Charleston passed away on December 20, 2009. He researched and published several scientific papers and histories of important South Carolina fisheries. Dr. Burrell played an integral part

in the organization of the South Carolina Fisheries Workers Association and served on the founding board of the South Carolina Aquarium. In 2007, he was chosen as the Fishery Conservationist of the Year by the South Carolina chapter of the American Fisheries Society. A memorial by Dave Bushek was published in the quarterly newsletter of the [National Shellfish Association](#). Vic will be remembered dearly by all who had the pleasure of knowing him.



Dr. Vic Burrell

## GPMB DEGREES

**Courtney Arthur** – Mercury Contamination Along the Eastern Coast of the United States: Assessment of the Diamondback Terrapin, *Malaclemys terrapin*, as an Indicator Species. (Advisor: David Owens)

**Carole Berini** – Pygmy Sperm Whale (*Kogia breviceps*, De Blainville 1838) Strandings Along the Southeastern Coast of the United States: An Analysis of Association with Environmental Factors. (Advisor: Laura Kracker)

**Bryan Danson** – Estimating Reef Fish Reproductive Productivity on Artificial and Natural Reefs Off the Southeastern Atlantic Coast. (Advisor: Marcel Reichert)

**Adair Dempsey** – The Effect of Salinity on Membrane Transport Proteins in the Kidney of a Euryhaline Elasmobranch (*Dasyatis sabina*). (Advisor: Wayne Fitzgibbon)

**Eric Hiltz** – Assessment of the Flounder (*Paralichthys* spp.) Gig Fishery in South Carolina. (Advisor: Marcel Reichert)

**Jessalyn Ierardi** – Quantitative Expression of Target Immune and Stress Response Genes Within the Skin and Kidney Cell Line of the North Atlantic Right Whale, *Eubalaena glacialis*: A Microarray Approach for Health Assessment. (Advisor: Bob Chapman)

**Suzanne Kacenas** – Within - and Between - Population Variation in Egg Mass Characteristics of Two Intertidal Cephalaspidean Mollusc Species, *Melanochlamys diomedea* and *Haminoea vesicula*. (Advisor: Bob Podolsky)

**Lyndsey Lefebvre** – Inshore Spawning of Cobia, *Rachycentron canadum*, in South Carolina. (Advisor: Mike Denson)

**Juliana Miller** – Effects of Temperature on Dimethylsulfoniopropionate Concentration in *Symbiodinium* (Freudenthal 1962). (Advisor: Jack DiTullio)

**Steven O'Connell** – Spatial and Temporal Trends of Perfluorinated Compounds in Juvenile Loggerhead Sea Turtles (*Caretta caretta*) Along the East Coast of the United States. (Advisor: Jennifer Keller)

**Kolo Rathburn** – Molecular Physiology and Stress Responses of the Pacific Whiteleg Shrimp, *Litopenaeus vannamei*: Impacts of Hypoxia and Hypercapnic Hypoxia. (Advisor: Karen Burnett)

## C.O.R.A.L.

The C.O.R.A.L. Program had a banner year in 2009. Over 1000 elementary through high school students experienced marine science through the use of an estuarine touch tank and a plankton microscope workshop.

## STUDENT AWARDS

**Jonathan Craft** was awarded the Link Foundation/Smithsonian Institution Graduate Fellowship and the Lerner-Gray Grant for Marine Science. He also received the Student Presentation Award at the 2010 Benthic Ecology Meeting.

**Daniel Fernandes** received a 2010 Grants In Aid Of Research Program (GIAR) award through the Society for Integrative and Comparative Biology (SICB). He was also awarded The Alan J. Kohn Endowed Fellowship through the Friday Harbor Labs, University of Washington.

**Jason Ferrante** received the Slocum-Lunz Foundation Award and the Graduate School Research Presentation Grant.

**Megan Kent** received a second place Best Poster Award at the 2009 World Aquaculture Society Conference and the first place Student Oral Presentation Award at the triennial Aquaculture 2010. She was also awarded NSF's East Asia and Pacific Summer Institutes Fellowship to study in Taiwan over the summer of 2010.

**Joseph Pollock** received a Sir Keith Murdoch USA to Australia Fellowship. He was also awarded a PhD Mobility Scholarship from the Australian National Network in Marine Science and an International Research Fellowship from James Cook University.

**Jared Ragland** received first place for his Poster Presentation at the Carolinas Chapter of the Society of Environmental Toxicology and Chemistry. He was also awarded the SETAC Student Travel Award.

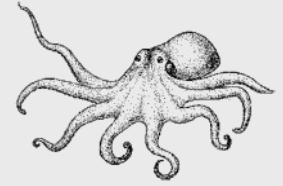
**David Shiffman** was awarded second place for his blog post in an internet-wide science writing competition that resulted in an interview on NPR's 'Pat Morrison Show'.

**Sammi Smoot** was awarded the Patricia Dudley Fellowship at University of Washington, Friday Harbor Laboratories.

**Mark Stratton** received the Slocum-Lunz Foundation award and the Lerner Gray Fund of the American Museum of Natural History award.

**Nora Sturgeon** received two Graduate School Research Presentation Grants to attend the 18th Biennial Meeting of The Society for Marine Mammalogy in Quebec City, QC and The Southeast and Mid-Atlantic Marine Mammal Symposium in Wilmington, NC. She also received a Joanna Deep Water Fellowship for the summer of 2009.

**Drew Wham** received a full scholarship to attend the Summer Institute of Statistical Genetics at the University of Washington.



### Grice Staff

**Lou Burnett**  
GML Director &  
Professor of Biology

**Craig Plante**  
GPMB Director &  
Professor of Biology

**Shelly Brew**  
Administrative Assistant

**Sarah Oakes**  
(formerly Prior)  
Laboratory Manager

**Peter Meier**  
Marine Operations  
Manager

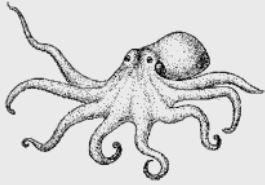
**Dawn Malone**  
Administrative Specialist

**Melannie Richmond**  
Laboratory Assistant

**Tricia Roth**  
Molecular Core Facility  
Manager



C.O.R.A.L. participants



*“Alumni, please let us know what you are up to!”*  
[marine@cofc.edu](mailto:marine@cofc.edu)

*“Grice Logbook is available on-line at [grice.cofc.edu](http://grice.cofc.edu)”*



## Alumni Notes

**David Gillett (2003):** David received his PhD in marine science from The College of William and Mary Virginia Institute of Marine Science. He'll be taking a position as a scientist with the Southern California Coastal Water Research Project in Costa Mesa, CA.

**Adam Herbert (2006):** After graduating from the GPMB, Adam worked for seven months at Wild Birds Unlimited in West Ashley. Riding his bike with a trailer everyday from Folly Beach (14 miles roundtrip) was a challenge in Charleston's heat. Still he champions these reasons why scientists should ride bicycles in lieu of fossil fuel vehicles: opportunities to stop and check the roadkill, scavenge discarded tools and other lost items for field research, reducing their carbon footprint by up to 30%. And finally, combining exercise and transportation into one activity saves money and time. He currently rides public transportation in the Central Valley of Costa Rica only reducing his carbon footprint by 18% but buying local produce brings that back up to 30%. He lives in a cloud forest above Heredia and works in Cariaria, a comparatively hotter and cementier jungle. He just finished his second and half year of teaching 7th-11th grade sciences although his class size is very small ranging from 7-18 students. Recent exceptional projects include Biodiversity Murals, Nature Journaling and Public Art for Clean Rivers. He is returning to the United States in July to teach high school biology and pay back some of his student loans. Ultimately, he plans to return to graduate school for doctoral study in science pedagogy reform.

**Juliana Miller (2009):** Juliana is currently serving 2 years in the United States Peace Corps in the South Pacific nation of Fiji. She is working in the Integrated Environmental Resource Management Program on the island of Ovalau. Juliana lives and works in a village to help educate the community about the sustainability of marine resources. She has organized reef clean up, crown of thorns starfish removals, and giant clam farming. Juliana is also working on a village bakery for income generation, repairing the village community hall, improving village waste management, and setting up an environmental club for the youth. Her service will be complete around June 2011.

## Faculty Notes

**Burnett Lab.** Kolo Rathburn, Karen Burnett and faculty member Ana Zimmerman traveled to Prague, Czech Republic, in June 2009 for a Congress of the International Society of Developmental and Comparative Immunology. The scientists also took a notable side trip to Brno, Czech Republic, to see Gregor Mendel's monastery and its historic pea garden. In other travel news, the whole Burnett lab attended the January 2010 SICB meeting in Seattle, where Nat Johnson and Kolo gave outstanding presentations on their thesis research. After completing his MS degree, Kolo moved to Washington DC as a John A. Knauss Marine Policy Legislative Fellow. He is working on Gulf Coast fisheries issues in the office of Sen. Roger Wicker, R-Miss., who serves on the Oceans Subcommittee of the Senate Commerce Committee. Kristin Hardy joined the lab in September 2009 as an OHH postdoctoral fellow. She is working to document whether hypoxia, hypercapnia and bacterial infection induce a metabolic depression in shrimp, crabs and oysters, a phenomenon which is likely to have widespread impacts on behavior and performance in these species.

**Harold Lab.** There are several research projects concerning systematics, evolution, and ecology of fishes currently in progress in Tony Harold's lab. These projects include Neotropical freshwater fish systematics and ecology (Paul Haywood, MES), marine fish systematics (Iris Kemp, CofC undergrad and Ray Simpson, GPMB), and community ecology of inshore macrofauna (Jacquelyn Wilkie, GPMB). Melannie Richmond and Ray Simpson are both working as curatorial assistants in the Fish and Invertebrate Collection. Rachel Worthen (MES) worked in the collection during the previous two years and has now graduated and moved to Arkansas. Tony's paper with Norma Salcedo, Visiting Assistant Professor, on a new species of characid from the Urubamba drainage of the Andes of Peru has now been published (Ichthyological Exploration of Freshwaters). Chapters on deep-sea stomiiform fishes are to be published this year in the Eastern Central Atlantic Identification Guide for Fishery Purposes.

**Owens Lab.** The recently completed MS thesis by Jesse Alderson (GPMB), a collaboration with the SCDNR in-water sea turtle program, documented sub-lethal injuries in 27% of free-swimming loggerhead



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# RESEARCH COLLOQUIUM 2009

The 13<sup>th</sup> annual GPMB Student Research Colloquium was held on September 25 and 26, 2009. The keynote speakers were **Dr. Erik Sotka**, an Assistant Professor of Biology at the College of Charleston, and **Dr. Geoff Scott**, the Director of the Center for Coastal Environmental Health and Biomolecular Research (NOAA). Sotka, whose research focuses on ecology and evolution of algal-herbivore interactions, larval dispersal of marine organisms, and chemical ecology, gave the opening address titled

“The Emerging Role for Pharmacology in Understanding Marine Plant-Herbivore Interactions” to kick off the event on Friday evening. The keynote talk was followed by a poster session and social in the outdoor classroom adjacent to the Marshlands House. Seventeen students presented posters describing their ongoing or planned thesis research projects.

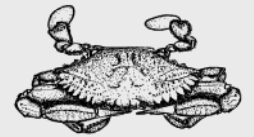
Oral presentations filled much of Saturday, with fifteen students participating this year. The presentations were evaluated for Best Talk Award by a panel of six judges on the basis of: 1) scientific content including introduction of the problem, hypothesis testing, methodologies, and analyses; 2) presentation of the material including delivery, organization, and graphics; and 3) functional understanding of the science as demonstrated in the Q & A period. Peer reviews were also conducted by audience members to facilitate the presenters' oratory development. **Melanie Hedgespeth** received the award this year for her talk, “An Assessment of the Presence and Fate of Pharmaceuticals and Personal Care Products (PPCPs) Found in Treated Wastewater Discharges into Charleston Harbor, South Carolina.” PPCPs include commonly used over-the-counter, prescription, and veterinary drugs, as well as chemicals found in cosmetics and common household products. These chemicals are introduced into

aquatic environments by both non-point and point sources including domestic wastewater treatment plant effluents. Melanie examined monthly chemical concentrations of 21 PPCPs in influent and effluent collected from two local wastewater treatment facilities, as well as six surface water samples

collected from Charleston Harbor. In addition, a select number of compounds were used in an acute exposure screen for potential effects on gill tissue respiration

of the Eastern oyster (*Crassostrea virginica*). Preliminary results suggest clear differences in PPCP concentrations among sewage influent and effluent samples, with concentrations of most PPCPs reduced in effluents in comparison to influents, although this trend was not universal. Monitoring and bioassays will continue into 2010. Final results will be critical in understanding the efficacy of wastewater treatment on PPCPs, the local distribution of PPCPs in estuarine waters, and their potential biological effects.

**Dr. Geoff Scott's** closing address was titled “Additive Effects of Coastal Development and Global Warming: A Recipe for Disaster for Coastal Ecosystem Health.” The colloquium concluded with an award presentation ceremony and lowcountry boil back at the Marshlands House. In addition to Hedgespeth's best talk award, **Joy Gerhard**, **Lindsey Parent**, **Tessa Bricker** and **Ryan Joyce** were recognized for their exemplary posters.



**Keynote speaker Dr. Erik Sotka**



## LAB MOVES AND SHUFFLING FISH GENES

(Continued from page 1)

a critical branch in vertebrate phylogeny to investigate adaptive immunity as the gene segments encoding antibodies appear to have emerged early during the evolutionary history of vertebrates, conceivably during the transition between jawless fishes and jawed animals. Understanding genetic mechanisms underlying antibody diversity can be relevant and applicable to a variety of ecological and biomedical research areas including fish health, aquaculture, vaccine development, and antibody based therapeutics.



Dr. Zimmerman's new laboratory space at Hollings Marine Lab

The Zimmerman lab is currently characterizing genomic diversity of immunoglobulin loci across several bony fishes. In collaboration with the Sanger Center, College of Charleston students **Ben Maddox** and **Krzysztof Romanowski** have utilized Bioinformatics approaches to find and annotate immunoglobulin gene segments in zebrafish.

Their work provides a scaffold upon which syntenic relationships of antibody genes within medaka, three-spine stickleback, and Atlantic cod are being explored. Multi-genome annotations provide a comparative framework upon which functional expression profiles of antibody genes can be characterized.

By aligning genomic sequences with those from cDNA libraries **Alexis Marianes** initiated studies to discern somatic hypermutation and affinity maturation patterns during teleost development. These mechanisms can facilitate a heightened immune

response with recurrent or long lived infections. Another student, **Farah Moustafa** is working on functional expression of an ancient immunoglobulin isotype IgD. Her work indicates alternative splice variants occur which is something not seen in mammalian models. It has long been suspected that extensive numbers of antibody segments and their inversional cluster configurations on chromosomes may poise fishes to have greater potential for immunoglobulin gene shuffling than traditionally studied mice and human models. By combining genomic, functional, and syntenic analyses, the Zimmerman lab has found inversional rearrangements occur in bony fish and may convey a selective advantage for editing self-reactive immunoglobulin receptors.

Recent studies in the lab have also focused on how aberrant chromosomal rearrangements involving antibody signal sequences can also occur in bony fishes. Translocations have been implicated in a variety of cancers and the lab is interested in testing if secondary gene rearrangements in addition to deleting auto-reactive receptors can also ablate aberrant translocations. Immunoglobulin editing processes are important in the overall understanding of how environmental mutagens may affect different fish species and how genetic repositories in different fish can both generate and regulate antibody diversity.

After completing her PhD at Washington State University, Ana did a postdoc in comparative immunology at MIT. She teaches Molecular Biology, Immunology, and seminar courses at the downtown campus.



## FACULTY NOTES CONT.

(Continued from page 4)

sea turtles collected in the southeast U.S. Her work was presented at the International Sea Turtle Symposium in February 2009 in Brisbane, Australia. Elizabeth Broyles (GPMB) is working to complete her MS thesis with adjunct faculty member Bill Roumillat and Erin Levesque from the SC-DNR inshore fisheries team. Her mark-recapture protocol has revealed a huge population of diamondback terrapins in the Ashley River but a significant drop in terrapins in the Wando River in the past 15 years. Dave Owens, Gaëlle Blanvillain and Al Segars (SC-DNR) completed a major endoscopic sex ratio study of loggerhead

sea turtles in Florida Bay in collaboration with scientists from Florida Fish and Wildlife Commission and the National Marine Fisheries Service. Gaëlle will be leaving this summer as she relocates with her husband to Carrboro, NC.

**Plante Lab.** The lab continues to focus on the microbial ecology of marine sediments. Recent work has examined the role of disturbances in structuring benthic bacterial and microalgal communities. Craig Plante presented aspects of this topic at the 11th Symposium on Aquatic Microbial Ecology in Piran, Slovenia, and a portion of this research was published in the Journal of Phycology with co-authors Jennifer Wilkie (CofC) and Sarah Freitag (former REU student). A second focus deals with antimicro-



## UNDERGRAD RESEARCH

(Continued from page 1)

vided evidence for structure in wild red drum populations along the southeastern U.S. coastline, a finding that may impact management of this important species. **Erin O'Reilly** used gene sequencing and electron microscopy to identify phytoplankton isolates from the Patagonian Shelf. Her results contribute to our understanding of fundamental global processes such as carbon and sulfur cycles. **Ryan De Leon** showed that the widely-used mosquito control agent etofenprox is acutely toxic to adult and larval grass shrimp, a finding that may impact management of the pesticide's use in coastal areas. Photosynthetic algae called zooxanthellae are critical to the survival of coral reefs. **Claire Hancock** demonstrated that the pigments of these algae respond to changes in salinity and light, providing new insight into patterns of coral bleaching. **Jake Gantz** gathered evidence that sea urchins consume more when given the opportunity to select between food sources with different toxins; his results further our understanding of algal-herbivore interactions which are so critical to marine ecosystems.

At the end of the ten week program, the young researchers gave oral presentations of their results to the Fort Johnson community of scientists and submitted research papers that were bound together, copied and widely distributed. As in past years of the Program, many students will become coauthors with their research mentors on peer-reviewed publications.

But the summer program wasn't just about research. There were journal clubs, workshops and lectures. There were great field trips as well – the Harbor Trawl, ACE Basin and Beach-walk, to name a few. The friendships created will provide the young researchers



with memories that will be treasured for a lifetime. And many, if not all, will remember the Fort Johnson Undergraduate Summer Research Program as a pivotal experience in their decision to pursue a career in science.

## GRICE WELCOMES NEW POSTDOCTORAL SCHOLARS



**Dr. Tina Bell** joined the Sotka lab as a postdoctoral researcher after she received her Ph.D. in Genetics at the University of Georgia in 2009. Her dissertation focused on the population genetics and evolution of feeding behavior in an herbivorous isopod *Idotea baltica*. Tina will use a newly-funded National Science Foundation grant (to Dr. Erik Sotka) to generate a phylogeny of herbivorous amphipods in the family Ampithoidae. This phylogeny will help clarify the taxonomic uncertainties within this group of important herbivores and to elucidate constraints on feeding preferences for chemically-rich seaweeds. She joined the Sotka lab in the fall of 2009.



Dr. Tina Bell

**Dr. Kristin Hardy** completed her Ph.D. in Marine Biology at the University of North Carolina, Wilmington in 2009. Her dissertation research investigated the effects of diffusion on skeletal muscle metabolism and fiber design in portunid swimming crabs. Her current research will focus on immunologic and metabolic response to anthropogenically induced environmental stressors in marine oysters, shrimps and crabs. She is a [NOAA Oceans and Human Health Postdoctoral Scholar](#) at the Hollings Marine Laboratory and works in the Burnett Lab.



Dr. Kristin Hardy

**Dr. Natasha Sharp** received her Ph.D. in Coastal Sciences at the University of Southern Mississippi in 2009. Her dissertation assessed the effects of lipopolysaccharide (LPS) on blue crab (*Callinectes sapidus*) hemocytes. Her research focused on the changes in hemocyte number as well as cytological effects and differential gene expression. She will further investigate the effects of low dissolved oxygen (hypoxia) and elevated carbon dioxide (hypercapnic hypoxia) on the immune defense of shrimp and blue crab while working as a postdoctoral researcher in the Burnett Lab.



Dr. Natasha Sharp

## GEORGE GRICE, JR. LECTURE

The third annual George Grice, Jr. lecture was given by Dr. Richard Satterlie of the University of North Carolina, Wilmington on March 19, 2010. [Dr. Satterlie](#) spoke on "Neural Control of Jellyfish Swimming: A Tale of Two Georges."



## FACULTY NOTES CONT.

(Continued from page 6)

bial compounds produced by benthic bacteria and will characterize the ecological role of antagonistic interactions among microbes. This work commenced with Amanda Kinney (CofC undergrad) with the help of Tricia Roth, a technician in the Plante lab. Whitney Hook (GPMB) will be taking this work in new directions employing molecular and genomics techniques. Another line of research focuses on microbial biosurfactants. Novel biosurfactant producing bacteria, potentially useful for bioremediation efforts, have been isolated from the guts of local marine deposit feeders. Sammi Smoot (GPMB) and Elizabeth Redpath (CofC) assisted with the work that focused on identifying these new species and optimizing culture conditions to maximize surfactant production.

**Podolsky Lab.** The Podolsky lab resumed work on the evolutionary ecology of marine invertebrate egg masses in Friday Harbor, WA last summer. Bob Podolsky continued work on the susceptibility of embryos to natural levels of UV radiation and the role that maternal transmission of sunscreens play in protecting embryos from UV damage. Sammi Smoot (GPMB) began her graduate work looking at the effects of bioactive products produced by gastropod egg masses. In particular, she is examining differences in antimicrobial activity in egg mass extracts among populations from field sites that vary in microbial activity. Her preliminary research compared bacterial counts and whole egg mass antimicrobial activity from several field sites in Friday Harbor. Daniel Fernandes (GPMB) focused his work on the effects of temperature variability and stress on the early development of the gastropod *Melanochlamys diomedea*. Back home, Daniel's experiments are looking at the effects of atmospheric CO<sub>2</sub> concentrations on the development of the mudsnail *Nassarius obsoletus*. These studies will continue by measuring whether larvae with shells that are weakened as a result are more vulnerable to common predators.

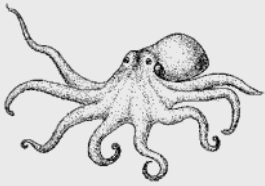
**Sancho Lab.** The fish ecology lab has been busy with multiple research and educational projects. David Shiffman (GPMB) spent the summer and fall collecting tissue samples from sandbar sharks along South Carolina and Virginia coastlines. He is presently doing stable isotope analyses to characterize their trophic ecology. As part of her senior thesis, Carolyne Tarpey morphologically identified hundreds of pelagic fish larvae

collected from shelf waters, and is presently sequencing DNA samples to confirm species identifications with Erik Sotka. Jessica Miller (CofC undergrad) started a new project in collaboration with Javier Escartin, from CNRS-Paris, to characterize the fish community at Lucky Strike hydrothermal vent in the Mid Atlantic Ridge by analyzing photomosaic and video images. Gorka Sancho was the co-pilot along with Leslie Sautter (Dept of Geology) in an oceanographic cruise with 12 undergraduate students to the Gulf Stream as part of the TRANSECT educational program, and is preparing a new 14 day oceanographic cruise with undergraduates from Charleston to Bermuda in collaboration with Sea Education Association for next summer.

**Sotka Lab.** The Sotka lab was awarded a 3-year National Science Foundation grant to generate a molecular phylogeny of herbivorous amphipods in the family Ampithoidae, in collaboration with Alistair Poore (University of New South Wales) and Jim Lowry (Australian Museum of Natural History). This phylogeny will help clarify the taxonomic uncertainties within this group of important herbivores and to elucidate constraints on feeding preferences for chemically-rich seaweeds. Tina Bell joined the Sotka lab as a postdoctoral researcher and will lead the project. Jonathan Craft (GPMB) was awarded a Link Fellowship to work at the Smithsonian Marine Station at Fort Pierce, Florida. Loren Danese worked for six months as a laboratory technician before moving on to a research technician position at MUSC. Jacob Gantz (former REU student) generated data on urchin detoxification of seaweed secondary metabolites that will be published later in 2010. Louise MacKenzie (UNSW) and Sarah Burke (U. Chicago) both visited the lab in the fall of 2009 to generate population genetic data on bryozoans and polychaetes. These efforts to understand the ecological and fisheries impact of an invasive seaweed (*Gracilaria vermiculophylla*) gained local and national press.

## MARINE BIOLOGY GRADUATE STUDENT ASSOCIATION

The Marine Biology Graduate Student Association (MBGSA) sells a variety of items to raise money to support students and provide funding for some social and community-related activities throughout the year. Visit the GML merchandise link [www.cofc.edu/marine/students/mbgsa.html](http://www.cofc.edu/marine/students/mbgsa.html) and click the bottom of the page for more details. Your support is greatly appreciated.



Marine Biology Graduate Student Association merchandise

