

## Welcome to *BIONEWS*



Welcome to the 3<sup>rd</sup> edition of *Bionews*, the annual newsletter of the biology department

of University of Louisiana at Lafayette. This is our attempt to help alumni and friends of the department stay informed about the activities of our faculty and students.

Reviewing our newsletter, you will see this has been an outstanding year for the department. We had 92 undergraduates receive biology degrees! It is exciting to see these recent graduates landing jobs and attending medical, professional, and graduate schools. The faculty and graduate students continue their high levels of research productivity. Some of the news stories we have reprinted describe faculty research occurring from the ocean depths to outer space.

This was also a year of much needed physical plant improvements for our buildings. Among these were a new roof and a new heating/AC system in Billeaud Hall. As you can imagine, major construction work does not mesh well with maintaining research and teaching activities. But now that the work is complete, it is great to have an improved environment for our students and faculty.

We hope you will find this newsletter informative. If you have any questions or comments on its contents, please direct them to me (Leberg@louisiana.edu). Thank you for your interest and support of biology at the University of Louisiana at Lafayette.

Sincerely,



Paul Leberg  
Professor and Head

## Faculty Spotlights:

### Biology research project on International space station

(this story is modified from one originally prepared by Charlie Bier, liftoff photo from NASA)

Dr. Karl Hasenstein is leading an experiment that took place inside the International Space Station. The biology professor is exploring ways plants sense and react to gravity by studying how directional forces affect their growth in a nearly weightless environment.

The project was launched in April from Cape Canaveral Air Force Station



aboard an unmanned Falcon 9 rocket as part of NASA's Space X-3 resupply mission.

The objective of the research is to learn more about how and why plants grow up, while their roots grow down. There are several prevailing theories. One involves starch grains inside cells, called amyloplasts. The tiny grains settle in the direction of gravity and are thought to



provide growth signals. “We don’t know what kind of movement these particles undergo without gravity, without effective gravity,” Hasenstein said.

The experiment attempted to displace the starch grains in *Brassica rapa* (turnip) roots using strong magnetic gradients. The plants were encapsulated in a semi-autonomous device and exposed to powerful magnetic fields. The roots curved away from the magnetic gradient if displacement of the starch grains is the gravity-sensing trigger.

“If we determine it’s not sensitive to the displacement, we know we don’t have to go that way. We can look at something else,” Hasenstein explained. The experiment also will analyze the effect of the magnetic gradient on plant cell membranes and potential gene expression changes.

“The work is important not just for plants, it’s important for everything to understand what small effects gravity has on individual cells,” Hasenstein said.

Hasenstein was able to monitor growth via a live stream of images during the several weeks the project was in space. Since the experiment returned to Earth in May 18<sup>th</sup>, Dr. Hasenstein and his students have been busy conducting additional research on the materials.

## Biologist studies evolution of 'electric organs'

(this story is modified from one originally prepared by Charlie Bier, photo by Amy Windsor)

Dr. James Albert jabs the exposed end of a length of coated wire into the water of a small aquarium, home of a tiny electric eel the size of pocket comb. The associate professor of biology at the University of Louisiana at Lafayette waves the metal prongs around like a wand, sending electrical impulses into a black box at the other end of the wire. The electronic box crackles like an old transistor radio searching for a signal. The popping sounds grow louder as his hand nears the eel, which emits an electric current it uses to stun prey, defend itself, navigate and communicate.

Albert is an ichthyologist, or a scientist who studies fishes—their anatomy, evolution, behavior, genetics, and, during a 10-year research project, their potential for medical advances. His favorites, and the ones he has studied the most, are electric eels, which get their name from their long



body shape and are actually a specialized kind of fish. “Electric fishes are the masters of

electricity,” Albert said. “All animals make electricity. Our brains run on electricity, and every time a muscle contracts, it’s because of electricity. But electric fishes can make more of it, and they have control of it.”

Albert co-authored an article entitled “Genomic Basis for the Convergent Evolution of Electric Organs” that was recently published in Science magazine. The article details the work of a team of 16

scientists who assembled the entire genome—or the complete set of genes—of the electric eel. “Electric fish have a whole new cell type that mammals don’t have, and the question is, ‘What genes were changed to allow the origin of this new cell type?’ ” he said.

Researchers compared a group of electric fish from South America with another group from Africa as part of the study. They discovered that although each group evolved electric organs independently, similar genes were responsible for the development of these organs inside the fish. Electric eels produce electricity using several organs, which contain flat, disc-shaped cells, called electrocytes. The electrocytes, which are stacked atop each other like batteries in a flashlight, generate electricity.

The project, which was led by Dr. Michael Sussman of the University of Wisconsin-Madison, was conducted to provide a genetic blueprint for electric fish that could be used in medical research, according to Albert. “There’s a whole new generation of implantable devices that are coming down the pipeline, pacemakers for example. How are we going to power them? Are we going to put artificial batteries in these devices? Or are we going to be able to use our own metabolic activity to power them? That’s what an electric fish does. It has modified muscles that generate electricity.”

As the project’s only anatomist, Albert’s work included dissecting the electric organs, spinal cords, brains, kidneys, skin and other tissue to help ascertain the genetic profiles of the electric fishes. His main interest in the project, he says, was less biomedical than learning more about evolutionary history. “What I really wanted was the genome of the electric eel, to understand the evolution of electric fish.”

Learn more about "[Genomic Basis for the Convergent Evolution of Electric Organs](#)" on Science magazine’s website.

## Professor leads expedition to study underwater habitat, sea life

(this story is modified from one originally prepared by Charlie Bier)



Dr. Scott France, an associate professor of biology, led a scientific expedition to explore a series of underwater mountains and canyons off the coast of Cape Cod. He and other researchers studied the New England Seamount chain, which extends about 700

miles to the southeast and consists of more than 30 volcanic peaks. The underwater mountains are dotted with holes and tunnels that provide habitat for a range of species, but are largely unexplored. It is the largest seamount chain in the North Atlantic.

The expedition was carried out to map underwater topography and to study underwater geological features, marine biology and ecosystems. The National Oceanic and Atmospheric Administration funded the expedition, which began in August and ended in October.

France, a marine biologist and oceanographer, worked aboard the *Okeanos Explorer*. The 225-foot-long ship is used for NOAA exploration. It’s outfitted with a sonar mapping system and carries a submersible, remotely operated vehicle that can explore underwater terrain thousands of meters deep. The ROV, which is tethered to the *Explorer* via a long fiber-optic cable, transmits operator commands, video and

electrical power. It also captures and transmits high-definition video in real time.

“Some of the things you see are jaw-dropping. You feel lucky, because some of the places have never been seen before,” said France in a recent interview. He has participated in similar expeditions in the British Virgin Islands and Hawaii.

France was one of two scientists who guided the underwater vehicle’s movements, based on input from other scientists. He led the biological exploration, while a marine geologist from Oregon State University led the geological exploration. France likens his role to that of a ground controller communicating with astronauts. “We’re the conduit between the onshore scientists and what’s happening at sea.”

Video, photos and oceanographic data, such as temperature and depth, were live-streamed to a team of scientists. Some of the scientists were stationed at a command center at the University of Rhode Island. Others accessed video streams from universities across the United States.

France also served as a virtual tour guide for the public, including science students, who could access interactive video feeds and log on to chat rooms at the expedition web site. “Part of the overall goal of this expedition is to get the public more engaged in understanding the oceans, and to get children excited about science,” he said. France said some of his students at the University accessed live streams for classroom and lab study.

Corals and sponges that grow in abundance in the underwater canyons are of particular interest to France. Stronger currents are funneled through the compressed, V-shaped spaces, scrubbing away soft sediments such as mud, sand, silt and clay. What remains are harder surfaces, such as steep-sided walls, ridges, rocks and boulders to which coral attaches.

One biological objective of the expedition was focused on how fish use the coral ecosystems for habitat, including as spots to lay eggs and to “hide out” from predators. “The places we’re targeting have really steep cliffs and rugged topography where we expect coral communities, and, as scientists, we’re trying to understand what fish associate with corals.”

“Biodiversity is a major interest, essentially why are there so many species in the deep sea,” France said. “There’s no sunlight, temperatures are very cold, and there’s very little food. So my interest is: Why is there so much life down there, and, in terms of corals, how many species are down there?”

[Learn more about the expedition “Our Deepwater Backyard: Exploring Atlantic Canyons and Seamounts 2014.”](#)

## Dr. Beth Stauffer joins the faculty



Our newest faculty member, Dr. Beth Stauffer, joined the department in January 2015. She obtained a Ph.D. in marine environmental biology from the University of Southern California and completed postdoctoral fellowships at Columbia University and the US EPA. Her research interests include phytoplankton ecology, especially as related to harmful algal blooms and hypoxic zones. She is interested in the intersection of human activities and development with the natural coastal environment and with the health and sustainability of aquatic ecosystems. During the coming year she will be setting up her research program and developing courses. Welcome Beth!

## Faculty Research

In 2014, Biology faculty reported authorship on over 54 scholarly articles, reports, and book chapters. Here is a small sample of this outstanding work. Names of Biology faculty, students, former students, and staff are in bold.

Ackleh, A., S. Delcambre, K.L. Sutton, and **D.G. Ennis**. 2014. A Structured Mathematical Model for Spread of *Mycobacterium marinum*: Foundations for a Numerical Approximation Scheme. Journal of Mathematics, Biosciences and Engineering 11:679-721

**Baeza, J.A., R.T. Bauer**, J. Okuno, and M. Thiel 2014. Molecular phylogeny of hinge-beak shrimps (Decapoda: Caridea: Rhynchocinetes and *Cinetorhynchus*) and allies: a formal test of familiar and generic monophyly using a multilocus phylogeny. Zoological Journal of the Linnean Society.172:426–450

**Bracken-Grissom, H. D.**, S. Ahyong, R. Wilkinson, C. Schweitzer, S. Ahyong, F. Palero, M. Tsang, K-H. Chu, **J.W. Martin**, R. M. Feldmann, M. Bendall, **D. L. Felder, R. Robles**, D. Kim, T-Y. Chan, and K. A. Crandall. 2014. The Emergence of the Lobsters: Phylogenetic Relationships, Morphological Evolution and Divergence Time Comparisons of an Ancient Group (Decapoda: Achelata, Astacidea, Glypheidea, Polychelida). Systematic Biology 63:457-479

Cao, J., J. Chen, J. Wang, **P. Klerks, P.** and **L. Xie**. 2014. Effects of sodium fluoride on MAPKs signaling pathway in the gills of a freshwater teleost, *Cyprinus carpio*. Aquatic Toxicology 152:164-172



**Cazan, A.M. and P.L. Klerks**. 2014. Evidence of maternal copper and cadmium transfer in two live-bearing fish species. Ecotoxicology 23:1774-1783  
*Alfy Cazan, recent doctoral graduate, in the field*

**Felder, D., B. Thoma, W. Schmidt. S. Self-Krayesky, A. Chistoserdov, H. Bracken-Grissom and S. Fredericq**. 2014. Seaweeds and decapod crustaceans on Gulf deep banks after the Macondo oil spill. Bioscience 64:808-819

Gallant, J. R., L. L. Traeger, J. D. Volkening, H. Moffett, Po-Hao Chen, C. D. Novina, R. Anand, G. B. Wells, M. Pinch, R. Gueth, G. A. Unguez, **J. S. Albert**, H. H. Zakon, M. J. Samanta, and M. R. Sussman. Genomic Basis for the Convergent Evolution of Electric Organs. Science 344:1522-1525

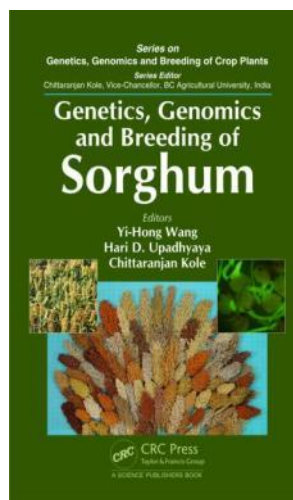
Matamoros, W. A., C. D. McMahan, P. Chakrabarty and **J. S. Albert**. Derivation of the freshwater fish fauna of Central America revisited: Myers's hypothesis in the 21st Century. Cladistics 2104: 1-12

Morgan, S.G., J.L. Fisher, S.T. McAfee, J.L. Largier, S.H. Miller, M.M. Sheridan, and **J.E. Neigel**. 2014. Transport of crustacean larvae between a low-inflow estuary and coastal waters. Estuaries and Coasts. 37:1269-1283

**Pante E.**, J. Abdelkrim, **A. Viricel**, D. Gey, **S.C. France**, M.C. Boisselier and S. Samadi. 2014. Use of RAD sequencing for delimiting species. Heredity online early pub doi:10.1038/hdy.2014.105

- Pesacreta, T.C.** and **M. Purpera.** 2014. Light microscopy survey of extant gymnosperm root protophloem, and comparison with basal angiosperms. *Botany* 92:388-401
- Prada, C., M.B. DeBiasse, **J.E. Neigel, B. Yednock, J.L. Stake**, Z.H. Forsman, I.B. Baums, M.E. Hellberg. 2014. Genetic species delineation among branching Caribbean Porites corals. *Coral Reefs* 33:1019-1030
- Roxo, F. F., **J. S. Albert**, G. S. C. Silva, C. H. Zawadzki, F. Foresti, and C. Oliveira. Molecular Phylogeny and Biogeographic History of the Armored Neotropical Catfish Subfamilies Hypoptomatinae, Neoplecostominae and Otothyriinae (Siluriformes: Loricariidae). *PLOS ONE* 9: e105564
- Sauvage, T.**, M.J. Wynne, V.J. Paul and **S. Fredericq.** 2014. Morphological and molecular clarification of the enigmatic *Caulerpa floridana* W.R. Taylor (Chlorophyta, Bryopsidales) from the Dry Tortugas, Florida. *European Journal of Phycology* 49: 370-383
- Smith, K.M.**, M.E. Maragnoli, P.M. Phull, K.M. Tran, L. Choubey, F.M. Vaccarino. 2014. Fgfr1 inactivation in the mouse telencephalon results in impaired maturation of interneurons expressing parvalbumin. *PLoS One*. 2014 Aug 12;9(8):e103696
- Teboh-Ewungkem, M.I., Mohammed-Awel, J., Baliraine, F.N., **Duke-Sylvester, S.M.** 2014. The effects of intermittent preventive Treatment on Antimalarial Drug Resistance spread in areas with population movement. *Malaria Journal* 13:428
- Thoma, B. P.**, D. Guinot, and **D. L. Felder.** 2014. Evolutionary relationships among American mud crabs (Crustacea: Decapoda: Brachyura: Xanthoidea) inferred from nuclear and mitochondrial markers, with comments on adult morphology. *Zoological Journal of the Linnean Society* 170:86–109
- Walter, S.T.**, J.J. Dindo, **P.L. Leberg**, and J. Karubian. 2014. Factors influencing Brown Pelican (*Pelecanus occidentalis*) foraging movement patterns during the breeding season. *Canadian Journal of Zoology* 92:885-891
- Yednock, B.K.** and **J. E. Neigel.** 2014. Detecting Selection in the Blue Crab, *Callinectes sapidus*, Using DNA Sequence Data from Multiple Nuclear Protein-Coding Genes. *PLoS ONE* 9(6)
- Yednock, B.K.** and **J.E. Neigel** 2014. An investigation of genetic population structure in blue crabs, *Callinectes sapidus*, using nuclear gene sequences. *Marine Biology*. 161:871-886

**New Book edited by Dr. Wang**  
(this text and image are from Amazon.com)



*Genetics, Genomics and Breeding of Sorghum* edited by **Yi Hong Wang**, HD Upadhyaya, and C. Kole. 2014. Taylor & Francis/CRC Press. ISBN: 978-1-48221-008-8. 344p.

Sorghum is one of the hardiest crop plants in modern agriculture and also one of the most versatile. Its seeds provide calorie for food and feed, stalks for building and industrial materials and its juice for syrup. This book provides an in-depth review of the cutting-edge knowledge in sorghum genetics and its applications in sorghum breeding. Each chapter is authored by specialists in their fields to report the latest trends and findings. The book showcases the definitive value of

sorghum as a model system to study the genetic basis of crop productivity and stress tolerance and will provide a foundation for future studies in sorghum genetics, genomics, and breeding.

## Newly Funded Projects

In 2014, Biology faculty were principal or co-principal investigators on over three million dollars of new funding for research and student training. Some of the larger awards are presented below.

Ben Blundell, **Joseph Neigel**, Arun Lakhota, Ryan Benton, and Raju Gottumukkala. National Science Foundation, CC\*IIE Networking Infrastructure: Cyberinfrastructure - Creation of Science DMZ at UL Lafayette, \$ 491,513

Prosanta Chakrabarty and **James Albert**. National Science Foundation, Not so Fast - Historical biogeography of freshwater fishes in Central America and the Greater Antilles \$ 781,182

**Paul Klerks** and **Paul Leberg**, Louisiana Board of Regents. Recruitment of superior graduate students in environmental and evolutionary biology for 2014. \$112,000

Joshua Lawler, John Mazluff, David Cimprich and **Paul Leberg**. US Department of Defense. Sources and Sinks: Elucidating Mechanisms, Documenting Patterns, and Forecasting. \$374,500

**Paul Leberg**. Louisiana Coastal Protection and Restoration Authority's coastal science assistantship program. Evaluation of Maximum Entropy Models for Assessing the Restoration Scenarios Influence on Coastal Wildlife Populations. \$75,000

**Susan Mopper**, Coypu Foundation, Effects of Invasive plant on insect pollinators. \$55,000

Peter A. Sheppard, Kathleen Lopez, **Pegge Alciatore**, and Patricia W. Beaulieu. National Science Foundation, Strengthening Teachers Education through Math & Science Scholars. \$1,193,309

**Scott Duke-Sylvester** and Jenneke Visser. The Water Institute of the Gulf. Basin-Wide Model Development for the LCA Mississippi River Hydrodynamic and Delta Management Study. \$89,697

## DEPARTMENT ROUNDUP: NEWS AND NUGGETS FROM INSIDE THE BIOLOGY DEPARTMENT

Dr. **Ray Bauer**, emeritus faculty member,



was awarded the Fulbright-Brazil Scientific Mobility Program Distinguished Chair Award. The award provides funds for travel to and within Brazil, research funds, living expenses, and a

stipend. These Distinguished Chairs are highly competitive, and this award represents a well deserved honor for Dr. Bauer.

**Lewis Deaton** received the Dr. Leon Lahaye Endowed Faculty Development award.

**Paul Klerks** received the Ray Authement College of Sciences 2014 Outstanding Professor Award.

**Pegge Alciatore, Penny Antley, Bruce Felgenhauer, Patricia Mire-Watson, Kyle Patton, and Sherry Krayesky** all won awards from the University as Outstanding Advisors.

**Paul Klerks** received a Chinese Academy of Sciences (CAS) Visiting Professorship for Senior International Scientists for summer 2014, CAS Institute of Applied Ecology.

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### **Board of Regent Professorships awarded to four faculty in recognition of their outstanding contributions**

This year, faculty awarded these three-year professorships included:

**Bruce Felgenhauer**—Dr. Glynn Granger/BoRSF Professorship in Pre-Med

**Karl Hasenstein**— BOR professorship SLEMCO/LEQSF Regents Professorship in Science II

**Suzanne Fredericq**—Freeport/McMoRan/BoRSF Professorship for Coastal Biodiversity in Research Development

**Paul Klerks**—Harold & Adele Comeaux/BoRSF Professorship in Biology



### **Dr. Alan DeRamus Retires**

A long time member of the Department of Renewable Resources, Dr DeRamus joined the Biology faculty in 2012. With over 32 years of distinguished service to the University as an

educator, researcher, and director the University's ag auxillary units, Dr. DeRamus' retirement is well deserved.

### **Your Gifts Make A Difference!**

Donations to the Biology Department's University of Louisiana at Lafayette Foundation fund allow us to make investments in new research directions and student education programs that are difficult to fund through our modest operating budget.

Gifts can be made online by visiting: <http://ullafayette.kintera.org/sciences>

At the bottom of the page, enter "BIOLOGY DEPARTMENT" in the "GIFT DETAILS" box.

Contributions to our foundation fund can also be made by sending a check, made out to **Biology Department Fund ULL Foundation**, to the foundation. Their address is:

UL Lafayette Foundation  
P.O. Box 44290  
Lafayette, LA 70504-4290

Thank you for any gift you provide supporting the department's activities.



## 92 Undergraduates Earn Biology Degrees in 2014!

Abron, Robigail  
Abshire, Jean-Paul  
Amador, Ana Maria  
Anyama, Boris  
Arabie, Daniel  
Atkins, Jade  
Aymond, Brandt  
Ballard, Matthew Victor  
Barnett, Lauren  
Begnaud, Chelsea L  
Bishop, Taylor Noelle  
Bodiford, Steven  
Book, Anna Beth  
Breau, Garrett Wade  
Brennan, Maeve  
Brockmann, Melissa  
Broussard, Ashley  
Brown, Albre'  
Bux, Amber  
Clause, Emily Claire  
Clements, Shauna Michelle  
Cooley, Sarah  
Darbonne, Royce Benjamin  
Dardar Jr, Basile Joseph  
Decoux, Amanda Michelle  
Dendy, Victoria Rose  
Deslatte, Kimberly  
Dinh, Nhi-Lyly  
Dinh, Raymond Phi  
Ducharme, Jennifer Anne  
Duhon, Jillian Elizabeth  
Elkhansa, Abbie Angelina  
Frady, Kristine Kay  
Franco, Marco  
Fruge, Alexandra Elise  
Gardiner, William Winston  
Gary, Sean  
Gauthier, Andrew  
Gerace, Laura Marie  
Gibson, William James  
Goulas, Emilee  
Granger, Stephen Glenn  
Graziano, Allyson  
Guidry, Carrie Elaine  
Guidry, Lindsey  
Guillory, Kacey Felice

Hanks, Justin Gerhard  
Hathorn, Destiny  
Henneman, Taylor  
Hicks, Matt Thomas  
Hill, Katherine  
Ho, Vu  
Hoard, Brandon  
Holland, Megan  
Hughes, Claire Catherine  
Jones, Lori Angelle  
Lalonde, Gregory Scott  
Langlinais, Kristy Ann  
LeBlanc, Brody James  
Lejeune, Kristen Ellen  
Lormand, Paige  
Louviere, Chase Michael  
Luong, Vy  
Mabee, Christopher Robert  
Mcatee, Midori Alexandra  
McClendon, Hunter Bailey  
McDonald, Hannah  
McLemore, Meagan Lyn  
Miguez, Summer  
Monceaux, Timothy Scott  
Muse, Lindy  
Mustapha, Sara Ali  
Nguyen, Tan Le  
Olivier, Alexandra  
Onyenekwu, Chukwuemeka  
Phiyo, Joonho  
Rivers, Madelyn  
Roberts, Jeremy Drake  
Sawvel, Baxter David  
Schexnayder, Raven  
Shank, Taylor Houston  
Spartz, Shelby Grace  
Sullivan, Ashley Nicole  
Swati, Tariq  
Thomas, Courtney Latrelle  
Thompson, Charles Aaron  
Trochez, Marcela Paola  
Williams, Quinten Anthony  
Yerino, Nicholas  
Young, Hillary  
Zamora, Kevin Alexander  
Zhang, Jing

**Congratulations and best wishes to  
all of our 2014 graduates!**

## Undergraduate Organization News

### The Biology Society



Faculty Advisor:  
Kyle Patton

This past year the Biology

Society held an Easter Bake Sale, a Halloween Bake Sale, and a Fundraiser for the new Cajun Café on campus. Over the summer, tables were set up during Freshman Orientations to recruit new members to the organization. A bowling social was held at Lafayette Lanes, and we had a great turn-out. During preview days, officers and board members assisted the biology department by directing parents and students to Billeaud Hall and serving them refreshments. Departmental speakers included Dr. Joe Neigel, Dr. Darryl Felder, and Dr. Brad Moon. A senior in Biology, Alexandra Olivier, gave a presentation on her study abroad program through Broadreach College.

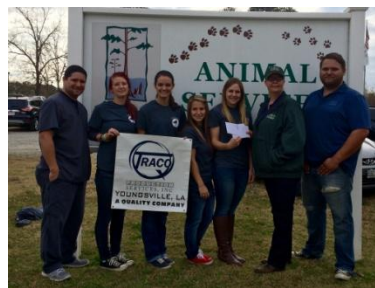
### Pre-Vet Society

Faculty Advisor: Dr. Alan DeRamus

This year, the Pre-Vet Society had a variety of speakers from all aspects of the veterinary profession and participated in a very productive fundraiser for a local shelter in need. The society hosted Dr. Jacki Simon, a small animal vet from St. Martinville, Dr. William Holmes, a veterinary research analyst, Dr. Joseph Taboada, LSU School of Veterinary Medicine's Associate Dean of Student and

Academic Affairs, and Valerie Long, Representative of Ross University School of Veterinary Medicine. We also were invited to tour Dr. Toby Wexler's AAHA certified veterinary hospital where he works on exotics and small animals.

The society also had a bake sale fundraiser for the St. Martin Parish Animal Shelter which had a great need. Through the bake sale and donations from Traco Production Services and County Place Vet Clinic, over \$700 was raised as a donation to the shelter for their animals!



*Prevet society presents check to the St. Martin Animal Shelter*

A supply drive for Acadiana Humane Society is currently underway and members hope to have a large donation to this great organization.

### Pre-Professional Society

Faculty Advisor: Dr. Bruce Felgenhauer

This year the ULL Pre-Professional Society hosted in the Fall semester the Deans of the Medical, Dental, and Osteopathic Medicine schools from Louisiana and Hattiesburg, MS. These Deans included: Dr. F. Scott Kennedy, (Dean of Admissions Shreveport), Dr. Jim Weir (Dean of Admissions, William Carey (Osteopathic Medicine), Dr. Sam McClugage (Dean of Admissions New Orleans), Dr. Cheramie (Dean of Admissions LSU Dental School, New Orleans). In addition, Mackel Harris from Life College in Atlanta, GA came and spoke to the group about their

program in Chiropractic Medicine. Throughout the rest of the year we had a wide variety of fine speakers from many different areas of Health Care in Acadiana including: Dr. Jacki Meriweather, Veterinarian, Dr. Bradley Chastant, Jr, Internal Medicine, Dr. Tedesco, Cardiologist, Dr. Bradley Chastant, Sr. ENT, Kathy Bobs; CEO of Women's and Children's Hospital, Dr. Myers, Dermatologist, and Dr. Felgenhauer giving his annual "State of the Union Address" on the basics of applying to professional schools.

The PPS was also quite active in community service. The members raised over \$5000 for the American Heart Association and \$5000 for St. Jude Cancer Hospital in Memphis which is twice what they raised for this organization from last year. Our members were involved in Clean-Up Day in Girard Park, Pre-view Day and "Up til Dawn" fund raiser for St. Jude. Members also volunteered for Habitat for Humanity and the Heart Walk of Acadiana. Enrollment increased again this year as this large organization continues to grow and is one if not these most active student organization on Campus. It was another good year!

## **Biology Student Named Outstanding Graduate**

Kristy Langlinais was the Outstanding Graduate for the Ray P. Authement College of Sciences in Spring 2014. A biology major with a 4.0 GPA, she was on the President's List and a member of the University Honors Program and the Blue Key Honor Society.

Langlinais received the TOPS Performance Scholarship, UL Lafayette Centennial Scholarship, UL Lafayette

High School Valedictorian Scholarship, Dr. Bernard and Marie Lahasky Scholarship, and Student Government Association Scholarship.

She was a member of Kappa Delta Sorority, the Pre-Professional Society and a Ragin' Cajun Catholics' Focus Missionary. In 2011, Langlinais was an ambassador for the Student

Alumni Association. In 2010, she served as public relations chairperson for the Junior National PanHellenic Council.



*Langlinais carrying in the College banner at commencement*

Langlinais performed community service work with Girl Scouts of America, Habitat for Humanity, Prevent Child Abuse America, St. Pierre's Center for the Arts, Family Christian Center, Lafayette Community Health Care Clinic and St. Jude Children's Research Hospital. She volunteered at Iberia Medical Center, Iberia Rehabilitation Hospital and the Pediatric Therapy and Learning Center. She is active in her church as a music minister and retreat team member.

Langlinais plans to enroll in the occupational therapy program at the LSU Health Sciences Center in Shreveport. She would like to return to the Lafayette area for a career as an occupational therapist. She is the daughter of Justin and Monica Langlinais of Erath, La.

## Undergraduate's Discovery Makes The News

(this story is modified from one originally prepared by Charlie Bier, image of fungus on host ant by Stephen Saltamachia)

A University of Louisiana at Lafayette student has discovered a “zombie fungus” that’s been off scientists’ radar for almost a century, was reported in Newsweek. Stephen Saltamachia, a senior majoring in microbiology at UL Lafayette, discovered the rare, furry fungus while working at Acadiana Park Nature Station in Lafayette. He spotted a carpenter ant queen wandering outside, which caught his attention since a queen rarely leaves her nest. Saltmachia studied the errant ant after sterilizing it and placing it in a petri dish.

“A born naturalist, Saltamachia suspected that the ant might be parasitized by a brain-manipulating pathogen often called 'zombie fungus,' which causes infected insects to behave abnormally,” an article posted on Newsweek’s website states. Saltmachia reports that DNA sequencing suggests that the fungus is a new, yet to be named, species.

Why is it called a “zombie fungus”? The Newsweek post explains that “Fungi in this group infects ants and other insects and often control their behavior to maximize their potential to spread—before ultimately killing the animal.



*Fungus growing on host ant*

For example, one such fungus infects ants and forces them to climb high up vegetation before perishing and giving rise to horn-like fungal growths, thus

allowing the species’ spores to spread farther than they would if released closer to the ground.”

See the [Newsweek article](#) to learn more about Steven’s discovery.

## Biology Students Receive Service Award

The University of Louisiana at Lafayette Dean of Community Service recognized graduating seniors who had more than 200 hours of verified University-based community service. Among the students receiving the 2014 Excellence in Service Award were three biology students:

Vu Ho

Kolby Handy

Katherine Hill

Congratulations to Vu, Kolby and Katherine.

## Mentoring Matters!

The Biology Department launched a new program in the spring of 2014, providing assistance to students with the help of other students. “Mentoring Matters” aims to provide supplemental peer instruction and assistance to students in some of our introductory courses. The effort began with Sherry Kravesky-Self and seven undergraduate students who had earned top grades in *Fundamentals of Biology I*. These students, having demonstrated mastery of the material in *Fundamentals of Biology I*, dedicated two hours each week to meet with and mentor students currently taking the course.

Initial success in this early effort, lead to an expansion of the program incorporating other courses. There are now approximately 27 student mentors

assisting their peers who are enrolled in *Fundamentals of Biology I*, *Fundamentals of Biology II*, *Applied Anatomy*, *Anatomy and Physiology*, and *Cell and Molecular Biology*. The Biology Mentoring Matters program hopes to build on the early success of the program and will continue to bring student mentors and their peers together in a pro-active learning environment. We thank all the mentors for donating their time and knowledge to



help their peers successfully master the challenges of freshmen and sophomore level course work.

*Some of the biology students serving as peer mentors*

## Graduate Student Awards and Accomplishments

Continuing biology graduate students were first authors on 10 peer-reviewed publications, presented 22 off-campus seminars, and gave 57 conference presentations in 2014. Below are some examples of awards and grants made to graduate students in the program.

**Camacho, Olga.** Grants-in-Aid of Research, \$1500, Psychological Society of America.

**Edge, Andrea.** Elected student President to the American Society for Gravitational and Space Research Student Organization.

**Hundy, Laura.** First Place Student Presentation Award at 2014 Annual Meeting of the Society of Wetland Scientists South Central Chapter for oral presentation “Effect of Hydrologic Regime and Soil Properties on Black Mangrove (*Avicennia germinans*) Survival and Growth in a Restored Louisiana Salt Marsh.” (Laura also earned three other awards for conference presentations in 2014!).

**Jones, Scott.** Society of Wetland Scientists Travel Award; State of the Coast 2014 Student Scholarship, Louisiana Sea Grant.

**Kascak, Alex.** Student Travel Award for Gulf of Mexico Oil Spill and Research Conference.

**Self-Krayesky, Sherry.** Hoshaw Travel Award from Psychological Society of America, LS-LAMP program award to mentor student at Joint Aquatics Meetings, and SURE/Board of Regents grant (with Delena Phung).

**Mueck, Kristy.** USGS Research Award; Rockefeller State Wildlife Scholarship, Louisiana Department of Wildlife and Fisheries.

**Sauvage, Thomas.** Hoshaw Travel Award and Grant-in-Aid of Research from Psychological Society of America.

**Sullivan, Timothy.** Rockefeller State Wildlife Scholarship, Louisiana Department of Wildlife and Fisheries.

**Tobin, Eric.** Scholarship for Out to Innovate from NOGLSTP; Best Graduate Student Poster Award at National STEM and NOGLSTP Joint Meeting.

**Tang, Pei-Ciao.** H. Dickson Hoese and Richard Moore Award for Best Graduate Student Publication in Biology for 2014.

## 10 Graduate Degrees Conferred

### Doctor of Philosophy in Environmental and Evolutionary Biology

**Cazan (Morales), Alfy;** Dissertation: Maternal Transfer of Metals in Live-Bearing Fish (Cyprinodontiformes: Poeciliinae); Advisor: **Dr. Paul Klerks**

**Mallick, Amrita;** Dissertation: In Vivo Characterization of *Mycobacterium marinum* Virulence Genes with Unknown Functions and Larval



Activation of Mycobacterial Virulence in the Medaka Infection Model; Advisor: **Dr. Don Ennis**

*Amrita Mallick at the bench*

**Oguma, Andrew;** Dissertation: Assessing the Effects of Low-Level Lead Contamination in Freshwater Sediments Using Community-Level and Functional Indicators; Advisor: **Dr. Paul Klerks**

## Master of Science in Biology, Non-Thesis

**Calais, Warnesha;** Advisor: **Dr. Glen Watson**  
**Waterman, Megan;** Advisor: **Dr. Bruce Felgenhauer**

## Master of Science in Biology, Thesis

**Cheramie, Martin;** Thesis: Investigations into *M. marinum* Interacting and Crossing Fish Gut Epithelia: Evidence for Inducing a Protective Gut Mucosal Immunity by a Live Vaccine Candidate; Advisor: **Dr. Don Ennis**

**Hazra, Suchandra;** Thesis: Individual and Combined Effect of Microbial Communities Associated with Marine Arthropods; Advisor: **Dr. Andrei Chistoserdov**

**Satbhai, Kruuttika;** Thesis: Petroleum Hydrocarbons Phenanthrene and Dibenzothiophene on Reproductive Behavior in the Amphipod *Hyaella azteca*; Advisor: **Dr. Paul Klerks**

**Starr, Matthew;** Thesis: Detecting Positive Selection on Stress-response genes in the marine slipper snail *Crepidula fornicata*; Co-Advisors: **Dr. Joseph Neigel & Dr. Rachel Collins**

**Yando, Erik;** Thesis: Mangrove Forest Expansion and Development in the Northern Gulf of Mexico: A Comparison of Plant–Soil Interactions Across Salt Marsh Mangrove Ecotones; Advisor: **Dr. Mark Hester**

## The Graduate Student Symposium 2014

The 15th Annual Biology Graduate Student Symposium was held on Friday, October 24, 2014. The Keynote Speaker was Dr. Kirk Winemiller from Texas A&M University. His keynote address was entitled “Functional traits, convergent evolution, and a periodic table of niches”

There were eleven student talks. **Kory Evans-Jackson** (Alberts Lab) won the “Singh Award for Best Presentation” for his talk “The Law of Heterocephaly; capturing the primary axis of vertebrate skull evolution (All up in your face/Brain case).”



*Kory Evans sampling fish in South America*

This award was presented in honor of the late Navasha Singh, a former doctoral student in biology.

**David Penning** (Moon Lab) won the “The Best Student Poster Presentation” for his poster “Always Fast and Always Furious? Can Ratsnakes Modulate Their Strikes When Encountering Offensive and Defensive Scenarios?”

A reception following the symposium was held at the Ira Nelson Horticulture Center. Funds were provided by the Student Government Association Lyceum Fund, Graduate School Organization, Ira Nelson Horticulture Center, and Ecology Center. Twenty-four local businesses donated raffle items. Thanks to **Kristin Wakeland, Lisa Sheriff, Trey Mace,**

**Brandon Waltz, Max Brent, and Kory Evans-Jackson** for all their hard work planning the event, and Drs. **Susan Mopper, Scott Duke-Sylvester, Karl Hasenstein** and Kirk Winemiller for serving as judges.

## Changes in the Office

After several years of dedicated service, Ms. **Jill Broussard** retired from her administrative assistant position. In June, Ms. **Ponchella (Anne) Boutte** joined us as a new administrative assistant working in the main departmental office. Congratulations Jill and welcome Anne!

## Alumni Updates

We love to hear from our graduates. If you have information you would like to share involving your professional or personal life, please send it Sondra Meyers (sdm7944@louisiana.edu). Please be sure to include information on your year of graduation and degree; participation by alumni of both our undergraduate and graduate programs is encouraged.

## Hiring?

We maintain an email list of recent grads searching for positions and have contact with current students. If you have a position or internship announcement appropriate for biology majors that you would like us to distribute to these groups, please send it to me (Leberg@Louisiana.edu) as an email attachment. Likewise, if you are a recent graduate, let me know if you would like to be added to our email list.