

BIOFEEDBACK

Winter 2016-2017

Newsletter of the Andrews University Department of Biology



Exploring and Discovering: Students involved in Biological Research

For many years now, the Department of Biology has maintained a strong culture of research. Many of our readers may be familiar with the work of Dr. Stout on cricket neurophysiology, with the parasitology research of Dr. Chobotar, or with the botanical work of Dr. Woodland. This research emphasis continues today. All of our faculty are active in some area of research, from ecology and animal behavior to neurophysiology and biochemistry.

This research is of central importance to our graduate program. All of our graduate students are intimately involved in some aspect of research toward a thesis. For example, the image above shows graduate student Roshelle Hall (front right) exploring a wetland area on the property of the Edward Lowe Foundation, in search of the elusive eastern massasauga rattlesnake. Other graduate students are currently working in areas of cancer biology, seabird ecology, and manatee conservation biology.

Not only do graduate students benefit from our research program here, but undergraduate students are also very active in research, often working together in a synergistic way with

graduate students. For example, Roshelle Hall, mentioned above, occasionally discovers shed snake skins. Roshelle has been handing these skins off to Erika Bauza, junior biotechnology major, who is developing methods to extract DNA from these skins which can be used to identify the species of snake from which it came.

Other undergrads have been involved in research as well. In fact, we have recently formalized the process of getting involved in research, so that all undergraduate researchers complete an application form and participate in a periodic group research meeting in which students get to see and hear what their fellow students are doing. In our last meeting we had over 25 undergraduate participants.

Some students involved in research are shown in the photos on the next page, and described here clockwise from top left.

1. Randy Sanchez, senior biology major, visited the Museum of Paleontology at the University of Michigan, where he and his advisor, Dr. Tom Goodwin, examined fossils to study hibernation in the fossil record.

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Student research and travel



A new faculty member!



Field trips



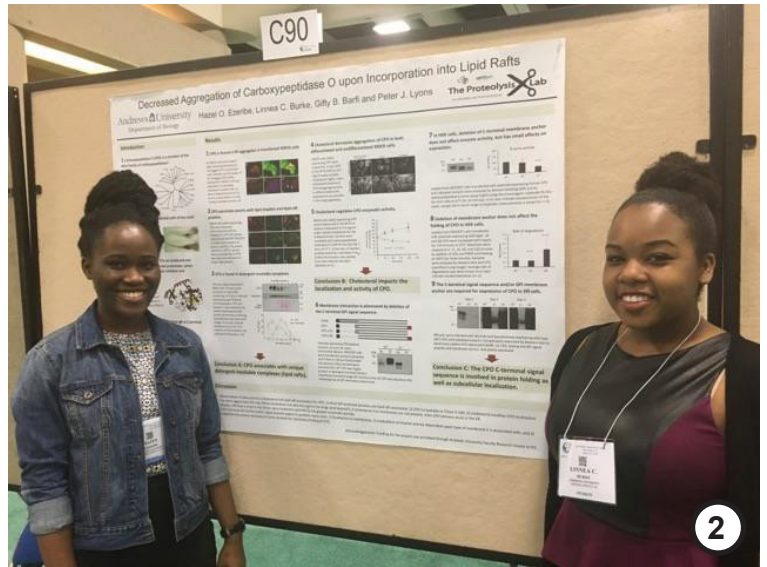
Starting in the early grades



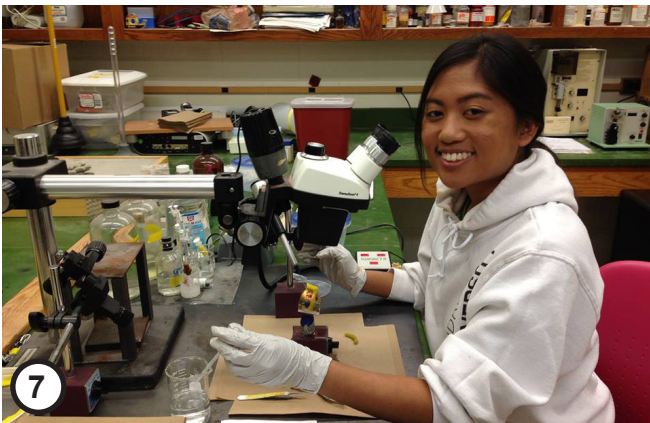
Changes in Master's program
Faculty presentations and publications
Alumni calling songs



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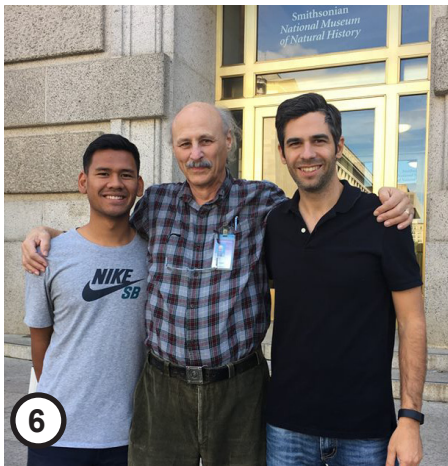
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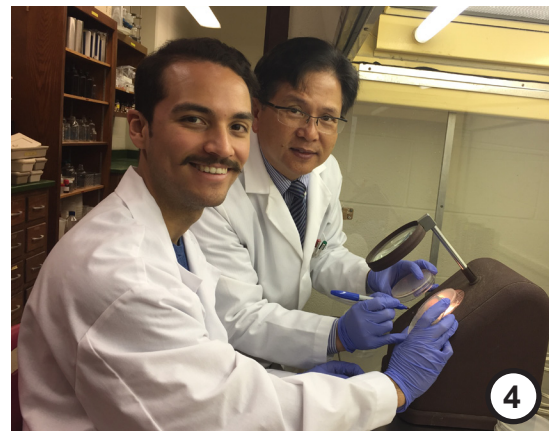
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2. Hazel Ezeribe (left), senior biology major, and Linnea Burke (right), junior biology major, presented a poster at the Experimental Biology conference in San Diego on their work with Dr. Peter Lyons on the intracellular function of an intestinal protease.

3. Athena Smith (left), graduate student, and Isabelle Hwang (right), junior biology major, worked with Dr. Jim Hayward (center) and the Seabird Ecology Team on Protection Island, examining the impact of climate change on egg cannibalism.

4. Rayford Alva (left), senior biology major, is shown working with Dr. Brian Wong. They are using the bacterium *Salmonella typhimurium* TA 98 in the Ames assay to characterize mutagens and identify potential antimutagenic phytochemicals from Chinese medicinal herbs.

5. Ezra Panjaitan, junior biology major, visited the Smithsonian National Museum of Natural History in Washington DC with Dr. Gonzalez-Socoloske as part of a collaborative research project examining the relationship between manatee tooth wear and habitat.

6. While at the Smithsonian, Ezra (left) and Dr. Gonzalez (right) were hosted by world-renowned paleontologist Dr. Daryl Domning (center) and were treated to a personal behind-the-scenes tour of the vertebrate fossils in the collection including the Sirenian fossils.

7. Darley Magno, senior biology major, has become an expert in microinjection of crickets while working with Dr. Ben Navia to better understand cricket neurophysiology. Darley also presented this work at Neuroscience 2016 in San Diego (see page 4).

Welcoming New Students, Faculty, and Staff to Our Department

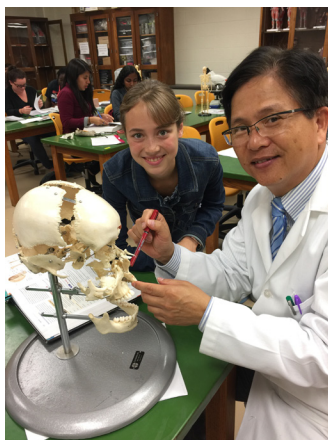
The past year has brought some new people to our department. Of course, every new year brings a new crop of students, for which we are always grateful. But this past year we have also been blessed with a new member of our faculty and of our staff.

The 2016-17 school year began with a picnic for new and returning students, complete with lawn games (see photo below following a rousing game of Kubbb), volleyball and badminton, and food. Unfortunately, a particularly wet summer brought the mosquitoes out in droves, which drove us inward when it came time for eating. The Department of Biology is blessed with a beautiful commons (the Chobotar Student Commons, renovated in 2014) that is well-suited for such events. We had fun outside for a time, and then an indoor picnic!



We have also experienced some changes in our faculty this year. While two of our faculty, Dr. Kanya Long and Dr. Pamela Litvak, have left us (see below), we have been blessed with the addition of Dr. Brian Wong to our faculty (shown below while working with a student in

Anatomy and Physiology lab). Dr. Wong comes to us with a wealth of experience. Prior to coming here, Dr. Wong served as a missionary in Macau, where he was principal and biology teacher at Macao Sam Yuk Middle School. He has worked as Professor of Biology at Pacific Union College and Union College, and additionally served as professor and administrator at Caribbean Union College in Trinidad and Tobago, West Indies. Clearly he is an international



person, perfect for our international and diverse student population here at Andrews.

Dr. Wong studies the anticancer mechanisms of various phytochemicals from Chinese medicinal herbs. His recent research focus has been on the modulation of apoptosis and cell survival in murine and human prostate and breast cancer cells by *Scutellaria barbata* and *Oldenlandia diffusa*. He has demonstrated that these two Chinese herbs contain phytochemicals that inhibit mutagenesis, DNA binding, and the metabolism of the pro-carcinogens aflatoxin B1 (a common potent fungal hepatic carcinogen) and benzo(a)pyrene (a common air carcinogen from fossil fuel combustion and charcoal-broiled food). The continued interest of Dr. Wong's lab is to reveal the phytotherapy potential of these and other Chinese herbs. Dr. Wong has already started working with students in research, as shown in the photo on the facing page.

Dr. Wong will be teaching a variety of courses, including Anatomy and Physiology, Environmental Science, and Histology. He has also been quick to join in university and departmental social events, including the annual ice cream social (second from left, below)



The past year has also brought changes in administrative assistance. Mayra Robertson moved to Florida in December of 2015 (She says that she prefers warmer weather... we will admit that it can be a bit chilly here at times!). So for the past year we have been blessed by the assistance of Angela Sonnenburg in the office. As we all know, this job is the most important in the department, and Angela has been doing a superb job, with efficiency and grace. She has also pitched in with events such as the ice cream social (second from right, above).



This year we said goodbye to two of our faculty members, Dr. Pam Coburn-Litvak and Dr. Kanya Long. Pam and Kanya both spent about 4 years in our department, and were involved in many areas of our academic curriculum.

Pam taught Systems Physiology and Anatomy & Physiology, and additionally served as graduate program coordinator. Over the last four years she has been instrumental in overseeing a number of organizational changes in our graduate program, and we will miss her eye for detail!

Kanya played a major role in developing a new core course for our biology majors called Scientific Communication. She also taught Virology and Immunology. Kanya was very active in research while here, and we will miss her ability to patiently mentor students in the challenging areas of virology and epidemiology.

We wish you both God's richest blessings!



Publications



Jim Hayward, professor emeritus of biology, continues his research with Dr. Shandelle Henson and the Seabird Ecology team.

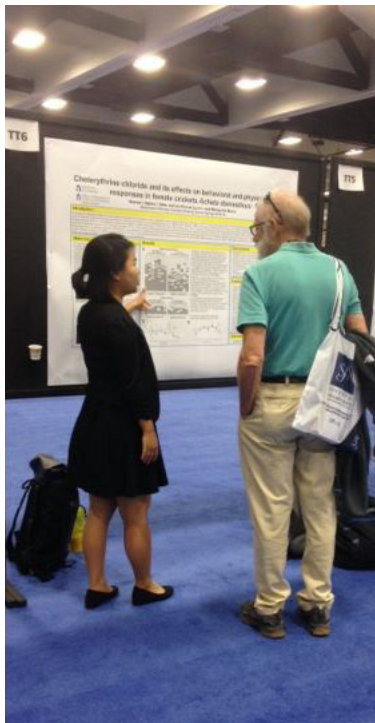
The Spring 2016 edition of the Resource Modeling Association Newsletter featured a 10-page, illustrated article summarizing recent work by the Seabird Ecology Team. The newsletter can be accessed at <http://resourcemodeling.org/spring-2016-2/>.

Amanda Sandler (MS, '13), Libby Megna (MS, '12), Cyndy Tkachuck, Richard Tkachuck (BS '64), Jim Hayward, and Shandelle Henson published a paper entitled "Every-other-day clutch-initiation synchrony in ring-billed gulls (*Larus glaucescens*)" (*Wilson Journal of Ornithology* 128(4):760-765).



Kanya Long, assistant professor of biology, was co-author on a paper in *PLoS Neglected Tropical Diseases* entitled "Incomplete Protection against Dengue Virus Type 2 Re-infection in Peru" (10(2):e0004398).

While it has been assumed that prior infection by dengue virus results in protection from re-infection, this study performed during a dengue epidemic in Iquitos, Peru in 2010-2011 suggests that this is not reliably the case.



Presentations

Jim Hayward, professor emeritus of biology, and Shandelle Henson, professor of mathematics and ecology, presented a talk entitled "Climate change, cannibalism, reproductive synchrony, and tipping points in seabirds" at the 2016 North American Ornithological Conference in Washington, DC.

Ben Navia, associate professor of biology, along with students Darley Magno and Heaven Shin, presented posters at Neuroscience 2016, the annual meeting of the Society for Neuroscience, held this year in San Diego, CA. Darley's poster was entitled "The role of octopamine in syllable-period selective phonotaxis in female cricket *Acheta domesticus*" (D. Magno, B. A. Navia), while Heaven presented a poster entitled "Chelerythrine chloride and its effects on behavioral and physiological responses in female cricket *Acheta domesticus*" (B. A. Navia, H. Shin, A. Lynch, J. Stout).

Peter Lyons, associate professor of biology, presented a poster on "A possible role for carboxypeptidase O in the regulation of secretion through cleavage of C-terminal ER retention signals" at the Gordon Research Conference on Protein Processing, Trafficking, and Secretion, held at Colby-Sawyer College in New London, NH. Dr. Lyons and three students also attended the annual meeting of the American Society for Biochemistry and Molecular Biology held in conjunction with Experimental Biology 2016 in San Diego, CA. Temitope Idowu presented a poster describing ongoing work on the "Characterization of Ecm14, a Fungal Pseudopeptidase" (T. A. Idowu, M. J. Schott, P. J. Lyons). Hazel Ezeribe and Linnea Burke presented a poster entitled "Decreased Aggregation of Carboxypeptidase O upon Incorporation into Lipid Rafts" (H. O. Ezeribe, L. C. Burke, G. B. Barfi, P. J. Lyons)

Daniel Gonzalez-Socoloske, assistant professor of biology, and Mindy McLarty, graduate student, attended the 21st Biennial Biology of Marine Mammals Conference in San Francisco, CA, where Mindy made a presentation on her work on Manatee habitat use in Cuba.

(left) Heaven Shin presents her poster to an interested scientist at Neuroscience 2016.
(right) Mindy McLarty and Dr. Daniel Gonzalez-Socoloske pose for a picture at the 21st Conference for the Biology of Marine Mammals.

News

News for future graduate students!

Our master's program has attracted many quality students over the years. You might be one of them! We want to make sure that the word gets out about a number of recent changes in finances and academic program.

1. Teaching Assistantship: All our graduate students are eligible for a teaching assistantship paid as a stipend of \$600 per month.
2. Research Assistantship: to enable graduate students to make effective use of summers for research, funds are also available for a number of research assistantships, at \$600 per month as for the TA above.
3. Tuition reduction: Students in our MS program get a 50% tuition reduction. Many MS students can also qualify for full tuition scholarship, based on merit and availability of funds. This means that you can get an MS degree in biology for \$0-\$16,000 for the 2-year program.
4. Thesis Proposal: During the first year of the program, students work with their thesis advisor to produce a thesis proposal, which they present orally to the department.
5. Following the thesis proposal presentation, students take an open-book written comprehensive exam, covering many aspects of biology as they apply to the student's chosen field of study. This approach to the comprehensive exam combines the need to understand biology broadly with the need to apply this knowledge specifically to one's field.

If you are interested in learning more about our graduate program...

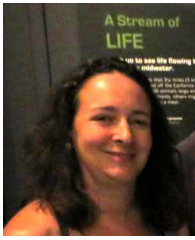
Web: andrews.edu/biology

Email: biologygrad@andrews.edu

Phone: 269-471-3243



Alumni Calling Songs



Karen Osborn (BS 1996), curator at the Smithsonian Museum of Natural History, has recently completed designing and installing a display which features her research on little-known

midwater zone animals of the ocean, many new species of which she herself has discovered. Karen is one of very few researchers studying this remarkable habitat.



Saharsh Dass (BS, 2016), is working as Clinical Research Assistant in cardiovascular medicine at the University of Pennsylvania. Prior to this, he was part of a select group participating in a math

modeling conference at Harvard University. We wish you all the best, Saharsh!

Philip Lewis (BA, 1961), retired from the US Environmental Protection Agency, recently published a book entitled "Genesis for Today". He adds this to another book published many years ago - "Taxonomy and ecology of *Stenonema* mayflies (Heptageniidae: Ephemeroptera)"



Tyler Pender (BS 2013) and **Melissa McCormick** (BS 2012) were married on December 20, 2015. Congratulations and best wishes for the future!

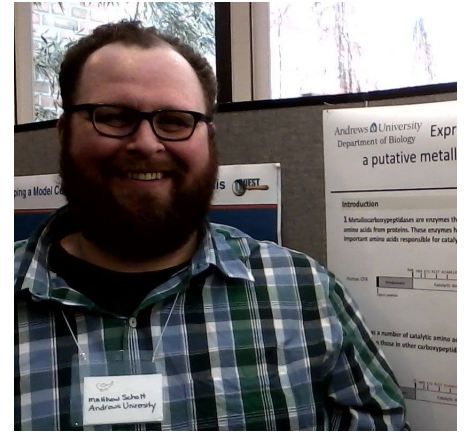


Dick and Juanita (MS 1968) **Ritland** recently moved from their longtime home here in Berrien Springs to join family in Washington. Juanita was in the first graduating

class of our MS in Biology program here at Andrews, while Dick taught in the department for many years. They are pictured here shortly before their move.

Lauren Martin (BS 2012) graduated this year from medical school at Washington University of St. Louis. She is featured in a short news article (<https://medicine.wustl.edu/news/class-2016-lauren-martin/>) describing her desire to meet people where they are to connect with the community in service.

Matthew Schott (MS 2015), spent just over two years as a graduate student in our department from 2012-2014. He worked as teaching assistant in Systems Physiology and Cell and Molecular Biology laboratories, and was greatly appreciated by students and faculty alike for his personable nature and clear explanations of challenging material. He persevered through a difficult research project, and graduated in 2015. In the fall of 2015 Matt obtained a job in San Diego as sales associate for VWR scientific supply company. He greatly enjoyed the city and his work. We are deeply saddened to learn that Matt passed away in May due to a sudden heart attack. Our thoughts and prayers go out to Matt's family and friends.



Let's Take a Field Trip!

The location of Andrews University is ideal. Of course, one has to be able to appreciate snow in the winter, as well as flowers in the spring and leaves in the fall.

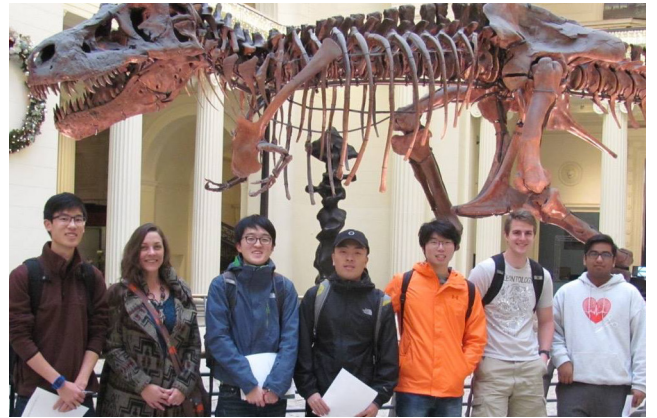
But what we're really talking about are the many resources available to us, both locally and in nearby Chicago.

For example, Dr. Goodwin's Vertebrate Paleontology class visited the Chicago Field Museum (right, top), a world-class resource of vertebrate fossils, amongst other things. Notably, every biology major also visits this museum as part of the second semester of Foundations of Biology.

Dr. Gonzalez-Socoloske also took advantage of the resources found in Chicago, taking his Mammalogy and Animal Behavior classes to the Brookfield Zoo, where they took a first-hand look at some of the behaviors they studied in class.

Dr. Wong brought his Environmental Science course to a number of local sites including Fernwood Botanical Gardens (right, bottom), and the Benson property, a 1000-acre largely undeveloped property located along the St. Joseph River and recently donated to the University. We hope that we can use this property for many more field biology projects in the future.

Finally, we might mention the resources we have in nearby South Bend. The University of Notre Dame has been a destination for Virology field trips with Dr. Long, while the South Bend Medical Foundation has been visited by Dr. Zdor's Biology of Bacteria class.



Starting in the Early Grades

A number of our faculty members and biology students have participated in biology education at local elementary schools such as Ruth Murdoch Elementary School and Sylvester Elementary.

Dr. Tom Goodwin spent some time with the 5th Grade class from Ruth Murdoch Elementary School (RMES). Mrs. Arlene Bailey's class had just completed a unit



on dinosaurs, and the class came well prepared to enjoy the study of fossil dinosaurs and mammals—including our own Prillwitz Mammoth.

Dr. Ben Navia took his neurobiology class to visit Mrs. Park's 6th grade class at RMES. The children watched videos on the brain, constructed clay models of the brain and spinal cord, and even helped dissect a brain!



Every other year, Ms. Jina Yoon brings her 2nd grade class from RMES to introduce them to the microscopic world. Students collected items on their walk

to Price Hall, then used our dissecting microscopes to discover what might be observed on those twigs and leaves at a microscopic level. It was lots of fun to discover some weird things that we never knew were there!



Dr. Rob Zdor continues his tradition of visiting Sylvester Elementary. Andrews students Rayford Alva, Shekiniah Dosunmu, and Dillon Zimmerman were among the students who helped during the last visit in April of this year.

We'd love to hear from you! And we'd love to share important events in your lives with other alumni via this newsletter. Send us an email or letter to let us know what is new in your life. Below are some suggestions if you don't know what to say! Photographs are great too.

Name: _____

Address: _____

Year you graduated from AU _____ AU degree _____

Other degrees since graduating from AU _____

Your current employment _____

Your current interests and activities _____



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BioFeedback

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