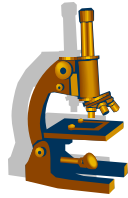


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Dr. Gonzalez wins 2008 SU Teaching Award



When Dr. G first found out he received a nomination for this award and later when he was chosen, he was speechless. Those knowing Dr. G realize that this is not typical. However, what is typical is his down-to-earth attitude and his penchant for humility. Just a quick 5 years ago, Dr. Gonzalez came to Southwestern from the University of Colorado - Denver. He knew that he wanted to have more interactions with students in the classroom.

Dr. Rebecca Sheller commented that "I am ecstatic to learn of Dr. Martin Gonzalez' SU Teaching Award. He is very deserving due to his dedication to students and his passion for biology. Dr. Gonzalez is an extremely knowledgeable molecular microbiologist who communicates well with students on many levels. He challenges students to understand complex concepts and provides the resources for student success. Dr. Gonzalez asks students in his classes to critically analyze information so that they can synthesize their own interpretations of data. He is constantly thinking of new methods for presenting information and stimulating student interest and comprehension. Dr. Gonzalez is an excellent teacher-scholar."

Next time you see Dr. Rebecca Sheller, say THANK YOU!



Spring 2008 brings a close to Dr. Rebecca Sheller's current service as Chairperson of the Biology Department. Her "student-centered" philosophy continues to permeate through the department. In a crazy time of faculty retirements, career changes and some unanticipated changes, Dr. Sheller shepherded the Biology Department through 5 new tenure-track hires and 3 technician hires. She played an instrumental role in providing ideas and momentum for curricular changes. In addition to managing the finances for a large department, she adeptly scheduled courses to find a great balance for students and faculty and set up guidelines for course transfers and advising. The above description probably only covers a fraction of what Dr. Sheller did for the department. So, next time that you see her, please take a minute to say "thanks!"



## Musings from the new chair...

Dr. Max Taub, Associate Professor of Biology, will assume the position of Department Chairperson officially in July, although he has already been "in training" for several months. When asked about his goals for the Biology Department over the next few years, Dr. Taub replied "The Biology Department has an excellent group of faculty members and staff. The task of the chair is simply to help create conditions that will allow them to use their talents to best advantage in the education of our students. In other words, my main concern is to keep out of their way and not mess things up! I will say that I hope to help the Department adapt to ongoing University-wide curricular changes in ways that will enhance the Biology major".

## Faculty Arriving...



Dr. Andrew Woodward, a HHMI Fellow at Rice University, will be joining the faculty as a 1-year Visiting Professor. Dr. Woodward will teach Cell Biology and Cellular Physiology in the fall.

I was an undergraduate and graduate student at Rice University. At Rice and UT Austin, I have conducted research on tiny negative regulators of gene expression called microRNAs, plant hormone metabolism and signal transduction, and regulated protein destruction in cotton and in the model plant *Arabidopsis*. Most recently, I have enjoyed teaching a freshman seminar that explores the research process--from the techniques of experimentation to the sociology of the laboratory workplace--using a case study of gene-swapping bacteria. "I am excited to come to SU, and I look forward to meeting SU students."

## and Faculty Going...

- The Department of Biology is sad to see Dr. Veronica Martinez Acosta depart SU. However, the good news is that she will not be far away in her new tenure-track position at University of the Incarnate Word in San Antonio.
- Dr. Karen Wheeler will also finish up her latest contribution to the Department but she is always welcome to return.



The Department of Biology expresses its sympathy for family and friends concerning the loss of Mr. Kenneth Strickland who worked for the Division of Natural Sciences. Ken was a master craftsman. If you could describe it, then Ken could make it. He was instrumental in designing various experimental set-ups and also for keeping instrumentation in quality condition. His presence in Fondren Jones will be sorely missed.



Dr. Ben Pierce will take over as coordinator for 2008-2009. Send him any suggestions for speakers that you might have.

# BIOLOGY SEMINAR SERIES CONTINUES...

# They just keep getting SMAR(er)...



SMARTeams (Science and Math Achiever Teams) held its 3<sup>rd</sup> poster presentation day - but this time at Southwestern. Day Facilitator, Amanda Mohammed organized the event along with the SMAR civic engagement course and help of Dr. Burks and Ms. Suzy Pukys. Amanda also completed her capstone by integrating her experiences with SMAR with her building knowledge of neurobiology. 11 SU students comprised the team.



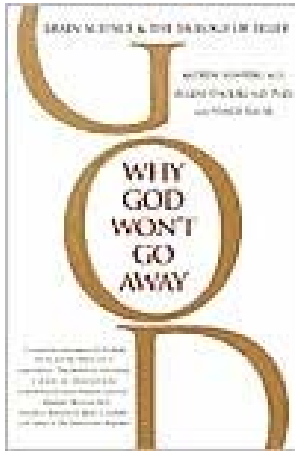
*SU Students included Talitha Morton, Martin Irish, Kristen Dettloff, Kayli Klass, Liz Delgado, Dyann Lopez, Sarah Hensley, Erica Navaira, Brittany Ford, Elizabeth Ferrick and Amanda Mohammed.*

## INVASION: 150 5<sup>th</sup> graders descend on Fondren Jones Science Hall

For the 2<sup>nd</sup> time this year, **Biologist Linda Southwick** volunteered to coordinate a large group of elementary students on campus to do workshops in the sciences. The group in the fall (i.e. 200 students) came from Liberty Hill. This spring's group was from Leander. The students were divided into 6 groups and rotated through 15-minute long science demonstrations. This spring's demonstrations included: DNA structure led by 3 Biology students (Emily Martisek, Lauren Hamlett, and Jessica Bolton); Mirror, Mirror, led by Dr. Veronica Martinez and Biology student Emily Schmidt, Dem Bones led by Dr. Karen Wheeler and Biology student Matt Kauffman, two chemistry workshops on chemical properties led by various chemistry students, and an astronomy workshop on the distances between the planets in our solar system led by Dr. Mark Bottorff.



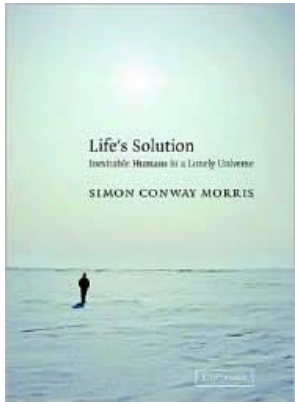
# Biology Bookworm says "Start Reading for Brown Symposium XXXI" - Feb 2009 SCIENCE AND RELIGION



ISBN-13: 9780345440341

Andrew Newberg, MD, Associate Professor in the Department of Radiology and Psychiatry and Director, Center for Spirituality and the Mind, University of Pennsylvania. Dr. Newberg is Board-certified in Internal Medicine, Nuclear Medicine, and Nuclear Cardiology. Dr. Newberg has published over seventy-five articles, essays and book chapters, and is the co-author of the best selling book: *Why God Won't Go Away: Brain Science and the Biology of Belief* (Ballantine, 2001).

One reviewer writes "the author is not implying that God does not exist, except in the brain, although there is evidence that God does exist as an experience of it (the brain)." Perplexing, yes? Read and find out more.

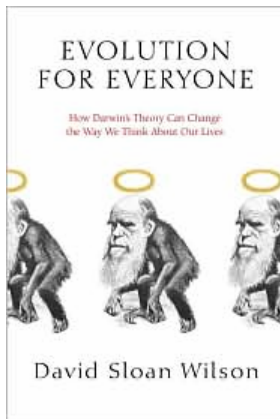


ISBN-13: 9780521827041

Simon Conway Morris, PhD, Professor of Evolutionary Palaeobiology in the Department of Earth Sciences at the University of Cambridge.

Dr. Morris is a Fellow of St. John's College and the Royal Society. He has been awarded the Charles Doolittle Walcott Medal of the National Academy of Sciences (1987), Yale University's George Gaylord Simpson Prize (1992) and the Lyell Medal of the Geological Society of London (1998). He is author of articles published in prestigious journals such as *Nature*, *Science* and *Cell*. Check out *Life's Solution: Inevitable Humans in a Lonely Universe* (Cambridge University Press, 2003).

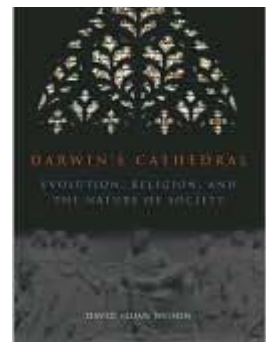
Write a review for the next issue of *Bioscope*!!



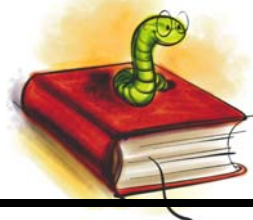
ISBN-13: 9780385340212

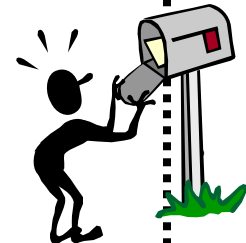
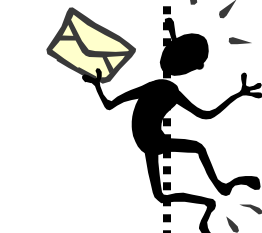
David Sloan Wilson, Ph.D. Professor, Departments of Biological Sciences and Anthropology, State University of New York, Binghamton.

Dr. Wilson is an evolutionary biologist who uses evolutionary theory to study foraging behavior, altruism, and the nature of individual differences, on organisms as diverse as microbes, zooplankton, insects, birds, fish, and humans. He is well-known for his work on multilevel selection, in which the fundamental ingredients of evolution can exist at all levels of the biological hierarchy. He has written numerous papers on evolutionary biology and is author of *Evolution for Everyone: How Darwin's Theory Can Change the Way We Think About Our Lives* (Delacorte Press, 2007) and *Darwin's Cathedral: Evolution, Religion and the Nature of Society* (University of Chicago Press, 2002), *Unto Others: The Evolution and Psychology of Unselfish Behavior* (Harvard University Press, 1998), and *The Literary Animal: Evolution and the Nature of Narrative* (Northwestern University Press, 2005).



ISBN-13: 9780226901350



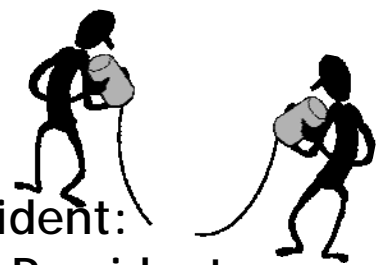


# BIOSCOPE FOCUS: Pedagogical & Scholarly Updates

- Drs. Maria Todd, Maria Cuevas and Rebecca Sheller received summer funding from the Mellon Fund for interdisciplinary collaboration. Combining their expertise in cancer biology, endocrinology and cell physiology, the team will spend part of the summer investigating the effects of deregulated overexpression of the claudin-3 protein on tight junction function in breast cancer cell lines. Their study aims to elucidate the role of tight junction disruption in the metastasis of breast cancer cells to secondary sites in the body.
- SU Juniors Colin Kyle and James McDonough received funding from the Mundy Collaborative Research Fund to continue their research on applesnail oviposition with Dr. Burks. The trio has conducted experiments this Spring and will continue through Fall 2008, culminating with a trip to Uruguay.

### UP & COMING:

- Jose Grande '07, Robert Peña '07 and Dr. Ben Pierce received word that their manuscript "Effects of disturbance, position of observer, and moonlight on efficiency of anuran call surveys" has been accepted for publication in *The Journal of Applied Herpetology*. Matt Barnes '06 also recently learned of the acceptance of his paper "Fecundity of the exotic applesnail *Pomacea insularum*" in *The Journal of the North American Benthological Society*. Rebecca Marfurt '05 serves as one of the co-authors.
- Dr. Max Taub and Dr. Romi Burks will be giving presentations in a Special Session at the annual meeting of the Ecological Society of America about undergraduate research at liberal arts institutions.



## 2008-09 Officers

- |                        |                 |
|------------------------|-----------------|
| President:             | Shug Evans      |
| Vice-President:        | Kerry Pattie    |
| Secretary:             | Taylor Jones    |
| Treasurer:             | Valerie Sanchez |
| Volunteer Coordinator: | Fern Nguyen     |
| Pre-Med Chair:         | Sarah Ferrero   |



*Learn something new from  
BioScope Magnifications - THIS  
ISSUE INSPIRED BY INVERTEBRATE ECOLOGY TRIP:*

- MOLECULE and PATHWAY: NEUROTOXIN FROM *Physalia*
- ORGANISM: PORTUGUESE MAN O'WAR (*Physalia physalis*)

The nematocystic sting toxin secreted from the tentacles of the dactylozooids, a mixture of enzymes, is a neurotoxin about 75% as powerful as cobra venom. The toxins contain a complex mixture of polypeptides and proteins including catecholamines, histamine, hyaluronidase, fibolysins, kinins, phospholipases and various hemolytic, cardiotoxic and dermatonecrotic toxins.



One does not want to run into this invertebrate while swimming in the warm Gulf waters. A member of the Class Hydrozoa within the Phylum Cnidaria, this animal packs a deadly punch. Comprised of a number of different zooids with different functions (feeding, catching prey, staying afloat, reproduction), several deaths occur each year from its stings. We found this one floating off this rock jetty in Port Aransas.

Edwards et al. (2002) show that the PMOW venom creates membrane pores, causing osmotic swelling, and eventual cell lysis. The membrane pores, or lesions, were observed to be larger with greater surface density as the venom concentration increased. Edwards et al. (2002) believe that physalitoxin is the man-of-war venom most likely responsible for formation of the membrane lesions. Once the lesions have developed, ionic fluxes lead to colloid osmosis causing cell swelling to the point of lysis.

Edwards, L. P., E. Whitter, and D. A. Hessinger. 2002. Apparent membrane pore formation by Portuguese man-of-war (*Physalia physalis*) venom in intact cultured cells. *Toxicon*. 40 (9): 1299-1305.

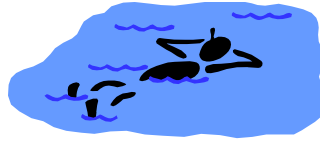
- **HABITAT: COASTAL SALT MARCH**



Lining the shores of the Texas coast, salt marshes provide important habitat for wintering birds. The dark soils show evidence of anaerobic respiration, releasing sulfur and sometimes giving off a rotten egg smell. Despite this, salt marsh help prevent coastal erosion and serve as a refuge for juvenile fishes.



Laura Kromann  
Sophomore  
PURE Program  
UTHSC-SA



## Check out these summer plans!

*(Note - Program Announcements and Deadlines for these types of programs usually occur between early January and late February. If you didn't think about it this year, make sure to plan for NEXT summer!)*

1. **What kind of summer experiences did you apply for?**

I applied to many different types of summer experiences. I was looking for any sort of research opportunities dealing with biology. I was offered an internship, the Physiology Undergraduate Research Experience (PURE), offered by the Department of Physiology at the University of Texas Health Science Center at San Antonio. This department consists of basic biomedical scientists who seek to discover how biological organisms work. They also strive to educate the next generation of clinicians and researchers in the various disciplines of the Physiological Science.

2. **How was the process of applying to an outside research experience?**

The process of applying to an outside research experience took a lot of time and effort. However, once I started the application process it got much easier. I had to first do research to find the applications (I started by looking at medical schools' websites) for different internships. The application questions usually consisted of brief personal statements including research interests, career goals, reasons for applying to research program and a description of what you would like to get out of the summer program. I also had to obtain letters of recommendation from academic faculty and send transcripts.

3. **What encouraged you to apply?**

I wanted to apply to gain real world experience, bridging the classroom with the real world. Also to be exposed to different disciplines of research, allowing me to focus my area of interest in biology. This type of internship will allow me to learn new information, important laboratory techniques, experimental design, data analysis, and critical thinking. It also gives me an opportunity to be surrounded by the people that have the same career goals, conversing with them, and enabling me to gain insightful knowledge.

4. **What will you be doing in your program this summer?**

I will be conducting hands on research projects with faculty member, postdoctoral fellows, and graduate students. The areas of research include: Cellular and Integrative Neuroscience, Cardiopulmonary Function, Endocrinology/Metabolism, Molecular Physiology, and Functional Genetics. I will also be able to attend weekly luncheon sessions with faculty members who will give a presentation on their area of research and how they got there.

1. **What kind of summer experiences did you apply for?**

I applied for seven undergraduate research programs across the United States. Though they covered a wide range of questions, flora, and fauna, they all fell under my specific area of interest, marine biology and ecology. I was specifically looking for programs that presented hands-on, individual research that could give me a more accurate picture of my future career.

2. **How was the process of applying to an outside research experience?**

I found most of the programs on the National Science Foundation's REU website (Research Experience for Undergrads). Most required three or four of the following for application: resume, essay, transcripts, application form, and letters of recommendation. For me, the most difficult part of the process was organizing the varied combinations of requirements and getting started on them.

3. **What encouraged you to apply?**

My advisor, Dr. Maria Todd, strongly promoted the idea early on in my college career. Because Southwestern doesn't have a specific marine biology major, taking initiatives like this might illustrate to graduate schools my dedication to the subject. Also, there really isn't anything I would rather spend my summer doing.

4. **What will you be doing in your program this summer?**

I will be conducting research at UC Davis Bodega Marine Laboratory, located on the rocky beaches of Bodega Bay, CA. There will be seven other interns as well. I will spend my first week of eight with my faculty mentor selecting and designing my experiment. Many of the possible research projects deal with marine invertebrate community ecology, predator-prey interactions, and pollution and environmental effects on coastal ecosystems.

Dena  
Leerberg  
Sophomore  
REU  
Marine <sup>7</sup>  
Biology -  
UCDavis



The Department of Biology needs a part-time student worker this summer to help with the continual clean-up and clear-out process and to perform routine lab work as required. Contact Dept. Technician Christy Schaller ([schallerc@southwestern.edu](mailto:schallerc@southwestern.edu)) with an email of interest and names of 2 references.



## Animal Behavior Program Activities

- **CURRICULAR/TEACHING:**
  - Spring 2007: Graduate 6 majors (3 B.S. and 3 B.A.)
  - Fall 2007: Taught new seminar Introduction to Animal Behavior for 2<sup>nd</sup> year
    - 24 students enrolled
- **PROGRAM EXPANSION:**
  - Established regular meetings
  - Increased communication between majors and faculty
  - Took field trip to MD Anderson Primate Facility in Bastrop (11/07)
  - Provided infrastructure for Brown Symposium XXX via work study funding
- **GRANT FUNDS:**
  - Based on a UNCF-MERCK fellowship awarded to AB major Delia Shelton, the program applied for and received a supplementary \$10,000 to support Capstone Research
- **IN DEVELOPMENT:**
  - Cultivating relationship with new local business (Zoot Pets)
  - Alumni list-serve
  - Paired major between Psychology and Animal Behavior (w J. Muir-Broadus)
  - Examination of major in light of curricular reform

### 2008 Graduating Seniors:

Dominique Bertrand  
Katy Siciliano

### Rising Senior Majors:

Delia Shelton  
Jennifer Penland\*\*  
Leah Christian

### Rising Junior Majors:

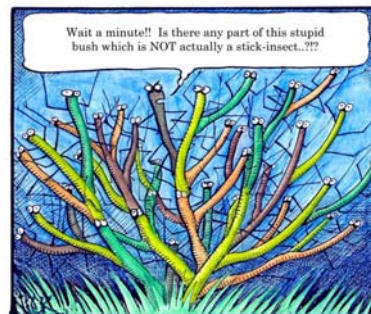
Jessica Bolton  
Brittany Ford  
Guilia Guiffre  
Jade Tinker

### Rising Sophomore Majors:

Alexander Hall  
Stephanie  
Henderson  
Michelle  
Camerota  
Megan Delgado  
Morgan Mingle  
Sarah Wiggins  
Sebastian  
Winkler

### New Minors:

Alex Brown  
Taylor Krueger  
Scott Manusov



*"Feel free to stick around" (ha, ha!) The AB Program continues to develop and expand, especially with interdisciplinary interest. Talk to Dr. Burks to learn more.*

# Biology Seniors!



1. You are invited to attend a picnic celebration in honor of your graduation and hosted by the faculty in the department of Biology. The picnic is one week from today, Friday, May 2, from 1-4 pm at a picnic pavilion in Cedar Breaks Park, Lake Georgetown. We will provide burgers (beef, chicken, and veggie) and many tasty sides. We will also provide some games and our reliable sense of humor.
2. **PLEASE COMPLETE A SENIOR SURVEY FOR THE DEPARTMENT!!**
3. Note that all Senior Grades need to be at the Registrar by 5 pm Monday. You are almost there!! Keep it up.
4. Don't lose touch - let us know what you are up to!