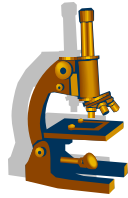
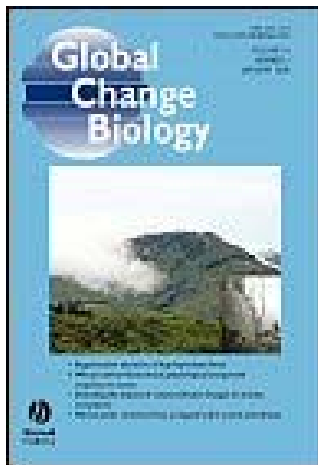
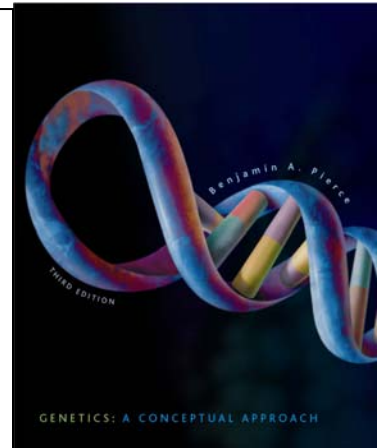


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SU Biologists Finish Up Big Projects

Dr. Ben Pierce, professor of biology and Brown Chair, recently completed his 3rd edition of his textbook: *Genetics, A Conceptual Approach*. Dr. Pierce shared that textbook writing has its own challenges because it can seem like the work is never done. However, he enjoys this project as the best way to keep up with the ever-changing world of genetics. As the book's second edition sold more copies than originally planned, Pierce sees this edition making even a wider impact as readers increasingly like his approach.



Dr. Max Taub, associate professor of biology, co-authored a paper that will be published in the March issue of *Global Change Biology*. In the paper, he and co-authors Brian Miller and Holly Allen analyze data on the effects of rising atmospheric carbon dioxide on the protein content of food crops. They conclude that the protein content of many crops (particularly wheat, rice, barley and potatoes) is likely to decline given the increase in CO₂ over the 21st century. The paper can be found online at

<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-2486.2007.01511.x>

Dr. Romi Burks recently saw her international collaboration in Uruguay come to fruition with the publication of an article in *The Journal of Molluscan Studies*. This project involved Brandon Boland '07 testing the feeding habits of applesnails in both Texas (*Pomacea insularum*) and in Uruguay (*Pomacea canaliculata*). It is a particularly exciting publication for the Burks Lab as future studies in Uruguay are being considered. The paper can be found on-line here: <http://mollus.oxfordjournals.org/cgi/reprint/eym045?ijkey=pkAUzrHAPA2U8z3&keytype=ref>





All Good Things Take Time....

For the 2008-2009 academic year, sabbaticals and University fellowships offer 3 Biology faculty more time to balance teaching and research.



Dr. Rebecca Sheller - Full Year Sabbatical:

During my sabbatical year, August 2008-August 2009, I plan to spend approximately nine months conducting collaborative research with Dr. Maria Todd and Dr. Maria Cuevas on the physiology of claudin-3 protein in breast cancer cell lines. I recently wrote a proposal to a philanthropic foundation to fund this research. In addition, I plan to spend approximately three months completing a set of pedagogical papers in the area of scientific education.

Dr. Martín Gonzalez, Sabbatical (Fall), Brown Senior Fellowship (Spring):

I plan to spend the next year advancing the research in my lab where I study mechanisms of DNA repair in *E. coli*. Such activity will contribute to future grant writing efforts that will hopefully continue my research support from the National Institutes of Health.



Dr. Maria Todd - Brown Junior (Fall):

During this fellowship, I want to further develop my two lines of research. For one project, Dr. Cuevas and I have written a grant to the National Science Foundation for some needed equipment to examine tight junction in breast cancer cell lines (see Summary Below). I also have some past projects on cancer biology that I plan to write up for publication during next Fall.



National Science Foundation
WHERE DISCOVERIES BEGIN

PROJECT SUMMARY

The present proposal seeks support for the acquisition of equipment to help advance the cellular and molecular biology research programs of faculty and their undergraduate researchers at Southwestern University. The requested funds will be used to purchase a flow cytometer, cell counter, phase-contrast microscope with digital camera, and a bench-top centrifuge. This equipment will be used to study the contribution of the integral membrane protein, claudin-3, to tight junction (TJ) strength, cell cycle regulation, cell proliferation, survival, motility and invasion in human breast epithelial cells.

TJs are apical intercellular junctional complexes with well-established and critical roles in the regulation of paracellular permeability and maintenance of cell polarity. In the last decade, the molecular characterization of vertebrate TJs has received much attention, yielding new, often surprising insights into their structural complexity and functional diversity. Claudins are one of three families of integral membrane proteins found in TJs. They comprise a family of 24 proteins that show tissue-specific expression and mediate interactions between adjacent endothelial and epithelial cells.

Beyond Simply Biology...

The Paideia group inspired by Dr. Cuevas completed their civic engagement project. The group worked with the Boys and Girls club of Georgetown. It was truly a community effort from Southwestern (BBB Biological Honor Society, APO, Kappa Alpha, Alpha Xi, women's basketball team, cheerleaders, professors, Dr. Berroth's Paideia group, Health and Counseling office, individual students), local Georgetown businesses (Chick-Fil-a and Chipotle) and friends from the Austin community. In partnership with Dr. Neville's group, they provided Christmas gifts for 35 children (ages 4-17), sponsored a family of five and coordinated the decoration and food for the Christmas Gala event where the children had the opportunity to show case their artwork and talents. Dr. Cuevas and her group start out this semester with reading *Blink* by Malcom Gladwell.

AB Major Jessica Bolton

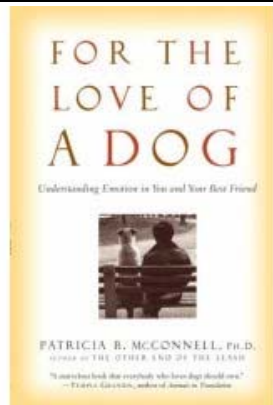
Biology Major and Spring '08 Coordinator Amanda Mohammed



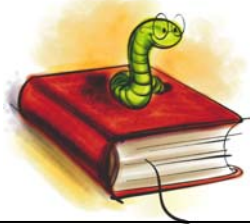
1st Year Student Claire Grady

Science Majors have been participating in SMARTeams (Science and Math Achiever Teams) under the direction of Dr. Burks. This program matches college students 1-on-1 with elementary school students to explore inquiry. The experience has also been developed into a 1 credit course in Civic Engagement with cooperation from Suzy Pukys. SMAR T has started recruiting now! Contact Amanda Mohammed (mohamma@southwestern.edu) who is doing her Capstone this semester as coordinator.





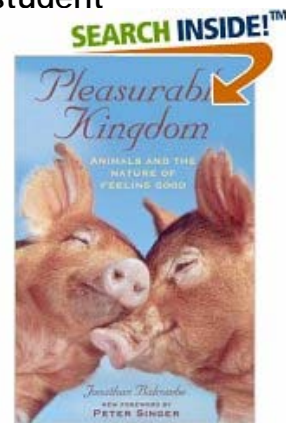
Advice from Animal Behavior Bookworms:




I thoroughly enjoyed reading the book "For the Love of a Dog: Understanding Emotion in You and Your Best Friend" by Patricia B. McConnell, Ph.D. I am a dog person through and through. Even though this book mainly focuses on dogs, McConnell references a lot of behavioral research done on all sort of other nonhuman animals, from typical research animals such as primates and rats to more exotic animals such as quails. Because the book is about 'understanding emotion in YOU and your best friend,' McConnell first explains the emotions that she focuses on in this book in a human context, using very basic neuroscience to explain the emotion and how it works in the brain of a human, then she reexplains everything in terms of dogs. This approach really helped me to understand everything.

-Jennifer Penland, AB Major

"Pleasurable Kingdom" - It is irrefutable that animals feel pleasure. As humans we only focus on the aspect of animal pain, and mistreatment. If animals can feel pain they must be able to feel pleasure. The book is filled with anecdotal and scientific evidence to support the claim that animals feel pleasure, as well as many popular animal behavior books. It is a very convincing narrative, and really made me rethink how and why I perceive animal emotions the way I do. Natural selection favors rewards. Pleasurable feelings are rewarding, and reinforce certain behaviors. Animals aren't responding consciously to these influences, rather they are living in the present, and motivated by responses—Sarah Wiggins - 1st year Intro AB student



Brown
SYMPOSIUM XXX



Umwelt: Exploring the *Self-Worlds of Human and Non-Human Animals

Alma Thomas Theater
Southwestern University
Georgetown, Texas
April 3-4, 2008

Dr. Diane Ackerman, writer and poet

Dr. Christopher W. Clark, Imogene Powers Johnson
Director of the Bioacoustics Research Program at the
Cornell Laboratory of Ornithology

Dr. David Fogel, president and CEO of Natural
Selection, Inc.

Dr. Michael S. Gazzaniga, professor of psychology at
the University of California, Santa Barbara

PUT THIS ON YOUR CALENDAR!



BIOSCOPE FOCUS: **Pedagogical & Scholarly Updates**



- Dr. Maria Todd and Dr. Maria Cuevas spent their Christmas Break finalizing the details for a Major Research Instrumentation proposal to the National Science Foundation (see pg. 2 for more details). They just sent the proposal away on the 29th and should be congratulated for an exceptional effort of writing the proposal amid all of the other demands of faculty members. The review can take up to 6 months...we'll keep our fingers crossed.
- **Biology Faculty Dr. Rebecca Sheller, Dr. Maria Cuevas, Dr. Maria Todd and Dr. Martín Gonzalez** all recently submitted research proposals to a potential funding agency. A focus on cancer research serves as the thread that ties these proposals together.
- **Dr. Max Taub's** recent publication in *Global Change Biology* has been highlighted recently by Scientific American (see pg. 1).
- **Dr. Romi Burks** gave a talk titled "Bad Eggs...Bad Snails: An update on the ecology of the Texas applesnail, *Pomacea insularum*" on Dec. 1st at the 3rd annual meeting of Central Texas Ecologists and Earth Sciences.
- **Dr. Pierce** published a paper in *The American Biology Teacher* in November (69:533-540) entitled "Illustrating Probability in Genetics With Hands-On Learning: Making the Math Real."
- **Colin Kyle '09 and James McDonough '09** recently submitted a research grant to the Texas Academy of Sciences to investigate more about how and why applesnails choose to lay their eggs on different surfaces.
- **Dr. Maria Cuevas and Dr. Romi Burks** recently received Sam Taylor Research Fellowships to continue their on-going projects in endocrinology and aquatic ecology, respectively.
- **Dr. Pierce** presented a talk at the Texas Herpetological Society in November with Southwestern student co-authors Alexis Ritzer '09 and Taylor Jones '08 entitled Distribution and ecology of the Georgetown salamander, *Eurycea naufragia*.
- **Dr. Max Taub and Dr. Romi Burks** received official invitations to give a presentation in a Special Oral Session, titled "Mentoring Future Ecologists at Small Liberal Arts Colleges Through Research" during this year's Ecological Society of American Meeting in Milwaukee. Dr. Taub will speak about his experience conducting meta-analysis with students and Dr. Burks will speak to the challenges and rewards of having undergraduate students as the first author of peer-reviewed papers.
- The lab of **Dr. Burks** will soon be featured (early March) as part of a story on "Exotic Aquatics" in the TV Show sponsored by the Texas Parks and Wildlife Department. The segment should air in early March on KLRU.

BIOLOGY STUDENTS OF THE YEAR: Ashley Battarbee & Jason Burnham

- Received the First Year Chemistry Student Award
- Participated as a member of Beta Beta Beta Biology Honor Society
- Served as a member of the Physical Chemistry Professor Interviewing Committee
- Conducted Anesthesiology research at the University of Texas Houston Medical School
- Received the Turner Caldwell Pre-Med Scholarship in my senior year
- Volunteered at St. David's Hospital in Georgetown
- Worked as a Dental Assistant during my summers in Houston, TX
- Served as Treasurer & President of Zeta Tau Alpha
- Studied abroad in Florence, Italy
- Served as Vice President for Omicron Delta Kappa National Leadership Honor Society
- Worked as an SU Ambassador and Tour Guide
- Served on Student Congress and Student Foundation



- Biology and Chemistry double major, Spanish minor
- Funded as a Merck scholar during Summer and Fall 2006 - worked on a project relating to antibiotic resistance in *E. coli*
- Presented Merck research as a part of the Biology Seminar Series Texas Academy of Sciences (above), and Southwestern University Undergraduate Research and Creative Works Symposium
- SMART program at Baylor College of Medicine in Summer 2007
- Volunteer Coordinator $\beta\beta\beta$ 2006-2007
- Vice President of Tri-Beta 2007-2008
- Math, Science, and Reading tutor for children K-8 as part of the Helping Hand Tutoring program
- Member of the Alpha Chi Honor Society,
- Omicron Delta Kappa National Leadership Honor Society
- Sigma Delta Pi Spanish Honor Society,
- Southwestern University Percussion Group



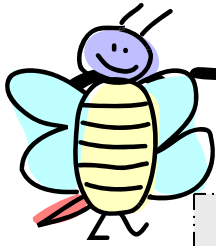
For their outstanding work in the department, both Ashley and Jason will receive medical dictionaries.

AWARD FOR EXCELLENCE IN ANIMAL BEHAVIOR Katy Siciliano



- Katy researched the neurobiology of female rat sexual behavior in Dr. Guarraci's lab, specifically the role of olfaction in mate preference.
- Her presentations include the SURGE banquet this summer and will be presenting at the Southwestern Central Psychological Association convention at SU this spring.
- At SU, Katy has been involved in ASIA, Operation Achievement, $\beta\beta\beta$, $A\Phi\Omega$ and productions of the Body Dialogues and VaginaMonologues.
- Katy also served a teaching assistant for Research Methods in psychology.

For her excellent work in the AB Program, Katy will receive both Planet Earth and the Blue Planet DVDs



OTHER BUZZ....

*Welcome to Christy Schaller, New Biology
Department Technician*



I was born and raised in South Dakota; attended University of South Dakota and graduated with a BS in Medical Technology. After living in Dallas for 5 years, I worked at Arlington Memorial Hospital as the Microbiology supervisor until 1995 when my husband got a job in Round Rock. I have been working in the Micro lab at Seton/Brackenridge since 1986. Since I live in Georgetown, I am very excited to be here at Southwestern and am looking forward to meeting everyone!!

My husband Carl is an industrial engineer; we have been married 18+ years. We have three children:

Justin (13)-8th grade at Tippit MS

Garrett (11)-5th grade at Williams Elem

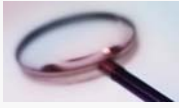
Courtney (7)-2nd grade at Annie Purl Elem

Needless to say, we are excited about the tuition benefits, and I plan to stick around for at least the next 14 years!! We have a large extended family as I am from a family of 11 and Carl is from a family of 10. I enjoy cooking, reading, swimming, movies, travel and spending time with family and friends. We are also involved with church and school activities, Boy Scouts, Cub Scouts and Girl Scouts, and keeping up with all the kids' sports and musical endeavors!

New May Term

Ms. Southwick is developing a new course involving Forensic Biology to be offered as a POK/ science distribution requirement. She received a Cullen Grant to develop the course. The course will be taught for the first time in May term, 2008. The laboratory component will involve learning how to do PCR and DNA electrophoresis, blood spatter analysis, bone identification, fingerprint identification, and other (hopefully!) interesting activities. The course has to be taught in summer school because it will require two lab rooms. Room 207 in the science building will be used as the students learn the various scientific techniques needed, and Room 212 will be used to set up a mock crime scene. It should be fun!



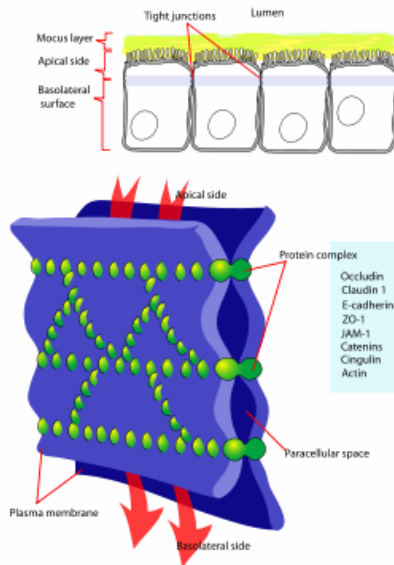


Learn something new from BioScope Magnifications:

- MOLECULE and PATHWAY: Claudin-3**

Source: Wikipedia (<http://en.wikipedia.org/wiki/Claudins>)

"Claudins are a family of proteins that are the most important components of the tight junctions, where they establish the paracellular barrier that controls the flow of molecules in the intercellular space between the cells of an epithelium. They have four transmembrane domains, with the N-terminus and the C-terminus in the cytoplasm." Dr. Todd believes that Claudin-3 plays an important role in the embryonic development and maintenance of homeostasis. Her work, in collaboration with Dr. Cuevas and Dr. Sheller, will look at physiological responses within breast cancer cell lines that have either elevated or normal levels of claudin-3 expression.



- ORGANISM & HABITAT: MEERKAT MANOR**

Animal Planet has created mix between a riotous comedy and a serious drama with its series Meerkat Manor. Meerkats most closely resemble a mongoose, live colonially in family groups and forage for insects and other small prey. They live in burrows and are quite active during the day. At least 3 subspecies exist in different geographical locations. Their complex social behaviors make them fun and entertaining to watch. Meerkat Manor takes places in Africa's Kalahari Desert.

Conservation status

Extinct | Threatened | Lower Risk

EX EW CR EN VU cd nt lc

Least Concern

Scientific classification

Kingdom: Animalia
 Phylum: Chordata
 Class: Mammalia
 Order: Carnivora
 Family: Herpestidae
 Genus: *Suricata*
Desmarest, 1804
 Species: *S. suricata*

Binomial name

Suricata suricatta
(Schreber, 1778)

Meerkat range

Officers



- President - Matt Kauffman
- Vice-President - Jason Burnham
- Secretary - Robert Lockwood
- Treasurer - Brytanie Piana
- Volunteer Coordinator - Amanda Mohammed
- Pre-Med Chair - Alison Unzeitig



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news



Plans for This Semester:

- Pre-Medical meeting with Dr. Bruns
- Careers in Biology (besides Medical and Graduate School) meeting with Roger Young
- Habitat for Humanity Build Day
- McCoy Elementary Science Fair Judging - February 1
- Tri-Beta Night at Austin Ice Bats (Hockey) Game or Round Rock Express (baseball)
- San Gabriel Park Clean-Up

CONGRATULATIONS

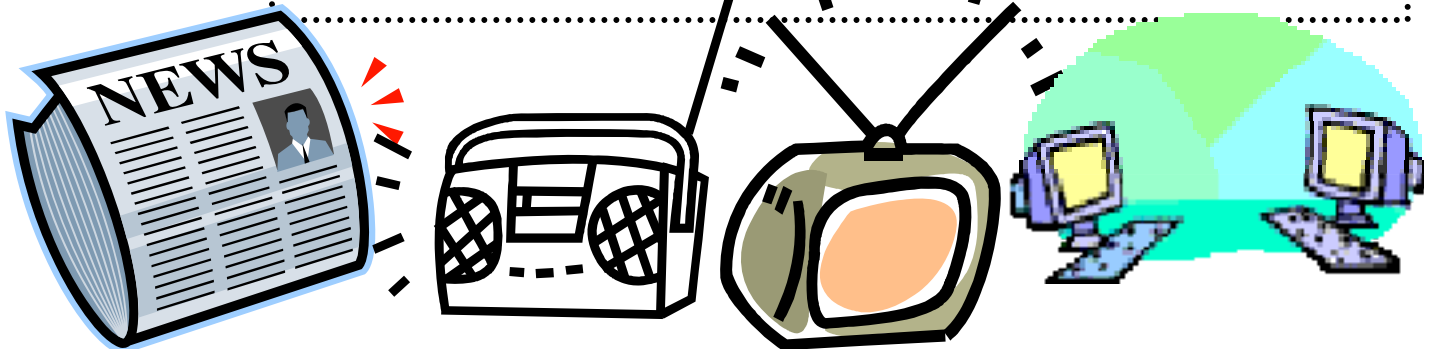
"15 Minutes of Fame" for Research & Teaching

The *Austin American-Statesman* ran a story about Biology Professor Max Taub's research on how rising CO₂ levels could affect the protein content of major food crops. He also commented on several radio stations.



The Houston Chronicle recently profiled the FYS Chocolate Class taught by Dr. Burks. This feature story has been picked up by several newspapers and websites. Dr. Burks will also appear on Channel 8 in an interview on Feb. 14th. You can read find the article in *The Austin American Statesman*:

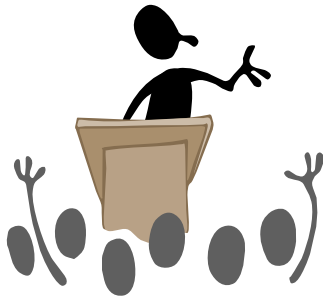
<http://www.statesman.com/news/content/news/stories/local/12/31/1231chocolate.html>



CONGRATULATIONS



To Visiting Professor, Dr. Veronica Martinez Acosta, who got married to Alfonso on January 12th in San Antonio. Dr. Acosta (note name change) will be in and out of the department this semester doing research with students.



Do you like to write?
Need a create outlet?
Enjoy connecting **Biology** with other things?

Consider becoming involved in *BioScope!*
Student writers and editors needed.
Contact Dr. Burks (burksr@southwestern.edu)



BIOLOGY SEMINAR SERIES CONTINUES...

Keep a look out for fliers! Thurs @ 12



ARE YOU GRADUATING?
CHECK IN WITH ADVISORS
AND ALSO FILL
OUT A SENIOR SURVEY!

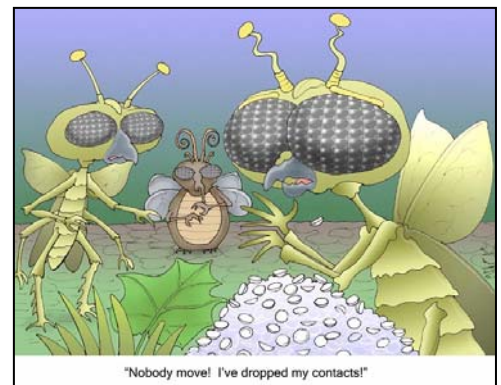
Congrats to Emily Schmidt and Niki Bertrand (AB) for King Creativity Grant Awards

Welcome back to Dr. Karen Wheeler, DVM, and current professor for Comparative Vertebrate Morphology



Dr. Wheeler currently practices at Griffith Small Animal Hospital in both Cedar Park and Austin. She is a true lover of all pets, especially fuzzy ones. Dr. Wheeler most recently taught Human Biology for the Biology Department and we are thrilled to have back. She is also the favorite vet of Twinkie and Cupcake!

*Just to bug you....
Some spineless humor*



"Nobody move! I've dropped my contacts!"

For more cartoon fun,
Visit www.nearingzero.net