

Southwestern University

DEPARTMENT OF BIOLOGY

We hope you enjoy this issue of the “Bioscope” and take the opportunity to learn a little more about the Biology department, our research, some study tips, and ways to engage with the faculty as well as other students!

Watch for signs for the next Biology Social to be held in the collaborative learning studio (FJS 260) and enjoy some treats on us! We look forward to seeing you there.



Biology Socials!



Dr. Stacie Brown and Austin Baker enjoy the tea party!



The Biology Department faculty and staff welcome you to the 2017-18 school year! Pictured left to right: Dr. Stacie Brown, Dr. Erika Borden, Dr. Maria Cuevas, Dr. Max Taub, Christy Schaller, Dr. Romi Burks, Dr. Ben Pierce, and Dr. Martin Gonzalez. Not pictured, Dr. Maria Todd (on sabbatical to focus on research).

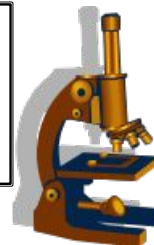


Pictured above (left to right) are students Margaret Leal, Myriam Ibarra, Saarah Cantu and Olivia Rosen.

Join our FB group! And visit us on our webpage

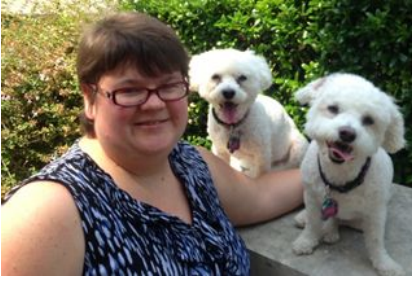
<https://www.facebook.com/groups/SUBIOLOGISTS/>

<http://www.southwestern.edu/departments/biology/>



B I O S C O P E

Message from the Department chair:



Dr. Romi Burks,
(Department Chair,
January 2017 - May 2019)
burksr@southwestern.edu
512-863-1280, Room#141



Welcome to the 2017-18 Academic Year!

On behalf of the Biology Department, I'm excited to welcome you to our community. We are an active, vibrant and engaged bunch of faculty, staff and students! Our department prioritizes student success and working closely with our students to maximize their undergraduate experience. We encourage you to get involved in the Department! So many ways exist from simply visiting with professors in office hours to doing research with a faculty member. Some students work as laboratory assistants, mentor elementary school students in SMaRT (see more on pg. 4), and /or participate in Beta Beta Beta. For our first year students, we strongly encourage you to engage in bolstering your study skills through BETA sessions. The teaching styles of our faculty vary a bit but we all seek to embrace student-driven education where we teach students to learn through inquiry-based instruction. You might find our classrooms to be a little different than your past experience but we encourage you to embrace new learning styles as education research shows active learning to boost student success. Good luck with the semester and feel free to contact us with any questions or concerns.



Eclipse shadow captured on the sidewalk of Southwestern University outside of Fondren Jones Science Hall on August 21, 2017!

CONGRATULATIONS!!

SU Biology Alumna Dr. Debbie Saddington Freeland is the recipient of the 2017 Lorraine Sulkin-Schein Medical Student Award in Geriatric Medicine at UT Southwestern Medical School for her compassion and commitment to the care of older adults!

Where is Dr. Todd?



Dr. Maria Todd

Dr. Todd is utilizing her sabbatical time this semester to focus on her research with endometrial cancer cell lines.

Majoring in Biology: Biology Curriculum

(BA = 4 UL courses + Capstone; BS = 5 UL + Capstone)

Gen Ed + Stats + Chemistry (I - BA; I & II BS) +Physics I & II/Calc I (BS)

BIOLOGY CAPSTONE - Option 1: 4 credits - for all students completing a BA or a BS degree that seek an integrative experience. Option 2 : 1 credit - for all students (BA or BS) that have successfully completed at least 3 hours of Research in Biology.

Above red line 300/above level courses	Biol. Reprod. Mol. Biology Microbiology Cancer Biol Organ Phys	Immuno	Biochem I recommended	Genetics Human Genetics Botany Evolution Plant Ecology Global Change Ecology Invert. Ecology
		Endocrine		
		Cell Phys	Organic Chem II	
Neurobiology Comp Vert Morph	Organic Chemistry I			
Methods in Cell and Molec Biol (200 level)		Methods in Ecol and Evol (200 level)		Gen Chem I and II
Biology Introductory Courses: Living Systems (Fall) ; Molecular and Population Genetics (Spring)			Statistics	

● Cellular and Molecular Biology

● Ecology and Evolutionary Biology

● Other areas

Where are your professors? Go say hello.

LAST NAME	FIRST NAME	EMAIL (@SU)	EXT	ROOM	LAST NAME	FIRST NAME	EMAIL (@SU)	EXT	ROOM
Borden	Erika	bordene	1627	Mood 320	Gonzalez	Martin	gonzale2	1621	Mood 208
Bowers	Christina	bowersc	1431	Mood 222	Pierce	Ben	pierceb	1974	FJS 240
Brown	Stacie	brown22	1776	Mood 316	Reamer	Lisa	reamerl	1146	Mood 222
Burks	Romi	burksr	1280	FJS 141	Taub	Max	taubd	1583	FJS 140
Cuevas	Maria	cuevasm	1698	FJS 241	Todd	Maria	toddm	1983	FJS 143

Student Groups

Beta Beta Beta

The Biological Honors Society, *Beta-Beta-Beta*, commits to engaging students in the appreciation of biology study, scientific research and the importance of biological issues. At Southwestern University, *BBB* informs students interested in a medical career about the admissions process. Last spring they hosted a group of middle school students from United Way of Williamson County, did an experiment with them and gave a tour of the new science building. This year they also have plans to host information sessions throughout the year for *BBB* members interested in going on to graduate school! Keep an eye out for signs around the science hall for information about meetings and how to join, or contact one of the officers listed below!

2017-18 *BBB* officers:

President- Abby Toppins	toppinsa@southwestern.edu
Vice President- Lauren Muskara	muskaral@southwestern.edu
Secretary- Mariany Gainza-Perez	gainzamp@southwestern.edu
Treasurer-Open	
Pre-Health Chair- Sara Cowan	cowans@southwestern.edu
Civic Engagement Chair- Audrey Horton	hortona@southwestern.edu

βββ Advisor: Dr. Martín Gonzalez

gonzale2@southwestern.edu



Anyone interested in Biology, including first year students, can join *βββ* as an associate member. Membership can be upgraded to "full" as students progress in their studies of biology. For more information visit the national *βββ* website: <http://www.tri-beta.org/aboutbbb.html>

Join SMArT! Recruiting Student Mentors Now!



SU Mentor Mauro Garcia and SMArTee Aiden Castro with their Solar Powered Robot project!



Greer Miller and Abby Toppins at the SMArT Achievement Party

Thanks to a generous grant from the WD Kelly Foundation, SMArTeams now represents an endowed Civic Engagement Opportunity geared towards science majors.

SMArTeams (i.e. Science and Math Achiever Teams) pairs SU student mentors with 3rd - 5th graders from a Georgetown ISD partner school. Led by SU students Claire Schumann, Greer Miller and Madison Granier, students come and check out SU on Mondays from 5-6 pm and explore a project of inquiry with their SU mentor. This fall SU mentors will be matched with students from Annie Purl Elementary! More info can be found on the webpage of the Office of Civic Engagement. Or, if you are interested in checking out the program, just email granierm@southwestern.edu

Interest Meeting for Mentors is Friday, Sept. 1 from 5-6pm

SMArT Directors include: Dr. Romi Burks, Christy Schaller and Dr. Sarah Brackman



RESEARCH



Main Research Interests of our faculty:

- **Dr. Romi Burks:** Aquatic & Molecular Ecology – Diversity, distribution and ecology of apple snails
- **Dr. Maria Cuevas and Dr. Maria Todd:** Tight junction protein deregulation in endometrial cancer
- **Dr. Martin Gonzalez & Dr. Stacie Brown**–Molecular Microbiology - post translational regulation of error prone polymerases
- **Dr. Ben Pierce:** Ecology, evolution and genetics of amphibians
- **Dr. Max Taub:** Patterns and mechanisms of Human Genetics

Sheller RA, Cuevas ME, Todd MC. 2017. Comparison of Transepithelial resistance measurements techniques: Chopsticks vs. Endhom. Biological Procedures Online 19:4 DOI:10.1186/s12575-017-0053-6.

Abstract Overexpression of claudin-3 tight junction protein in endometrial cancer cell lines and tumor tissues derived from African American women to be presented at 10th American Association of Cancer Research 2017 Conference on the Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved; to be held in September 2017 in Atlanta.

SCOPE NEWS!

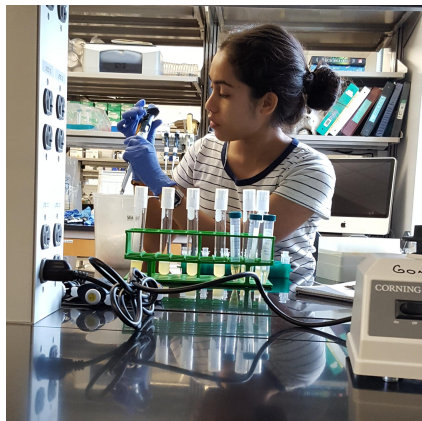
(Summer Collaborative Opportunities And Experiences)

DID YOU KNOW that your professors often publish with their students? If interested, ask them about their research!

SCOPE Scholars Antonio Mendez, Athena Pinero and Chandler Hyatt spent 8 weeks this summer in the research lab of Dr. Martin Gonzalez identifying the inhibitory factors of ICE391 responsible for attenuating mutagenic activity in bacteria. When cloned separately from ICE391, Ruma'2B has been shown to factor in cellular levels of spontaneous and DNA damage-induced mutagenesis, which can contribute to the establishment of antibiotic resistance. The student researchers honed skills such as pipetting and handling various pieces of laboratory equipment, harvesting and maintaining DNA fragments, as well as the essential research skills of troubleshooting problems and coming up with their own unique solutions! This experience gave them a glimpse of what a career in research might look like. To hear more about their work, visit their poster presentation at the **Fall SCOPE Open House on Thursday, Sept. 7 at 5 pm in FJS**, or next spring at the SU Research and Creative Works Symposium.



Antonio Mendez, class of '20



Athena Pinero, class of '20



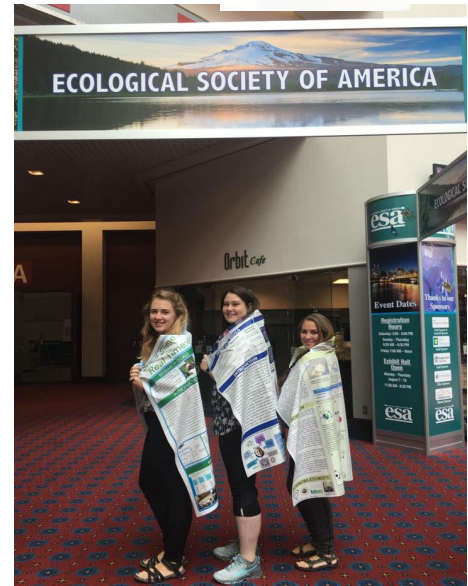
Chandler Hyatt, class of '19



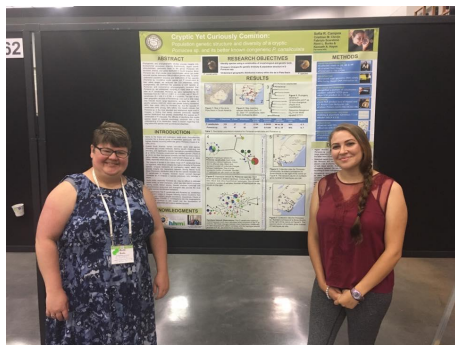
Ecological Society of America Meeting



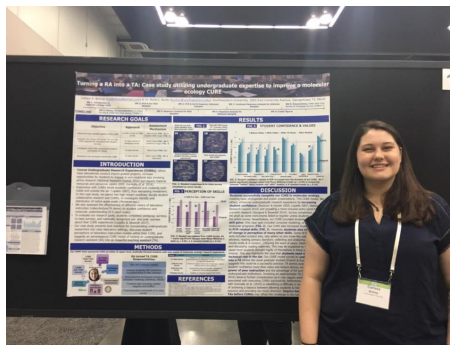
Professor of Biology **Romi Burks** attended the Ecological Society of America meetings in Portland, Ore., with three of her research students, **Carissa Bishop** '17, **Madison Granier**, class of 2019, and **Sofia Campos** '16, Aug. 6–11. All three presented their own research posters at this national meeting attended by over 4,000 ecologists. Bishop shared her experience mentoring her peers in an Invertebrate Ecology lab taught by Burks. Her poster "Turning an RA into a TA: Case study in utilizing undergraduate research expertise to improve a molecular ecology course undergraduate research experience" evaluated a module made possible by funds from the Keck Foundation. Granier presented her poster titled "Snail Slime in Real Time: qPCR Detection of Environmental DNA from Apple Snails" which includes a collaboration with SU alumnus Dr. **Matthew Barnes** '06. This project extends her SCOPE research from the summer of 2016. Campos added the final samples to her analysis and presented a poster titled "Cryptic Yet Curiously Common: Population genetic structure and diversity of a cryptic Pomacea sp. and its better known congeneric *P. canaliculata*." Co-authors include Dr. Ken Hayes from Howard University and Cristhian M. Blavijo and Fabrizio Scarabino from Uruguay.



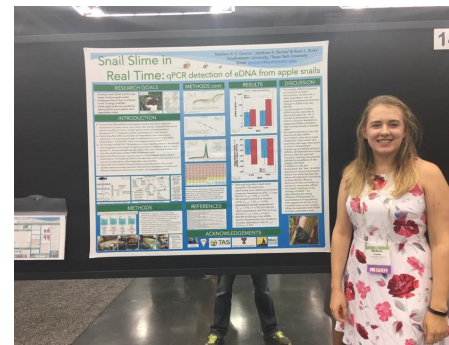
"Super researchers" pose with their fabric poster capes!



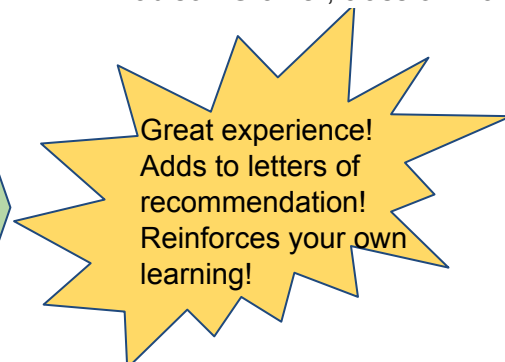
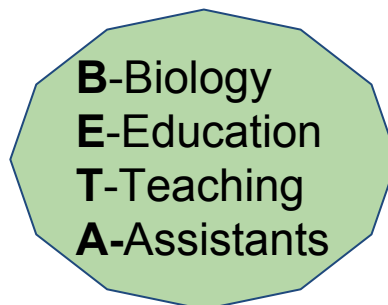
Dr. Romi Burks and Sofia Campos '16



Carissa Bishop '17



Madison Granier, class of '19



ATTENTION: all science majors - The Biology Department is now hiring students as BETAs for both the lecture and laboratory class Living Systems.

Times Available: Lecture Sun-Thursday evenings 8-9 pm
Labs: Mon 1:30-4:30 pm
Tues 7-10 pm
Thurs 12:45-3:45 pm
Fri 1:30-4:30 pm

Contact Dr. Burks if interested!
burksr@southwestern.edu

What Some of Your Biology Faculty Did During Their Summer “Work-cation”



Dr. Cuevas had the opportunity to travel to Germany and Mexico to spend time with family and friends. She attended a family reunion to celebrate her parents' 60th wedding anniversary. It was an amazing trip with her brother, sisters, nephews, nieces and of course her parents (17 total!).



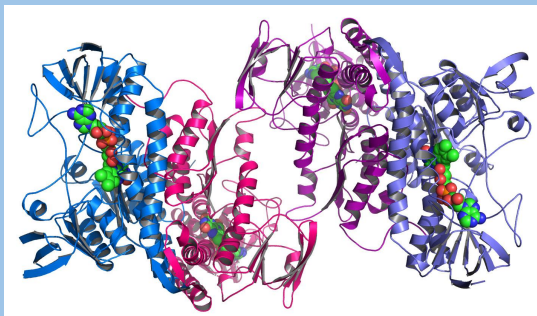
Dr. Cuevas is back from her Spring sabbatical. It was a very productive sabbatical where she made progress on her collaborative research project identifying the underlying molecular mechanism responsible for the over-expression of the tight junction proteins claudin-3 and -4 observed in several endometrial cancer cell lines. In addition, she co-authored a peer-review article, the abstract she submitted to the American Association of Cancer Research was accepted for a poster presentation, co-authored two external grant proposals and made incredible progress in the preparation of the new course she teaching in this fall. Dr. Cuevas is very excited about teaching Organ Physiology in the fall. The laboratory component will consist of independent research projects where students will study the effect of a particular variable on the nervous system, cardiovascular system and endocrine system.

Dr. Brown enjoyed some time off with her family this summer, spending time in Oklahoma and South Padre Island. She also worked on her new microbiology laboratory manual, scheduled to be published this fall by ASM Press.



Dr. Borden and family made their annual trip to the east coast, visiting family in Atlanta and Washington, DC, and spending a week at the beach in North Carolina."





In June, the Bio Dept. hosted a two-day bioinformatics workshop led by Dr. Robert Kuhn of the University of California Santa Cruz Genome Browser group. The workshop was attended by most of the Bio faculty (and by Dr. Anthony of the Comp Sci Dept.)- look for new genomics approaches to soon be showing up in your courses!

During May, Dr. Pierce and recent SU graduate Daniel Gonzalez conducted research on tail losses in the Georgetown salamander. Dr. Pierce spent June in New Mexico, where he worked several manuscripts. In July he attended the national Joint Meeting of Ichthyologists and Herpetologists in Austin. He also worked this summer on the 4th edition of his genetics textbook, *Genetics Essentials*, which is published by Macmillan Learning.



Georgetown Salamander



'The Todd family vacationed in Indian Beach, Florida, this summer. They were delighted to meet Winter and Hope from Dolphin Tale I and 2, go on an eco-cruise with local marine biologists, visit a Lego sculpture exhibition - Aidan is a huge Lego fan! - eat amazing seafood and, of course, spend lots of time at the beach!'

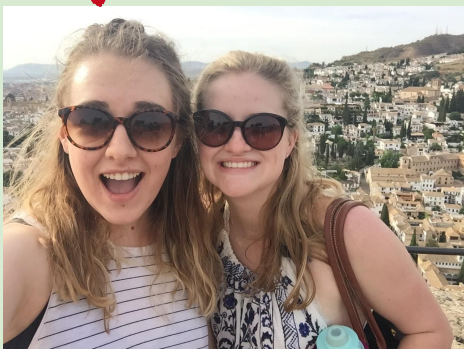


FJS Chemical Inventory Upgrade!

This summer, all of the chemicals in Fondren Jones were bar coded and added to our new chemical inventory system, Chimera. Thank you to recent SU grad Jiyoun Ahn '17 for all of her assistance with updating the inventory! Safety data sheets are linked to the Chimera system and automatically updated.



Students Abby Toppins and Madison Granier '19 Study Abroad in Spain!



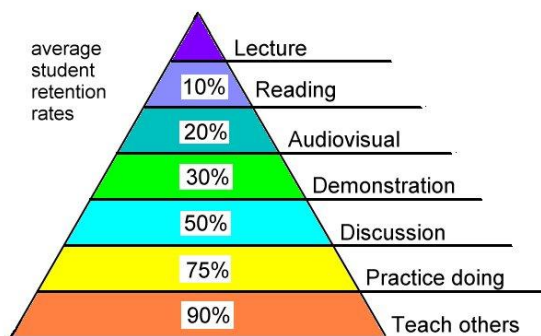
We had an amazing time in Spain. Though we did nothing related to biology for two months, it was a great experience. While taking upper level Spanish classes, we managed to eat a lot of Spanish food, embrace the local culture, and have a lot of adventures (including paragliding over Granada). Biology majors can study abroad!



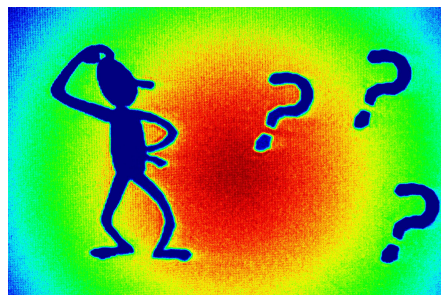
Nuggets of Wisdom!

- * Go to EVERY class (80% of success is showing up!) ENGAGE in class participation!
- * Take notes directly on slide handout, if available. Leave laptop at home to avoid distractions.
 - * Study a little bit EVERY day, rather than cramming in one long session.
- * Read actively before class; slow down and aim for understanding by asking questions such as: "What did I learn on this page?" and "What on this page is new to me?"
 - * Use flashcards to learn key vocabulary!
- * Answer the "end-of-chapter" questions BEFORE and AFTER reading a chapter to help connect new information to what you might already know about the topic!
 - * Make friends and study groups; participate in BETA sessions!
 - * Write down all syllabi dates on your calendar; test dates, projects due, etc.
 - * LOOK at your calendar at least weekly to plan ahead!
- * Get at least 6 hours of sleep a night. Sleeping is critical for ensuring that memories are successfully stored in long term memory!
- * Get some exercise! Going on a walk in nature can enhance your ability to focus.
 - * Check your email at least once a day
- * Visit office hours (We are here for YOU!) Ask questions if you do not understand a topic.
 - * Take advantage of our open door policy!

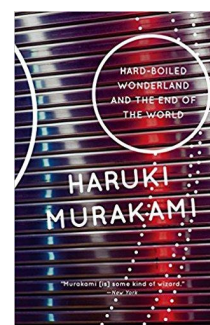
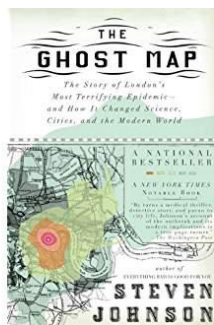
Learning Pyramid



Source: National Training Laboratories, Bethel, Maine



2017 BOOK LIST - READ FOR FUN IN ADDITION TO YOUR TEXTBOOKS



Link to Biology Writing Guide:

<http://www.southwestern.edu/live/files/4637-biology-department-writing-guide>

WELCOME BACK!!



Lisa Reamer-Primatology Instructor

Lisa Reamer is currently the Coordinator of Primate Behavioral Research at the University of Texas MD Anderson Keeling Center in Bastrop, TX – working with chimpanzees, olive baboons, rhesus macaques, squirrel monkeys and owl monkeys. She has worked at the Keeling Center for 8 years; prior to that she received her master's degree in Primatology from the University of Roehampton in London and spent time in Nigeria at CERCOPAN Primate Sanctuary working on conservation efforts with mangabeys and guenons. Her main research interest is captive primate welfare. Lisa taught Animal Behavior in Spring 2016 at Southwestern and loved the students and the campus so she is very excited to be returning. Originally from Ohio, Lisa went to undergrad at Concordia College in New York. She will be getting married in April and enjoys hiking. Big Bend National Park is one of her favorite spots (although Mesa Verde National Park is a close second).



Dr. Christina Bowers

Dr. Christina Bowers is a lifelong learner who enjoys exploring current topics in research across a range of scientific disciplines as well as strategies for engaging students in STEM education. She regularly participates in workshops through the Milwaukee School of Engineering, on the power of molecular models and associated narratives to foster student inquiry. She is currently a participant in the curriculum revision for International Baccalaureate Diploma biology in the Hague. A microbiologist at heart, she draws on those passions as a mentor for students engaging in original research in fulfillment of the IB diploma, at Meridian World School—an IB continuum school in Round Rock, where she currently teaches and oversees a science program spanning 6-12 grade. She holds a Master's degree in biology from the College of William and Mary, where her focus was red algal phylogeny and a doctorate in Molecular Genetics from the U.T. Medical School in Houston, where she studied the mechanics of transcription initiation in bacteria. As a Life Sciences Research Fellow at Princeton, her work focused on protein secretion in Gram Negative bacteria.

She is passionate about student exploration in the lab and beyond, where her mission in life is to inspire students to leave with more questions than they came in with and the tenacity to seek out the answers. When she is not in the classroom, she enjoys hiking (with dogs or humans), flamenco dance and traveling with family. Previously at Southwestern, she taught Cell Biology and an upper division course on Microbial Pathogenesis, and is very excited to return to Southwestern to participate in the introductory biology labs.

If you would like to contribute materials
and/or be an editor for BioScope, please
contact Christy Schaller, FJS #268, ext 1544,
schallec@southwestern.edu

