

Southwestern University

DEPARTMENT OF BIOLOGY

B I O S C O P E



Welcome from the Biology Department (left to right): Dr. Stacie Brown, Dr. Ben Pierce, Dr. Romi Burks (chair), Christy Schaller, Dr. Maria Todd, Dr. Maria Cuevas, Dr. Erika Borden, Dr. Martin Gonzalez and Dr. Max Taub.

The Jack and Camille Garey School of Natural Sciences



SU Life Trustee Jack Garey is pictured above signing the final 12-foot beam to be installed in the Fondren Jones Science Hall Phase II addition. Also pictured are President Burger and Mr. Garey's wife Doris. Mr. Garey, with honor to his late wife Camille Garey, also a former SU trustee has donated \$15 million to fund an endowment that will establish the Jack and Camille Garey School of Natural Sciences. The endowment will support faculty development, academic programming, need based scholarships and high impact experiences. We are grateful for this generous, impactful gift which will benefit many current and future SU faculty and students!



The Phase II expansion of Fondren Jones Science Hall is well underway. We anticipate that move in will take place during the summer of 2019. In addition to Biology, Chemistry and Physics, the added space will allow Math, Computer Science and Kinesiology to join in on the collaboration! Other features of the new space include a new Pre-Med Center, shop area, loading dock, plant growth facility, nursing station, computer lab, outdoor classroom, human performance/exercise lab, an open atrium for hosting events, as well as several offices, seminar rooms, and additional research and teaching labs and classrooms. It is an exciting time to be a Biologist & a Southwestern Pirate!

Join our FB group! And visit us on our webpage

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

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



Fall 2018
Issue #27

Message from the Department Chair:



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



Welcome (and welcome back) all biologists! As Chair of the Department, I have several routine responsibilities but also some overall broader goals. As a Department, we continue to look for ways to connect with our students. This semester we will launch a new seminar series - FRESH - Faculty Research Engaging in Scholarship "Hello" or maybe highlights. I like highlights a bit better and I'm responsible for the acronym. Whatever we choose, this series gives faculty an opportunity to share their own research agenda with our biology community and provide a sense of where the research might go. Other faculty will often also be attendance and may be available to talk about research opportunities. I strongly encourage you to attend the series - as part of participation in a course, sometimes even maybe extra credit...but most importantly, because you love biology and want to know more. In addition, we will be conducting a very important task this semester - searching for a new Developmental Biologist to join our department. We asked two students, Seniors Hannah Winkler and Antonio Mendez, to join our search committee and organize interactions between our candidates and our biology students. Hannah and Antonio will provide great feedback - but they will also graduate in May. All first-years, sophomores and juniors will have the opportunity to take classes from the person we hire so it's VITAL to be involved. Besides seminars, we also host a number of social events - with the first one coming up on September 13th. Come hang out with Biology faculty and play some Biology-themed games!! As other ways to be involved, I strongly encourage students to participate in our Honor Society, *Beta Beta Beta*, and pay attention to other ways to help create the strong, supportive and inquisitive community of biologists that we want. I welcome any questions, suggestions or concerns that you might have. You can find me and the girly dogs in my office most afternoons in the Fall. Best wishes to everyone for a fabulous academic year.

**Biology Social &
Game Day
Thursday, Sept 13
4:30-6 PM
FJS 260**



Alumni News



The Health Studies Minor explores interconnections among health, disease, and society to prepare students to understand the broader role and determinants of health in today's world. This interdisciplinary minor will promote an increased awareness of the historical, political, social, and cultural dimensions of health. Students will develop a more critical and holistic perspective of health through interdisciplinary analysis of these complex issues. For details on courses check out the catalog. *Biology majors (either BA or BS) only need three additional courses outside the sciences to complete this major.*

**For more information contact Dr. Maria Cuevas, Health Studies Minor Coordinator:
Phone:512-863-1698, Office FJS 241**

Burks R. Wait, you can't leave me! How to maintain research productivity with undergraduates post graduation [version 1; not peer reviewed]. *F1000Research*2018, 7:1249 (slides) (doi: [10.7490/f1000research.1115925.1](https://doi.org/10.7490/f1000research.1115925.1))

Jason Burnham, M.D., an instructor of medicine in the division of infectious diseases at the Washington University School of Medicine in St. Louis, and SU alumnus, authored a study on the importance of consulting an infectious disease specialist for patients who develop multiple drug resistant infections.

The One Doctor You Need to See If You Get an Antibiotic-Resistant Infection

<https://www.consumerreports.org/medical-conditions/the-one-doctor-you-need-to-see-if-you-get-an-antibiotic-resistant-infection/>

For the complete study in Open Forum Infectious Diseases,

<https://academic.oup.com/ofid/article/5/3/ofy026/4925511>



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 Endocrine Cell Phys	Biochem I recommended	Genetics Human Genetics Botany Evolution Plant Ecology Global Change Ecology Invert. Ecology
Neurobiology Comp Vert Morph	Organic Chemistry I			Organic Chem II
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

Biology Faculty/Staff Directory

LAST NAME	FIRST NAME	EMAIL (@SU)	EXT	ROOM	LAST NAME	FIRST NAME	EMAIL (@SU)	EXT	ROOM
Borden	Erika	bordene	1627	FJS 143	Gonzalez	Martin	gonzale2	1621	Mood 208
Bowers	Christina	bowersc	xxxx	FJS 161	Pierce	Ben	pierceb	1974	FJS 240
Brown	Stacie	brown22	1776	Mood 316	Schaller	Christy	schallec	1544	FJS 268
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



2018-19 BBB officers:

βββ Advisor: Dr. Martín Gonzalez
President - Madison Granier
VP- Lauren Muskara
Treasurer - Jack Stark
Civic Engagement Chair- OPEN
Pre-Health/Pre-Med Chair - Hannah Winkler
Secretary - Karen Rativa

gonzale2@southwestern.edu
granierm@southwestern.edu
muskaral@southwestern.edu
starkj@southwestern.edu
winklerh@southwestern.edu
rativaf@southwestern.edu

First meeting: Thursday, Sept 13th at 7 PM in FJS 148

Beta Beta Beta (TriBeta) is an honor society for students, particularly undergraduates, dedicated to improving the understanding and appreciation of biological study and extending boundaries of human knowledge through scientific research. In the past at Southwestern, we have brought in guest speakers, hosted local environmental clean-ups, and held events to get to know your SU biology department. If you are interested in becoming a member of TriBeta, make sure to keep an out for flyers around FJS throughout the semester!

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!

Thanks to a generous grant from the WD Kelly Foundation, SMARtTeams now represents an endowed Civic Engagement Opportunity geared towards science majors. SMARt Directors include: Dr. Romi Burks, Christy Schaller and Dr. Sarah Brackman



**SMARt
Commitment
meeting
Friday, Sept. 7th
5-6 PM
FJS 148**



SMARtTeams (i.e. Science and Math Achiever Teams) pairs SU student mentors with 3rd - 5th graders from a Georgetown ISD partner school. Led by SU student 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 Ford 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



Interested in RESEARCH?

Eat some free pizza and hear about our faculty research at a “FRESH” talk!
(Faculty Research Education Sharing Hello) Location: FJS 148
Then, visit with a faculty member if you want to learn more, or possibly work with them!



Friday, Sept. 7th Noon-1 PM: Dr. Romi Burks
Having a "Shell" of a Time: Recent molecular ecology projects with freshwater snails
Friday, Oct. 19th Noon-1 PM: Dr. Erika Borden
Friday, Nov. 30th Noon-1 PM: Dr. Maria Cuevas



It's all about ^{lack of} connections: Loss of cell adhesion in endometrial cancer

SCOPE NEWS!

(*Summer Collaborative Opportunities And Experiences*)



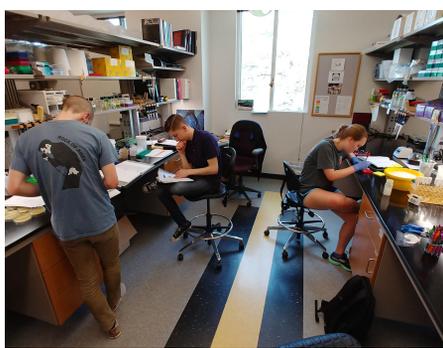
Shannon O., Dr. Barnes, Lauren & Shellsea

Shannon Odell, Nicole Kelly, Lauren Muskara, and Shellsea Miller worked in the lab of Dr. Romi Burks over the summer. Shannon, Lauren & Shellsea also spent 4 days collaborating with Dr. Matthew Barnes '06 at Texas Tech University. Along with continuing researcher Hannah Winkler and recent '18 graduate Shannon Walsh, Nicole and Shannon O. published a quick summary of their research to date in *Ellipsaria*.

Help Us Unravel the Mystery:
Genetic Differentiation of Chinese and Japanese
Mysterysnails with Future eDNA Collaboration



Dr. Matt
Barnes '06



Working in the lab of Dr. Gonzalez this summer were Chandler Hyatt, Antonio Mendez and Lacey Mims. They spent part of the summer knocking out genes from the Integrating Conjugative Element 391 (ICE391) which are believed to regulate the activity of the error-prone DNA polymerase encoded by ICE391. Because this DNA polymerase has the potential to produce numerous mutations within the genome of the bacterial host, they will spend the 2018-2019 academic year assessing the role of these genes by characterizing the knockout derivatives of ICE391. They also spent a portion of the summer identifying the bacterial proteases responsible for regulating the cellular levels of the polypeptides that make-up the error-prone DNA polymerase. Oh, and they also had fun bowling! It was a great summer!!!



**B-Biology
E-Education
T-Teaching
A-Assistants**

**Want to earn money while reinforcing
your own learning?**



Need a great recommendation letter?

Contact Dr. Burks (burksr@southwestern.edu) if you are interested in becoming a **BETA student** for the Living Systems Lecture or Lab classes! Several time slots available for all science majors who have previously taken **Living Systems!**



**Interested in
Medical/Osteopathic/Dental/Veterinary
School?**



**Information Meetings:
First and Second Year Students:
Friday, Sept. 21st at 12:20 PM
Location: Lynda Ballroom
Juniors: Spring 2019
Location and date TBD**

Contact: Dr. Maria Cuevas-Pre-Med Chair
phone number 512- 863-1698, Office:FJS 241



WATCH FOR INFORMATIONAL FLYERS!

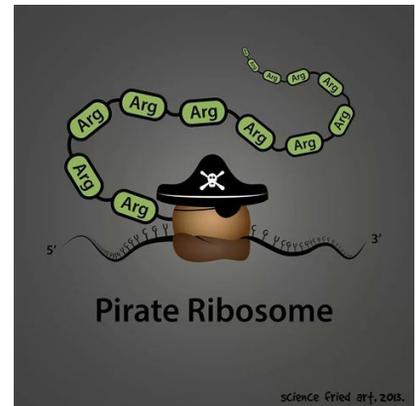
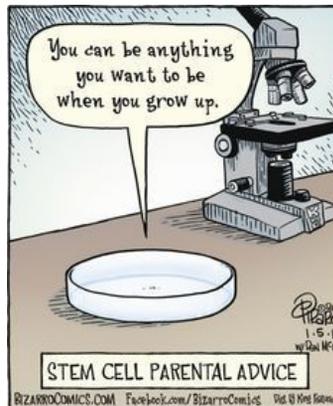
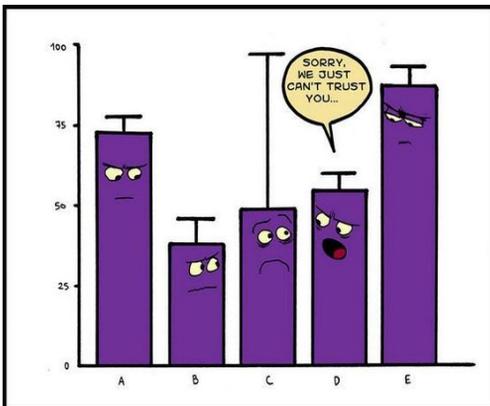


**Welcome Laura Palanco!
FJS Administrative Assistant**

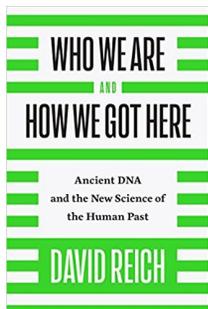
Laura moved to the Austin area in May of this year from Alpine, TX where she was the administrative assistant to the Language and Literature Department, and Dean of Graduate Studies at Sul Ross State University. Her hobbies include spending time with her grandchildren, hiking, camping, and gardening. She is married and has three daughters: Samantha lives in Mesquite and teaches 4th grade science and math, Brittany is a juvenile probation officer, and Cassandra is attending Texas A&M. Laura has three granddaughters ages 4,4, and 1 and one grandson age 6. She also cares for a very bad red tick hound dog named Clyde!

Tips for Success!

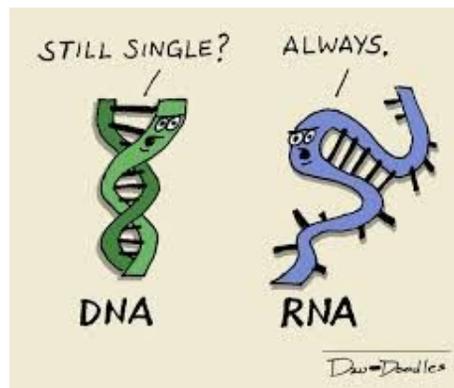
- * Go to EVERY class (80% of success is showing up!) ENGAGE in class participation!
- * Take notes directly on slide handout, if available. Leave laptop at home to avoid distractions.
 - * Study a little bit EVERY day, rather than cramming in one long session.
- * Read actively before class; slow down 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!



Recommended Reading for Fun



A fascinating, non-technical look at how analysis of DNA from ancient human burials has revealed fascinating insights about the peopling of the earth, as humans expanded out of Africa, and have migrated and interbred over tens of thousands of years.



Link to Biology Writing Guide:

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

Biology Faculty Summer Work and Fun!



Georgetown Salamander



Ben Pierce worked on two manuscripts this summer. One, an article on movement in the Georgetown salamander, is co-authored with former Southwestern students Areli Gutierrez and Sam Guess and will be published in the August issue of *Herpetological Conservation and Biology*. The second article, on tail loss and regeneration in salamanders, is co-authored with former Southwestern University student Daniel Gonzalez and is being revised for publication. Dr. Pierce also worked on the next (7th edition) of his genetics textbook. He spent June in northern New Mexico with his family. While there, he taught a class on butterflies to children in the Nature Discovery Camp. In July, Dr. Pierce attended the Joint Meeting of Ichthyologists and Herpetologists in Rochester, NY and in August, he traveled to William Jewell College in Missouri where he conducted an external review of their biology program. Throughout the summer, Dr. Pierce was the faculty liaison with architects and contractors on construction of the new science building.



Dr. Stacie Brown, husband Brad and children Gabby and Gavin enjoy Epcot!

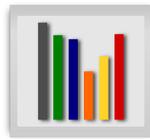


Dr. Brown spent the summer traveling with family to Disney World, South Padre Island, Oklahoma, and Phoenix. Dr. Brown also attended an educator's conference in Austin, TX, and is excited to share what she learned with her classes.



In July, the Brown's gained a new family member: a sweet puppy from a local rescue organization. Her name is Kita and her hobbies include chewing on toys, running with kids, and eating shoes.

Dr. Burks spent time with her new nephews, hiked Rocky Mountain National Park (12,200 ft) & went to Universal Studios and spent some time in Cape Cod and Mystic Aquarium, pictured below with jellyfish!



Dr. Max Taub attended a course on "The Search for Selection" (observational, experimental and statistical methods for detecting natural selection in populations) at the National Institute for Mathematical and Biological Synthesis in Knoxville TN. He also increased his knowledge of spoken French from zero to "I can make a fool of myself" in preparation for a trip to visit relatives of his wife in southern France. He is happy to report that France is a nation that knows that field biologists should be revered.



Statue of Entomologist in Sérignan-du-Comtat, France)



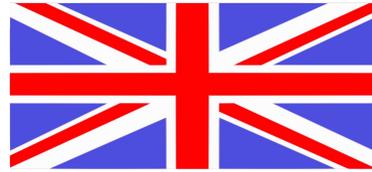
Dr. Martín Gonzalez and his wife Kris and sons Steven and Daniel were able to escape the heat and enjoy some hiking in Cloudcroft, New Mexico.!



Dr. Romi Burks gave an "Inspire" presentation (link on pg. 2) at Ecological Society of America meetings in New Orleans. Matt Barnes '06 was also in attendance. Dr. Burks also attended an R workshop at the University of Missouri Botanical Garden in early June.



Dr. Todd, Aidan, and Sean at St. Paul's Cathedral

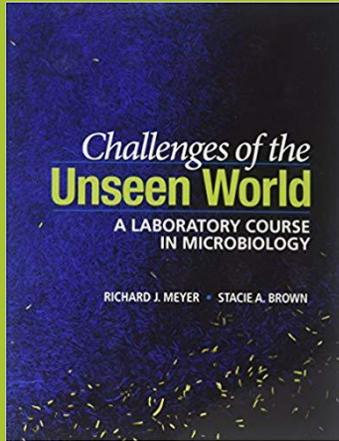


Shard Building (tallest in Europe!)

Dr. Maria Todd spent part of the summer in England with her husband Sean and son Aidan. They enjoyed visiting the 9th Century Warwick Castle, as well as St. Paul's Cathedral. They also toured Guildhall, Windsor Castle, Portsmouth, and the Shard building, and enjoyed catching up with family and friends.



Warwick Castle, pictured above. Dr. Todd and family enjoying the view from the top of the castle on the left.



Dr. Stacie Brown attended the American Society for Microbiology Conference for Undergraduate Educators (ASMCUE) to promote her new book, *Challenges of the Unseen World: A Microbiology Laboratory Manual*. The book, co-authored with Dr. Richard Meyer from the University of Texas at Austin, consists of six multi-week modules and conforms to ASM curriculum and safety guidelines.



Dr. Stacie Brown (left) pictured with her publisher at the ASMCUE conference.

WILD about CONSERVATION!



Associate Professor of Education Sherry Adrian, Professor of Education Michael Kamen, and Associate Professor of Education Alicia Moore, together with staff from Texas Parks & Wildlife, hosted the Texas WILD Forum over three days for 40+ participants in Mood-Bridwell. The Forum was an opportunity to demonstrate how to share conservation with young children with the intent to build a child's sense of wonder with arts and crafts, music, reading, math, and conservation activities

- Professor of Biology Romi Burks presented the "ABCs of Apple Snails and eDNA." She spoke about the basic ecology, diversity, and distribution of apple snails and how future monitoring efforts may incorporate environmental DNA.

Interested in an Internship working with baboons and chimpanzees?



Contact Lisa Reamer at the Keeling Center in Bastrop LAReamer@mdanderson.org.

- *Flexible Hours!
- *No experience required, although Research Methods and Data Collection experience is helpful.
- *Preferred fields of study include Animal Behavior, Biology and Psychology (others considered on a case by case basis)



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

Why did the dinosaur cross the road?
Because the chicken hadn't evolved yet!

