BioScope’s Back, Biologists!
It has been a while since our last issue but we’ve been busy!

- Dr. Pierce spent Spring 2013 on sabbatical working on his Genetics textbook and other papers. Dr. Pierce also received the Exemplary Teaching Award from the Board of Higher Education and Ministry of the United Methodist Church.
- Dr. Cuevas & Dr. Todd stepped up as Cluster Leaders for the new Paideia in Taking the Pulse of Global Health.
- Dr. Burks spent 7-weeks in Hawaii last summer learning how to apply molecular ecology techniques to apple snails.
- Dr. Taub (2012) & Dr. Burks (2013) both received promotions to the rank of Full Professor.

- Dr. Gonzalez received recognition from the American Society for Microbiology as a Science Teaching Fellow.
- Dr. Sheller attended a special workshop on Inquiry-based Learning at Grinnell College.
- The Biology Dept. recorded 5 publications published by our faculty with 4 students as co-authors, as well as 16 students as co-authors involved in presentations at regional and national scientific meetings.
- SU students scored in the top 5% nationally in an assessment exit exam (Major Field Test) in Biology Capstone.
- Biology has a Student Seminar Series which provides a forum for our students to present research findings, giving students an opportunity to learn to get involved with research.

Welcome from the Biology Department
Welcome to Southwestern University and particularly to the Biology Department. We are looking forward to meeting all of you in person and hope your transition to SU is a smooth one. This is an exciting time for all of you and maybe some of you are a little anxious. You are probably excited about the new independence and all the opportunities that lie ahead. Are you anxious at the unknown, the new roommate, the new professors, or wondering what we all expect from you? Just remember we are all here for you.

Please know that our main goal is to help you succeed. Get involved and get to know us! To that end, we encourage you to take advantage of all the opportunities SU and the Biology Department has to offer. Do not hesitate to stop by our offices to introduce yourselves or if you need anything. We have an open door policy precisely to encourage our students to sit down and chat. We wish you the best in this new journey!

To our returning students, we hope you had a wonderful, fun, relaxing summer, and are re-energized to start a new semester. We expect you will continue to do your best and represent our department with distinction. As always, please stop by to say hi! We would love to hear what you did this summer.

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Advice for First Years
Connect to the Department
Southwestern University Biologists

Find us on Facebook

1. Take advantage of the small class size and our open door policy to get to know your professors. Don’t be intimidated, and seek our assistance as soon as you need it. Our goal is to help you succeed in our classes and prepare you well for your career of choice. (Dr. Cuevas)

2. Think of your college education as your full-time job for the next 4 years. (Dr. Pierce)

3. Seek out your own opportunities and don’t be afraid to try something new. (Dr. Burks)

4. Visit with your professors, regardless of whether or not you need specific help with your studies. (Dr. Sheller)

5. “Understand deeply... Be brutally honest about what you know and don’t know...There are degrees to understanding...and you can always heighten yours. Rock-solid understanding is the foundation for success.”- Edward Burger and Michael Starbird. (Quoted by Dr. Taub)

6. Don’t sit on a question. First year courses move rapidly and as soon as you encounter a question or area of difficulty, seek out an answer with a peer, tutor or professor. (Dr. Todd)

7. Set up a regular study schedule and make sure to seek help if you find yourself struggling with course material. (Dr. Gonzalez)

Interested in Animal Behavior?
Intro Class starts in October
Talk to Dr. Burks

Apple Snail Lab Alumni catch-up
with Dr. Burks outside SU

1. “Can I turn this in early?”
2. “I appreciate all the time you took to grade this assignment and I’ll take into consideration all your comments.”
3. “I really enjoyed the discussion today, where could I find more information about that?”
4. “I woke up thinking about biology and just couldn’t wait to tell you about it.”
5. “Even though this course may be required, I would have chosen to take it anyway.”

JUST FOR FUN-Guys!!
Five Things TO SAY to your Professor

1. “Did I miss anything important/Did we do anything important in class?”
2. “I just took your class for an easy A.”
3. “I didn’t know we had anything due in this course.”
4. “I was busy studying for my other classes so I didn’t do my work for this class.”
5. “Did you answer my email yet?”

 JUST FOR FUN!!!
Five Things NOT TO SAY to Your Professor

1. “Did I miss anything important/Did we do anything important in class?”
2. “I just took your class for an easy A.”
3. “I didn’t know we had anything due in this course.”
4. “I was busy studying for my other classes so I didn’t do my work for this class.”
5. “Did you answer my email yet?”

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. This year they also have plans to host information sessions throughout the year for BBB members interested in going on to graduate school!

2013-2014 BBB officers:

President: Kyrie Cassin
Vice-President: Joshua Page
Treasurer: Kelsey Rice
Secretary: Rebecca Norcini
Volunteer Coordinator: Kara Curley
Grad School Coordinator: Chandler Adaway
Med School Chair: CJ Martinez

βββ Advisors: Dr. Rebecca Sheller and Ms. Linda Southwick

cassink@southwestern.edu
pagej@southwestern.edu
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norcinir@southwestern.edu
curleyk@southwestern.edu
adawayb@southwestern.edu
martinec@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

SMArT Begins 14th semester at SU!!

Recruiting Students Now!

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 fabulous Biology Senior Megan Lowther, students come and check out SU on Mondays from 5-6 pm and explore a project of inquiry with their SU mentor.

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 Megan Lowther (lowtherm@southwestern.edu)

Interest Meeting for Mentors
SMArT begins: Monday, September 9th
SMArT Directors include: Dr. Romi Burks and Dr. Sarah Brackman
Mrs. Anica Debelica
Teaching Biodiversity

- MS in Zoology from Sam Houston State University
- Currently working on PhD in Biology at Baylor University
- Favorite book is Shannara series by Terry Brooks
- Summer vacation included trip to Serbia with 9-month old baby girl
- Favorite vacation spot is Malaysia
- Looking forward to meeting new science enthusiasts
- Words of wisdom for students: Trust your instructors, if you need help, ask for it; If an instructor gives you advice, trust that is from his/her heart and with best intentions; Instructors are here to teach you and guide you through your education

Fascinated by sensory plasticity bacterial cells
Has used genetics to probe how proteins synthesized in the cytoplasm are selectively and correctly targeted to and across biological membranes at Princeton University
Studied the nuts and bolts of transcription initiation at UT Medical School in Houston
Words of wisdom for students:
Don’t be afraid to ask questions, the more you participate, the richer your experience and the more you will learn (and the more fun you will have!)
Has discovered good books through reading with her kids, recently introduced to “The Giver Trilogy” by Lois Lowry
Summer vacation included a trip to San Francisco where the high points were tickling anemones in the tide pools and playing in the tinkering lab at the Exploratorium

Dr. Christina Bowers
Teaching Cell Biology

- Earned PhD from the Department of Biological Sciences at Louisiana State University in Baton Rouge
- Worked in DC on science policy and communication
- Scientific interests run the gamut of evolutionary ecology, conservation biology and landscape genetics
- Doctoral research included investigating how habitat fragmentation and environmental conditions shape genetic variation in populations of Artibeus lituratus, the “great fruit-eating bat”, in highly-threatened Atlantic Forest of South America
- Enjoys reading fantasy and science fiction for fun
- Summer vacation included a trip to Zambia, a road trip up the west coast of the USA, and hiking in some spectacular national parks
- Words of wisdom for students: Encourages students to take every opportunity to develop, intellectually and personally, in the directions that interest them

Dr. Eve S. McCulloch
Teaching Biodiversity

- Earned PhD from the Department of Biological Sciences at Louisiana State University in Baton Rouge
- Worked in DC on science policy and communication
- Scientific interests run the gamut of evolutionary ecology, conservation biology and landscape genetics
- Doctoral research included investigating how habitat fragmentation and environmental conditions shape genetic variation in populations of Artibeus lituratus, the “great fruit-eating bat”, in highly-threatened Atlantic Forest of South America
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2014 Brown Symposium
Healing: The Art & Science of Medicine
Brought to us by Biology Professor & Brown Chair Dr. Ben Pierce
Feb. 6th and 7th

+ Art Exhibit + Health Fair + Panels + Film Series
More about the participants can be found here:
http://www.southwestern.edu/academics/brownsymposium/participants.php

Biology supports Science-Artists!

Past visiting professor Dr. Hayley Gillespie has started a venture in Austin to connect art and science.

http://www.artsciencegallery.com

“My interest in art and science comes from being a student of ecology and natural history and always looking for connections and interactions between things. As a graduate of a liberal arts college it has always been natural for me to combine art and science; I majored in biology at Austin College, with minors in environmental studies and art.”
(Dr. Hayley Gillespie)

From our students:

Morgan Bailey 2011 Graduate
Double Major Biology & Fine Arts
Attending Galveston Medical School

Alicia Burns 2010 Graduate
Double Major Biology & Fine Arts

Sarah Alpini
Senior, Biologist

Kira McEntire
Salamander Vase
2013 Graduate
Ph.D. student at UGeorgia

Bookworm: New Paideia’s
Taking the Pulse of Global Health

In preparation for the new Paideia experience, some of your Biology Professors read “God’s Hotel” by Victoria Sweet, one of this year’s Brown Symposium speakers.
Check it out!
Putting science into action more. Increasing opportunities for students who might not have considered it before to do research. (Dr. Romi Burks)

Southwestern Receives Howard Hughes Medical Institute Grant!

In addition to more undergraduate research opportunities, what does this mean for Southwestern and what excites our professors about the upcoming Inquiry Initiative?

HHMI provides the opportunity to learn and implement new pedagogical strategies to make the classroom a more interactive environment where faculty and students work in a partnership. In addition, I love the opportunity to interact with my colleagues in the Natural Science Division in the exchange of ideas. The workshop I attended in May was lots of fun! (Dr. Maria Cuevas)

The opportunity to teach more about the process of science. (Dr. Ben Pierce)

The first year of the HHMI Inquiry Initiative provided funding that allowed inspiring speakers to come to SU, and incentives for SU faculty to meet to talk about improving science teaching.

(Dr. Rebecca Sheller)

The New Paideia Educational Experience

In a nutshell, it’s a way to organize some of your courses around a central theme or question.

It is about making connections and building relationships that will help you explore how it relates to your major and beyond the classroom.

Paideia helps you to connect different classes and departments in ways you never knew possible. You will collaborate with other students, faculty and staff on projects centered on a particular theme.

How does it work?

• Students will need to apply and once accepted and enrolled in the new Paideia program, they will take three interconnected courses followed by a team-taught interdisciplinary Paideia seminar.

• Where do I apply? Visit the below link for more details and apply online. It’s that easy!

http://www.southwestern.edu/academics/paideia/
WHAT WE DID THIS SUMMER……FUN & LEARNING……
WHO SAID BIOLOGY WAS NOT FUN?..

**Maria Cuevas** attended the Paideia: Global Health Cluster and HHMI Inquiry-Based Workshops both were very informative and fun. She is looking forward to implementing what she learned into her lectures. She also did research preparing cells for electromicroscopy (EM) and immunofluorescence studies of the tight junction proteins claudin-3 and -4 in the breast epithelial (MCF-7) and endometrial (HEC-1A) adenocarcinoma cell lines, worked on an article for publication in a peer-review journal, and she took some time to vacation in California with her family (Picture from Yosemite National Park).

**Ben Pierce** conducted research on the Georgetown salamander with SU graduate Kira McEntire, worked on the 5th edition of his genetics textbook *Genetics: A Conceptual Approach*, and worked with science faculty on planning the new Southwestern University Science Center.

**Romi Burks** conducted research on the apple snail, *Pomacea maculata*, with Amy Miller, Alex Hill and Amber Cochran. She traveled to Chicago (Botanical Gardens pic) and the University of Notre Dame for the defense of alumnus Matt Barnes ’06. In June, Burks traveled to New York City where she worked at the American Museum of Natural History for a couple of days, attended the Fine Chocolate Industry Association meeting, and celebrated her promotion to Full Professor and her 40th birthday. In August, she attended the Ecological Society of America meetings and has been busy trying to get some research papers submitted. Burks keeps finding ways to incorporate chocolate into her travels.

**Maria Todd** attended the Paideia and HHMI workshops and conducted research with Heather Petty (’13) as part of SCOPE. They investigated the effect of abnormally elevated claudin-3 tight junction protein on the migration of breast cancer cells. After SCOPE, Todd took her husband and son to visit family in the UK. Having studied at the University of Sussex, Heather decided to take the chance to go back to England and was able to spend some more time with Dr. Todd and her family.

**Rebecca Sheller** attended the HHMI pedagogical workshop on inquiry-based learning, participated in the HHMI-sponsored SCOPE program with Rachel DeLong and Noah Bierwirth, and attended a pedagogical workshop, “Research based undergraduate introductory biology” at Grinnell College in Grinnell, Iowa in July.

**Linda Southwick** participated in the HHMI pedagogical workshop in May. She taught her Forensic Science class for SU summer school students and also for high school students involved in the STEPS program. Afterwards, she went on a 7-week marathon driving trip (8000 miles) checking out national parks along the way. She also spent quality time with her daughter, son-in-law, and grandchildren in Washington State.

**Martin Gonzalez** worked with his students Ali Erkin, Hassan Asghar and Audrey Garcia on furthering understanding of the regulation of the prokaryotic error-prone DNA polymerases. Gonzalez also spent a week hiking in the mountains of southern New Mexico with his family.

**Max Taub** worked in collaboration with SU student Joshua Page on an active-learning class module on the evolutionary genetics of cystic fibrosis. They are going to submit it to a pedagogical journal, and will also be using the module in Taub’s Genetics and Evolution class.
BIOSCOPE FOCUS:
Select Presentations

Todd, M.C., J. M. King, M. E. Cuevas and R. A. Sheller. 2012. Sub-cellular localization of overexpressed versus siRNA-suppressed claudin-3 protein in breast cancer cell lines by cell fractionation and indirect immunofluorescence. Cancer Prevention and Research Institute of Texas Annual Meeting, Austin, TX.


Burks, R. L. and 7 co-authors. August 2013. “Practice does not make quite perfect but does build student confidence in oral communication Skills”, Education and Assessment Session. Ecological Society of America Meeting.


Several students presented at Texas Academy of Science - for more information, see website story: http://www.southwestern.edu/live/news/7771-southwestern-students-faculty-members-presenting

BIOSCOPE FOCUS:
Select Publications


*Colin Kyle, formally a Southwestern University biology major, is currently working on his Ph.D. in quantitative ecology at the University of Chicago.


*Jessica Hua, formally a Southwestern University biology major, is currently finishing her Ph.D. in ecology at the University of Pittsburgh.


*Alex Hall graduated from Southwestern University in 2011. He is currently a Ph.D. student at the University of Texas at Arlington, doing genomics research on lizards.


What Faculty Think Represent Amazing Advancements in Science for 2013

Hou et al. (2013) published an article in science about inducing pluripotent stem cells from somatic cells using a combination of seven small-molecule compounds. This has the potential of circumventing the debate about stem cell source and advance it’s clinical application (Dr. Maria Cuevas).

There is also this new surgical procedure for heart valve replacement that doesn’t require the traditional open-heart surgery, but is done through laparoscopy. They make three little holes and insert the new valve through one of them. The patient is out of the hospital in three days. AMAZING!!! The only drawback is that currently it can only be done one time. (Dr. María Cuevas)

I find the discovery that much of the human genome is transcribed and functional fascinating. We used to think that much of genome was junk DNA, with no function, but research reported last year that over 80% of the genome is either transcribed or controls gene expression (Dr. Ben Pierce).

I think the amount of attention paid to microbial diversity – specifically looking at gut microbes and the fauna of the belly button - speaks to a new appreciation for the complexity associated with biodiversity (Dr. Romi Burks).

I marvel at the increase in microbiome research being performed all over the world, especially research relating to the gut microflora. The connection between the composition of the gut microbiome and brain function is fascinating (Dr. Martín Gonzalez).

The recent news about Dr. Mark Post’s laboratory growing hamburger from stem cells in a petri dish, “schmeat”, is revolutionary (http://www.tedxhaarlem.com/speakers/mark-post). I enjoy interacting with animals, including cattle, but the idea that in the future we might be able to use less land, water, and other resources to “grow” meat, and potentially reduce pollution in air and water is intriguing (Dr. Rebecca Sheller).

I found the use of 3-D printing to create artificial scaffolds for the growth of body parts such as ears and noses. This has the potential for the treatment of individuals with certain congenital disorders or even burn victims (Dr. Maria Todd).
Learn something new from BioScope Magnifications:

FDA Investigates Multistate Outbreak of *Cyclosporiasis*
What is the problem and what is being done about it?

• Multiple state departments have reported related illnesses. It is unclear if all reported cases are related, but the FDA is continuing it’s investigation. A couple states have linked the outbreak to a salad mix.

• **What is *Cyclospora***?
  *Cyclospora cayetanensis* is a parasite composed of one cell, too small to be seen without a microscope; this parasite causes an intestinal infection called cyclosporiasis.

• **Who is at risk and how is it infecting people?**
  *Cyclospora* is acquired by people ingesting something - such as food or water - that was contaminated with the parasite. *Cyclospora* takes days to several weeks after being passed in a bowel movement to become infectious for another person. Therefore, it is unlikely that *Cyclospora* is passed directly from one person to another.

• **What are the symptoms?**
  *Cyclospora* infects the small intestine (bowel) and usually causes watery diarrhea, with frequent, sometimes explosive, bowel movements (as well as other symptoms). For more details, please visit the government websites below.

• **What do Consumers Need to Do?**
Consumers should always practice safe food handling and preparation measures. Wash hands, utensils, and surfaces with hot, soapy water before and after handling food. Fresh produce should be thoroughly washed before it is eaten.

For more information on *Cyclospora*:
(http://www.cdc.gov/parasites/cyclosporiasis/)

Information above obtained from FDA website, check below website for more details:
(http://www.fda.gov/Food/RecallsOutbreaksEmergencies/Outbreaks/ucm361637.htm)
**Who’s Teaching What, When, & Where?**

**Fall 2013**

**Minicourses offered the first half**

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**Minicourses offered the second half**

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**First minimester**

- Sept. 11 Last day to drop without record
- Oct. 2 Last day to drop with record
- Oct. 16 last day of classes

**Second minimester**

- Nov. 1
- Nov. 22
- Dec. 6

**Tutors Available in Library Rm 223**

**Sunday, Tuesday & Thursday -likely starting 9/3**

**Watch out for Dr. Burks’s new wheels on campus-**

Nicknamed the PupTart Limo!

Look out for us - you’ll be seeing us in more biology courses