



BIOrhythms

Washington University Biology Department Newsletter

September 2014

*"Life starts all over
again when it gets
crisp in the fall."*

—F. Scott Fitzgerald, *The
Great Gatsby*

Helpful Links

Biology Home Page
Biology Course Listings
Faculty Listings

*BIOrhythms is a publication of
the Washington University
Biology Department for
Undergraduate Majors*

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Featured in this issue:

Faculty Spotlight: Elizabeth Haswell

Course Spotlights: Bio 3041: Plant Biology & Genetic
Engineering; new U College courses on Cancer Biology

Student Clubs: JCUBES; Synapse

Calendar: Biology Events & links to event listings

PLUS: Career Center, Neuroscience Colloquium,
Undergraduate Research Symposium



Faculty Spotlight: Elizabeth Haswell



Elizabeth Haswell grew up in Pullman, a small college town in eastern Washington State, where her father was an English Composition professor at Washington State University. Her mother was a Spanish instructor and spent time early in her career working for the Peace Corps in Peru. Her father's sabbaticals allowed the family to spend two years in Central or South America. They lived in Mexico for a year when she was 4 and Ecuador for a year when she was 12.

Even in high school, Dr. Haswell knew that she wanted to be a biologist. A

particular memory that stands out for her is looking at cross-sections of leaves under a microscope and seeing the different cell layers, each with their own structures and functions. Her experience with a real life observation of concepts she'd just read about in a textbook was the start of her fascination with plant biology, an interest she returned to late in her research training.

Dr. Haswell was excited to leave her small town for college at the University of Washington in the big city of Seattle. While completing her undergrad degree she worked as a technician in Botany lab at UW. She moved on to the University of California in San

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Neuroscience

Colloquium Fall 2014

Fridays from 4:00-5:00pm,
September through October,
Location: Connor Auditorium,
Farrell Learning and Teaching
Center, Washington University
School of Medicine

*Reception immediately following,
Farrell Atrium*

2014 Colloquium Schedule

September 26, 2014
Franck Polleux, Columbia Univ.
“Novel kinase pathways underlying
axon morphogenesis and presyn-
aptic function in the mammalian
CNS” —*Hosted by WUSTL Develop-
mental Biology*

October 3, 2014
Eric Knudsen, Stanford Univ.
“Neural mechanisms of spatial at-
tention in birds” —*Hosted by WUSTL
Biology*

October 10, 2014
Nancy Kopell, Boston Univ.
“Cortical Rhythms Facilitate Bot-
tom-Up and Top-Down Processing”
—*Hosted by WUSTL Neurosurgery*

October 17, 2014
Marsha Mailick, UW-Madison
*Hosted by the Intellectual and Devel-
opmental Disabilities Research Center
(IDDR)*

October 24, 2014
Vivian Budnik, U of Mass.
“Crossing the nuclear boundary
to establish postsynaptic compart-
ments” —*Hosted by the McDonnell
Center for Cellular and Molecular
Neurobiology*

October 31, 2014
Rachel Wong, U of Washington
“Imaging circuit assembly and
reassembly in the retina” —*Hosted
by WUSTL Ophthalmology & Visual
Sciences*

For more information go to:
[http://neuroscienceresearch.wustl.edu/
Pages/Neuroscience
Colloquium.aspx](http://neuroscienceresearch.wustl.edu/Pages/NeuroscienceColloquium.aspx)

Francisco to complete her PhD thesis on “Chromatin Remodeling in Yeast Response to Phosphate Starvation”. She completed her postdoc at Caltech in Pasadena in Elliot Meyerowitz’s lab. Her work there was the seed for her current research at Wash U on Plant Mechanotransduction.

Dr. Haswell joined the Wash U Biology Department in 2007. The long-term goal of research in the Haswell lab is to reveal the molecular mechanisms that underlie the perception and transduction of mechanical signals in plants. Many organisms sense and respond to mechanical forces, and one way in which this can be accomplished is through the activation of mechanosensitive (MS) ion channels. Land plants provide a particularly relevant model system for the study of MS channels, as numerous MS channel activities have been identified in plant membranes, and they are implicated in a wide range of physiological processes. However, the research team does not know the molecular identity of all of the MS channels involved, nor how their activities might be regulated. To begin to gain insight into the plant mechanosensory apparatus, the team has undertaken the characterization of ten *Arabidopsis thaliana* homologs of the bacterial mechanosensor MscS. They have discovered that plant MscS homologs are not simple safety valves, but are regulated channels with distinct and diverse roles at the organellar, cellular, and organismal level. The Haswell lab currently includes 4 postdocs, 2 grad students, 3 techs and 2 undergrads. Interested students are encouraged to get involved in the lab’s research through Bio200/500 during the school year, or through summer fellowships funded through the National Science Foundation or the WUSTL SURF program.

In addition to her research, Dr. Haswell is a Bio 200/500 mentor and guest lecturer in several other courses. She also teaches Bio 3041: Plant Biology and Genetic Engineering every spring semester. The course is designed for students with a background in Introductory Biology to take in the spring of their sophomore year. One unique aspect of the course is that it covers the history of plant genetic engineering, which had many of its “roots” in Saint Louis and at Washington University. The course also gives students the information necessary to have an educated discussion about the hot topic of genetically engineered crops. This important, current topic deserves a strong scientific background as foundation for discussion. Another central concept of the course is that “Plant science is biomedical science,” i.e. addressing the deficits in human nutrition and in global food safety are as important to improving human health as cancer research. It’s all part of a bigger picture that students are encouraged to examine and explore. To learn more about Dr. Haswell and her lab’s research visit <http://pages.wustl.edu/haswell>.

Course Spotlight: **Bio 3041: Plant Biology & Genetic Engineering**

This 4 credit lecture course provides an introduction to plant development, genetics, physiology and biochemistry with emphasis on processes that can be manipulated or better understood through genetic engineering. The course is divided into 3 sections. The first section of the course discusses basic plant biology, development and genetics. The second part of the course emphasizes gene structure, expression, and cloning as well as methods for introducing foreign DNA into plant cells and regenerating fertile plants in tissue culture. During the third part of the course we discuss a variety of examples of genetically engineered traits, including: herbicide resistance; fruit ripening; pathogen and/or insect resistance; the use of plants for production of industrial and pharmaceutical compounds. Friday discussion sections focus on critical reading of the primary literature related to the material covered in lecture. Prerequisites: Bio 2960 and Bio 2970.

Course Spotlight: Cancer Biology Courses



There are some new course offerings through University College that may be of interest to biology undergrads. U29 Bio 4715 Basic Cancer Biology is taught by Dr. Jason Weber, Co-Director of the Breast Cancer Program at Siteman Cancer Research Center. He runs a cancer research lab at Washington University consisting of eighteen researchers, graduate students, undergrads, postdocs, and junior faculty members. Their emphasis is on identifying novel new therapeutic targets for the treatment of breast cancer. Right now, they are participating in a large breast tumor genome sequencing project aimed at uncovering mutations in patients that drive their breast cancer with the hopes of catering future clinical treatments to each individual patient.

The Breast Cancer Program at Washington University includes dozens of faculty members in both the basic and clinical sciences programs with the collaborative goal of discovering new treatments for breast cancer. Learn more at http://hematology.im.wustl.edu/people/faculty/Weber/Weber_Res.html.

New Fall Course: Bio 4715: Basic Cancer Biology

Course Description: Over two-thirds of all people know someone who has cancer. This course provides students with a more extensive understanding of what cancer is and how it affects the human body. We will discuss the history of cancer research, the many different types of human cancers, and basic chemotherapeutics. The topics will be presented in a basic scientific nature with an emphasis on gaining a broad understanding of the subjects. Mondays 6:00-8:30

New Spring Course: Bio 4716: Advanced Cancer Biology

Course Description: Pre-requisite: Basic Cancer Biology. This advanced course aims at providing students with a more in-depth understanding of the molecular mechanisms of cancer. We will discuss tumor suppressors, oncogenes, signaling pathways, animal models in cancer, and novel targeted cancer therapies being developed by biotechnology and pharmaceutical companies. The topics will be presented in an advanced forum with an emphasis on active discussions of the subjects. Classes will consist of a lecture (2 hours) followed by a class discussion of a recent or classic science paper (30 minutes). Students will be graded on two exams (mid-term and final). Mondays 6:00-8:30



Research Opportunities

Professor Garland Allen is interested in identifying students who would like to do independent study on issues relating to societal aspects of biological research such as GMOs, stem cells, cloning, agribusiness, etc. Work could be adjusted for one, two or three credits, and for either fall or spring semester. He is available in Life Sciences 202D at 314-935-6808 or at allen@biology2.wustl.edu.

SURF Undergraduate Research Symposium, 10/11/14

The Summer Undergraduate Research Fellows (SURF), funded by the Howard Hughes Medical Institute and various other agencies, is an opportunity for freshmen, sophomores and juniors to apply for a 10 week research project with faculty mentors, earning a summer stipend. Over the past few years, the number of students receiving awards has grown, due to increased funding and interest. When the research projects are complete, the participants join students from other fields to present their projects and findings at the Fall Undergraduate Research Symposium, this year's will be on October 11, 12-3pm in the Olin Library. Many students continue to work with their SURF mentors throughout the academic year as paid lab technicians or in work study positions.

For more information: <http://www.nslc.wustl.edu/Research/HHMI/surf.html>

Do You Have...

An announcement you'd like to make?

An interesting story or fun fact you'd like to share?

A professor or course you'd like to suggest for a spotlight?

We want your input! Send ideas and information to:

gerrity@biology2.wustl.edu

Career Center Fall Events

Locations: Danforth University Center, Suite 110 with satellite offices in Lopata Hall, Brauer Hall and Steinberg Hall

Main Office Hours in the DUC
Monday-Friday: 8:30-5:00

Contact Us:

Phone: 314.935.5930

Fax: 314.935.5905

E-mail: careers@wustl.edu

Website: careercenter.wustl.edu

Upcoming Events

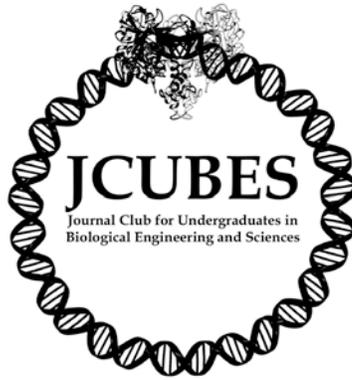
S.T.E.M. SLAM: Sept. 16
Looking for a science, technology, engineering, or math opportunity? Come hear employers 'open mic' pitch their internship and job opportunities at this fast-moving and fun event. Students can see participating employers and RSVP in CAREERlink.

Fall 2014 Internship & Job Career Fair: Sept. 17
The fair will take place 3-7pm in the Mallinckrodt Center. Students can research positions and sign up for employer-hosted information sessions by logging into CAREERlink.

Global & Public Health Internships & Jobs Work Group:
Every other Tuesday, starting Sept. 9 through Oct. 7
Join this Work Group at any time. We'll cover the basics of how to search for opportunities in the field, gain expert advice, and optimize the time you spend on your search. Throughout the weeks, we will connect with professionals in the industry, including WUSTL alumni, to draw on their expertise. RSVP each week in CAREERlink.

For more upcoming events, go to careers.wustl.edu/events.

Student Clubs: JCUBES & Synapse



The Journal Club for Undergraduates in Biological Engineering and Sciences (JCUBES) is a journal club for any and all undergraduates who are interested in the life sciences. We hold bi-weekly meetings on Thursday evenings during which an undergraduate gives a brief presentation on a piece of research. Throughout the presentation attendees can ask questions or make comments while enjoying free pizza generously provided by the Department of Biology and the BME Department. The presentations tend to center around a paper, either current or historical, which caught the presenter's

eye either because it is related to their own lab work or because it discusses a topic that interests them. In the past, we have had discussions on a variety of topics ranging from molecular biology, ecology, and medicine to computer science and chemical engineering, so the Journal Club is a great way to hear about different areas of research at Wash U and beyond.

In addition to undergraduate research talks, JCUBES has previously worked with faculty, graduate students, and the Career Center to provide additional resources to our undergraduate members. We also periodically host lab tours and other field trips in order get a behind-the-scenes look at innovative approaches to research.

Our events and meetings are open to the general undergraduate body, and all are welcome to attend. To get on our email list for updates on upcoming events, contact wustlj-cubes@gmail.com or check out our blog wustljcubes.wordpress.com.

Synapse is the premier neuroscience student organization at Washington University in St. Louis. We are dedicated to undergraduate students of all majors with an interest in neuroscience. Our mission is to provide students with opportunities to get involved with neuroscience-related activities in both the WashU and St. Louis communities. We organize research panels and opportunities to shadow physicians, and reach out to the St. Louis community through neuroscience-related volunteer activities. Some of the programs we offer include:

- **Synapse Education:** Teaching science classes about the nervous system to elementary and middle school students in St. Louis
- **Synapse Shadowing:** Shadow a neurosurgeon, neurologist, or psychiatrist at Barnes-Jewish or St. Louis Children's Hospital
- **Cerebral Palsy Sports Program:** Play basketball, swim, dance, or martial arts with children with cerebral palsy
- **Brain Bee:** Help train high school students to compete in a national neuroscience tournament

One of our upcoming events is the MD Panel, in which a panel of physicians will speak about their medical experiences as well as answer any questions from the audience. This event will take place on Thursday, Oct. 16th, from 6:30 to 8:30 pm in DUC 276. Feel free to check out our new website: synapse.wustl.edu! You can also follow us on Facebook <https://www.facebook.com/groups/WUSYNAPSE/> or on twitter [@WU_Synapse](https://twitter.com/WU_Synapse).

Biology Department Calendar



Links to General Calendars and Regular Events:

Washington University Record Calendar: <http://record.wustl.edu/calendar>

Biology Department Seminars, Mondays, 4:00pm, Rebstock 322, check the website for topics/schedule: http://wubio.wustl.edu/events?field_event_tags_tid=19

Evolution, Ecology, & Population Biology Seminars, Thursdays, 4:00pm, Rebstock 322, check the website for topics/schedule: <http://wubio.wustl.edu/events/eepeb-student-seminar-schedule>

History & Philosophy of Science Seminar Series: http://wubio.wustl.edu/events?field_event_tags_tid=20

Plant and Microbe Super Group Seminar Series, most Tuesdays at 9:00am, McDonnell 362: <http://wubio.wustl.edu/events/pmb-supergroup-seminar-series>

Donald Danforth Plant Science Center (DDPSC), Weekly Seminar Series—Wednesdays, 3:45pm, AT&T Auditorium, check the website for topics: http://www.danforthcenter.org/the_center/events/seminars_symposia/

Division of Biology and Biomedical Sciences (DBBS), all lectures and seminars: <http://dbbs.wustl.edu/Pages/Events.aspx>

October 2014

10th Parent and Family Weekend: October 10-12

11th Summer Undergraduate Research Fellows (SURF) will present the results of their summer research from 12:00–3:00 pm in Olin Library, October 11-12

17th FALL BREAK—NO CLASSES; “*Life Sciences in the 20th Century: A symposium celebration in honor of Garland Allen’s retirement*” 930am – 5:00pm; Rebstock 215. For more info contact Judy Musick jmusick@wustl.edu

24th WILD

27th Advising Period Begins, October 27th—November 7th



November 2014

11th Spring 2015 online registration for undergrads graduation class of 2015 or earlier

12th Spring 2015 online registration: undergraduates graduation class of 2016

13th Spring 2015 online registration for undergraduates graduation class of 2017

14th Spring 2015 online registration for undergraduates graduation class of 2018

26th Thanksgiving Break, Wednesday, November 26th-30th—NO CLASSES

