



BIOrhythms

Washington University Biology Department Newsletter

September 2015

"You can't even begin to understand biology, you can't understand life, unless you understand what it's all there for, how it arose - and that means evolution."

—Richard Dawkins

Helpful Links

[Biology Home Page](#)
[Biology Course Listings](#)
[Faculty Listings](#)

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

Contact Erin Gerrity to submit articles/info:

Erin Gerrity
Editor-BIOrhythms
Biology Department
Washington University
Plant Growth 105
Campus Box 1137
St. Louis, MO 63130-4899
314 935-5064
gerrity@biology2.wustl.edu

Featured in this issue:

Faculty Spotlight: [Carlos Botero](#)

Course Spotlights: [Bio 373: Laboratory on the Evolution of Animal Behavior](#)

Student Clubs: [JCUBES](#); [Synapse](#)

Calendar: [Biology Events & links to event listings](#)

PLUS: [Career Center](#), [Neuroscience Colloquium](#), [PARC](#), [Undergraduate Research Symposium](#)



Faculty Spotlight: [Carlos Botero](#)



Dr. Carlos Botero originates from Bogota, Colombia. His early interest in biology stemmed from watching nature documentaries and hearing his father's exciting travel stories. Growing up in the city center of a major urban area made all things nature-related seem unattainable and far away. He equated biology with traveling and never saw it as an option for his life, unaware that the country he lived in is actually one of the most biodiverse areas in the world and that amazing natural landscapes existed just around the corner! He planned to study Economics after high school but was drafted into the army instead for 3 years, where he gained some hands-on experience with nature. He became fascinated with the wildlife of the desert in Egypt and the biodiversity he found while diving in the Red Sea. He decided to change course and study Biology in college instead.

Dr. Botero was truly inspired during his undergrad years, by his first field course in Macarena, Colombia where he was immersed in the jungle, living in stripped down conditions and studying animal behavior. He spent a lot of time observing in the wilderness, which led him to look more deeply into his surroundings upon returning to the city. Suddenly, biodiversity emerged from the urban landscape, ever present, —*cont'd on page 2*

Neuroscience

Colloquium Fall 2015

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 11, 2015

Hao Wu, Harvard University

*"Immune signaling: what we learn from
structures"*—Hosted by the Center
for Biological Systems Engineering
(CBSE) NOTE: Seminar in Moore
Auditorium

September 18, 2015

Michael Dickinson, CA Inst of Tech

*"Sensory-motor integration in the flight
behavior of Drosophila"*—Hosted
by the Department of Anatomy &
Neurobiology and the McDonnell
Center for Cellular and Molecular
Neurobiology

October 2, 2015

Rudolf Jaenisch, MA Inst of Tech

*"iPS cell technology, epigenetics and the
study of simple and complex diseases"*
—Hosted by the Department of
Genetics and the Center of Regen-
erative Medicine

October 9, 2015

Rudolph Tanzi, Harvard University

*"Decoding Alzheimer's Disease in the
whole genome era"*—Hosted by the
Department of Neurology and
the Hope Center for Neurological
Disorders

October 23, 2015

Jocelyne Bachevalier, Emory Univ.

*"The primate hippocampus: Ontogeny
and early insult"*—Hosted by the
Department of Psychology and the
McDonnell Center for Systems
Neuroscience

For more information go to:

[http://neuroscienceresearch.wustl.edu/
Pages/Neuroscience_Colloquium.aspx](http://neuroscienceresearch.wustl.edu/Pages/Neuroscience_Colloquium.aspx)

but noticed by him for the first time. The mental synthesis of the urban and wild, the human and animal, laid the groundwork for his interest and future research on how environmental variation affects the evolution of creatures.

His studies began at the University of Los Andes in Colombia where he received an undergraduate degree in Biology, followed by graduate work at Cornell University where he specialized in animal communication and behavioral ecology. By the end of his graduate work, he decided to incorporate math into his research, applied for a fellowship in the Netherlands and spent a year at the University of Groningen. His postdoc work was completed at Duke University's National Evolution Synthesis Center and North Carolina State University in Raleigh, where the biocomplexity initiative allowed him to develop his own research program, giving him the liberty to put different aspects of his learnings together.

Dr. Botero joined the Biology Department at Wash U in fall 2015 for his first teaching appointment as an Assistant Professor. He has always enjoyed teaching, even as an undergrad TA. He became the instructor for his first field course and continued teaching it for multiple years. He was a TA for many different subjects as a grad student and took over the course Methods in Animal Behavior at Cornell upon graduation. Among his teaching and training course, he also served as a research advisor on honors theses at multiple schools. He is currently teaching Biology 373: Laboratory on the Evolution of Animal Behavior as well as mentoring for Bio 200/500.

The Botero Lab is still in the process of being set up, but there will be opportunities for students to get involved in the future. Interested students can email Dr. Botero at: cbotero@wustl.edu. The lab has three major areas of research:

-Evolutionary Modeling Theory: virtual population modeling in computers, experimenting with virtual organisms, studying the evolution of the populations

-Phylogenetic Comparative Analysis: study of whole groups of species, try to explain variation and address why some groups diversify more quickly than others, many projects on human cultures around the world.

-Experimental Evolution: similar to the evolutionary modeling described above, but using real live organisms, such as yeast.

Dr. Botero enjoys interacting with people not normally attuned to thinking about scientific issues, in order to easily establish an immediate connection for them. Therefore, he selects his experiments based on a balance between what he finds theoretically interesting and important, with what the perceived public value is in understanding that subject matter. He wants to both gather the information for the sake of learning and present a real life application for the material that is gathered and studied. He also feels strongly about open science and open data. He is interested in contributing to a common knowledge to be shared with the public. In addition to lab research, he is excited about teaching. There are so many things he can do and so much potential for students to learn in the lab. He looks forward to what the future will bring and this opportunity makes him feel like a kid in a candy store! For more information about Dr. Botero and his lab, visit the website at: <https://pages.wustl.edu/botero>.

Course Spotlight: Bio 373: Laboratory on the Evolution of Animal Behavior

This course explores the costs, benefits and constraints that drive the evolution of animal behavior. It is divided into four modules: a brief overview of basic statistics, a lab on agonistic behavior, a lab on animal communication, and a lab on sexual selection by female choice. Laboratory modules are hands-on and student driven. They begin with an overview of relevant literature and a discussion of key questions that have been addressed experimentally in that field. Students are then encouraged to apply these concepts into the design, execution, and analysis of a research project aimed at answering a question of their own choosing through the use of house crickets as a study system. A majority of class time is devoted to active learning through the collection and analysis of data (each lab module lasts 4 weeks). In addition, the course includes weekly presentations by the instructor and class discussions on topics that help place the students' work into the broader context of evolutionary theory. Bio 2970 and Psych 100B or permission of instructor. Offered fall semester, 3 units.



PARC Certificate in Renewable Energy & the Environment

Since 2010, PARC (the Photosynthetic Antenna Research Center) and I-CARES (the International Center for Advanced Renewable Energy and Sustainability) have partnered to offer an interdisciplinary Certificate in Renewable Energy & the Environment for undergraduate students in all schools and departments at Washington University. In conjunction with this program, we run a site visit series entitled Events & Topics in Renewable Energy & the Environment, which offers two opportunities per semester for students, faculty, staff, the public, etc. to visit a location with energy, sustainability or environmental applications for a behind-the-scenes tour.

The Certificate in Renewable Energy & the Environment is a non-academic award for students who wish to pursue energy and sustainability studies in addition to their selected major and/or minor. Enrolled students are required to earn 11 points from 3 categories to achieve the certificate: courses, outreach and/or research, and seminars/events. Graduates of the program have included students from several schools, including Arts and Sciences, Business and Engineering. It takes most students approximate two school years to complete the certificate; many students will find that they are already participating in courses and extracurricular activities that will earn credit toward the certificate. We work directly with the students to create customized opportunities for research and public outreach geared toward the students' interests and schedule, as well as to keep them informed of relevant talks and events on campus. Certificates are awarded annually at an awards luncheon with the PARC Director, Dr. Robert Blankenship.

This semester, Events & Topics in Renewable Energy & the Environment will feature tours to the EarthWays Center at the Missouri Botanical Garden —*cont'd on Page 4*

SURF Undergraduate
Research Symposium,
10/10/15

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 10, 12-3:30pm 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, 6:00-7:30pm, Brauer Hall
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 2015 Internship & Job Career Fair: NOW TWO DAYS!
Sept. 17 & 18—Sponsored by the Career Center and the National Society of Black Engineers (NSBE)

The Danforth Campus will host local and national organizations for two days for the Fall Internship & Job Career Fair held in Mallinckrodt Center. Employers will only participate in one day of the fair to allow for more employers to participate. Both days will be unique opportunities for students to engage a variety of employers. Students can find more info, including a complete list of employers attending by logging into *CAREERlink*.

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

PARC cont'd—and the Midwest Biodiesel Products LLC plant. Past tour sites have included the Tyson Research Center, the Maryland Heights Renewable Energy Center, the Donald Danforth Plant Science Center, several solar power installations, and Washington University's energy production and usage technologies.

Students must earn a total of 11 points:

Required Activities

Courses

- At least 4 points must be earned through courses
- Point value based on course level
- Courses must be drawn from at least 2 of 3 course clusters (Social Sciences & Humanities; Architecture; Natural Sciences & Engineering)

Research/Outreach

- At least 3 points must be earned through outreach or research activities
- Point value based on length and depth of commitment
- Opportunities for one-time activities, semesterly, or independent (PARC Education & Outreach Mini-Grant, Energy video, etc.)

Optional Activities

Seminars and Events

- Attend 2 events to earn 1 point
- Examples include: Events & Topics in Renewable Energy & the Environment tours, MAGEEP seminars, and PARC or other energy/environment-related seminars

Interested students should visit <https://parc.wustl.edu/certificate/application> to enroll and learn more about the program.

Student Clubs: JCUBES & Synapse



JCUBES: Journal Club for Undergraduates in Biological Engineering and Sciences—WashU has many opportunities for undergraduates that enable students to experience the world of science and technology from a first-person perspective. You can see how your classmates are contributing to cutting-edge discoveries by attending our meetings. Each week, a fellow student will present a research paper pertinent to the research he or she has been doing in lab in an open-discussion based forum. Every few weeks or so, we also have guest speakers come in to talk about their experience in industry, research, community service, non-profit organizations, etc or professional development events. Meetings are held every-other week in the life sciences buildings. For more info, visit: <https://wustljcubes.wordpress.com/>.



Synapse is Wash U's premier neuroscience organization, and we put on many events for the Wash U community as well as provide volunteering opportunities around St. Louis. You can teach elementary schoolers about brains, play sports with children that have cerebral palsy, shadow a neurologist, and more! There's a lot to keep you engaged with a community of neuroscience enthusiasts, and you don't have to be a neuroscience major to join. To learn more about our programs, visit our website at synapse.wustl.edu.

Biology Department Calendar



Links to General Calendars and Regular Events:

Washington University Record Calendar: <https://news.wustl.edu/Pages/Calendar.aspx>

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

Evolution, Ecology, & Population Biology Seminars, Thursdays, 4:10pm, Rebstock 322, check the website for topics/schedule: <http://wubio.wustl.edu/events/eepb-student-seminar-schedule>

History & Philosophy of Science Seminar Series: <http://pages.wustl.edu/hpbm/events>

Plant and Microbe Super Group Seminar Series, most Wednesdays at 12:00pm, McDonnell 412: <http://wubio.wustl.edu/events/pmb-supergroup-seminar-series>

Donald Danforth Plant Science Center (DDPSC), Weekly Seminar Series—most 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 2015

9th

Parent and Family Weekend: October 9-11

10th

Summer Undergraduate Research Fellows (SURF) will present the results of their summer research from 12:00–3:30 pm in Olin Library, October 10

16th

FALL BREAK—NO CLASSES

23rd

WILD

26th

Advising Period Begins, October 26th—November 6th



November 2015

10th

Spring 2016 online registration: undergraduates graduation class of 2016 or earlier

11th

Spring 2016 online registration: undergraduates graduation class of 2017

12th

Spring 2016 online registration: undergraduates graduation class of 2018

13th

Spring 2016 online registration: undergraduates graduation class of 2019

25th

Thanksgiving Break, Wednesday, November 25th-29th—NO CLASSES

