



BIOrhythms

Washington University Biology Department Newsletter

December 2012

“Some men see things as they are and ask why. Others dream things that never were and ask why not.”

-George Bernard Shaw

Helpful Links

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[Faculty Listings](#)

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

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Faculty Spotlight: **Dr. Hani Zaher**



Dr. Hani Zaher joined the Biology Department this fall as an Assistant Professor. As a young teenager, he wanted to be a doctor but eventually grew to love the process of scientific research and the idea of becoming a professor. Zaher grew up in Lebanon until the age of 15, when he went away to an international high school in Canada. He received a scholarship to Simon Fraser University where he attended as a Biochemistry major. Simon Fraser University offered a cooperative education program, which encouraged students to take time off and work in various industries that are relevant to their studies. Dr. Zaher took advantage of the program where he worked in different settings that included pharmaceutical, biotech and food companies to get a feel for fields he might be interested in. For instance during his senior year, Dr.

Zaher was involved in developing new techniques to isolate proteins from egg white in the research and development department.

Dr. Zaher enjoyed the process of scientific research so much that he decided to join Simon Fraser's molecular biology and biochemistry department as a grad student and finished his PhD. There, Dr. Zaher studied the catalytic potential of RNA in an effort to provide further support for the "RNA world" hypothesis. Zaher then went on to complete his postdoc studies at Johns Hopkins School of Medicine in Baltimore, where he investigated the mechanisms of protein synthesis.

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WASHINGTON
UNIVERSITY
CAREER CENTER

Locations:

Danforth University Center,
Suite 110 with satellite of-
fices in Lopata Hall, Brauer
Hall and Steinberg Hall

Main Office Hours in the
Danforth University Center:
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

Have a Quick Question?

You can always stop by the
Career Center's Quick
Question hours in the main
office Monday-Friday, 11am-
5pm for assistance with
CAREERlink, writing your
resume and cover letters, or
for quick guidance.

UPCOMING CAREER
CENTER EVENTS

Career and Internship Con-
nections (CIC): Jan 7 – 11

These off-campus events
held in Boston, Los Angeles,
New York, and Washington,
D.C. are an excellent op-
portunity to network and
interview face-to-face for
entry-level jobs and in-
ternships with a variety of
employers.

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Course Spotlight: BIO 328: Principles in Human Physiology

This course is designed to provide students with an understanding of the function & regulation of the organ systems of the body and physiological integration of the systems to maintain homeostasis. Course content will include neural & hormonal homeostatic control mechanisms, and study of the musculoskeletal, circulatory, respiratory, digestive, urinary, immune, reproductive, and endocrine systems. The response of the body to exercise and integration of organ system function to meet the demands of exercise performance will be emphasized throughout the semester.

Offered spring semester. Prerequisite courses: Biology 3050, 3059, or 3058 or similar introductory physiology course. It is assumed that all students enrolled in this course have completed the required prerequisite courses and have knowledge of cell biology, molecular cell mechanisms and basic concepts of physiological control mechanisms as taught in Biology 3058 (previously 3050 or 3059). Format: Lecture Credit: 4 semester hours.

Course Goals and Objectives

The primary goal of this course is to offer an in-depth presentation of the function of the major organs and organ systems of the human body. The course is designed to expand physiological concepts presented in prerequisite courses. It is expected that the student understand the unique role of each organ and organ system in maintaining health. Students should be able to describe the functions of the distinctive cells that comprise each major organ and when appropriate define the role of physiological functional units. Case studies will be provided to enhance the integration of material presented in class.

Upon completion of this course the student should be knowledgeable in the following areas of bodily function:

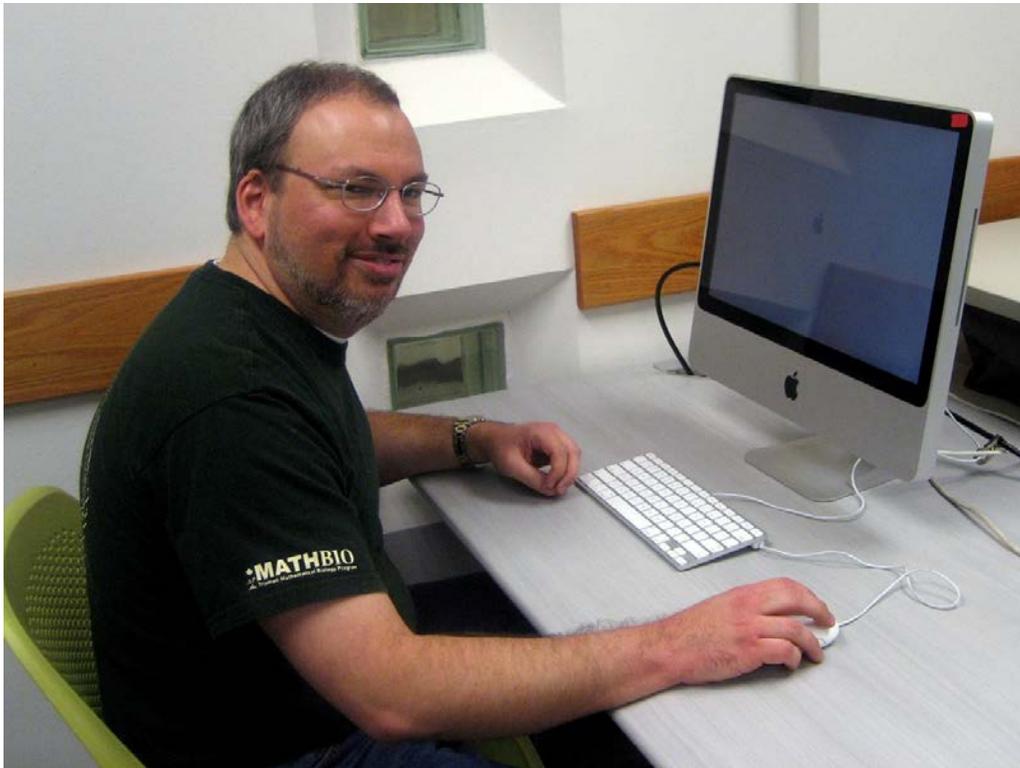
- Integration of the organ systems to maintain constancy of the internal environment
- Regulation of homeostasis by neuronal, endocrine and local chemical messengers
- Role of the Autonomic Nervous System in regulating organ function
- Adaptive responses to exercise and the role of exercise in maintaining health
- Adaptive physiological responses to stress, infectious organisms and toxins
- Changes in bodily function through the life span



Faculty Spotlight cont'd— He came to Wash U this fall with his first appointment as assistant professor. He will be teaching an undergraduate biochemistry course next year and he will also be a mentor for Bio 200/500. The Zaher Lab studies protein synthesis; in particular, the lab is interested in understanding the molecular mechanism of decoding on the ribosome. In other words, how the ribosome is able to translate the genetic code encoded in the mRNA into functional peptides with high fidelity and speed.

In his free time, Dr. Zaher enjoys many hobbies including gardening, fishing, wood-working and biking. To learn more about Hani Zaher and the Zaher Lab, go to: <http://wubio.wustl.edu/zaher>.

Visiting Professor: Dr. Anton Weisstein



Dr. Anton Weisstein, visiting professor from Truman State University, has been working with the BioQUEST Curriculum Consortium (BQCC) for 13 years. BQCC is a community of scientists, educators, and learners of all ages who are interested in supporting biology education that reflects realistic scientific practices. Dr. Weisstein has been involved with and given presentations at other educational institutions about educational reform and employing a more exploratory, investigative style of teaching, but this is his first time doing a whole semester on sabbatical at a university. His semester at Wash U is part of a long-term collaboration. In the future, he will serve as a consultant and possibly work on a publication about these projects. Dr. Erik Herzog brought Weisstein to the Biology Department and serves as a supervisor over the three projects Weisstein is working on this semester.

☞ Dr. Weisstein is working in collaboration with Ed Spitznagel from the statistics department on developing an optional lab for Math 2200. Students will learn to use software package R, a free program used in biostatistics, which will reinforce concepts introduced in class and apply to biological data sets. He is currently using NHANES (National Health and Nutrition Examination Survey), the biggest national health survey, as a model. This data set covers a 24 year period following thousands of people, taking into account factors such as cholesterol, age, smoking and health outcomes. Students in the lab are learning to analyze demographics and effects, in ways that are similar to the work of insurance companies. Students use regression models for this particular study. Students also work with other studies on correlations and standard statistics tests. Weisstein finds the data sets to serve as examples and sends them to Dr. Spitznagel who uses them as a teaching tool.

☞ Dr. Weisstein is also working with instructors for Bio 2960: Principles in Biology, Kathy Hafer, John Majors, and Barbara Kunkel, who will begin teaching it next year. They review the content to extract specific learning objectives for each section and set goals for what they want students to learn. They are working together —*cont'd on p. 4*

Career Center Upcoming Events cont'd—Submit your resume via the CIC website by December 3 to be considered for interviews. Students are still encouraged to attend if they do not register by that date. Password token: 'cic2013'.

Winter Parties: Jan. 8 – 10

Come build relationships with young alumni in major cities across the country over winter break! This is an excellent opportunity to make invaluable connections and learn about life in each city. RSVP in CAREERlink for parties in New York, Los Angeles, Washington, D.C., and Silicon Valley.

Spring 2013 All-Campus Internship & Job Career Fair: Jan 30

The fair will take place from 3 to 7 p.m. in the Athletic Complex. Students can view registered organizations, research positions, and sign up for employer-hosted information sessions by logging into CAREERlink.

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



Bio 493 Sec 2: Biology on the Cutting Edge

Molecular Tweezers. NMR. Proteomics. X-ray crystallography. Deep sequencing. . .

Ever wondered what these are? Want to learn about cutting edge techniques in biomedical science from the people who use them daily? You could wander around Rebstock and the Medical Campus for a few days asking every grad student you see to explain their research, OR you could sign up for section 2 of Bio 493, and get them to come to you. I know which I would choose.

Bio 493 section 2, Biology on the Cutting Edge, brings in 14 graduate students who are applying the latest technology to biological and medical problems to your doorstep (OK actually to Rebstock 309 on Thursdays from 10:00 to 11:30am this spring but close enough!). Each student will give a short explanation of the science and application of their technique, and then lead a discussion on the impact of this type of research on human health and our understanding of life. 1 Credit.

If you have questions about this course please contact the course master:

Dr. Petra Levin
plevin@wustl.edu

Or the graduate student coordinator:

Mitch Pesesky
m.w.pesesky@gmail.com

Anton Weisstein cont'd—on developing a pre and post test to measure incoming vs. outgoing knowledge. The instructors use outcome-based evaluation, i.e. they set objectives first, then assess progress to know where to make changes in the curriculum. Using this method, instructors can better monitor if students have pre-knowledge, iron out any major misconceptions and direct individual students to additional resources as needed. The work Weisstein has been doing at his home university Truman, is now being aligned with Wash U's content and curriculum. These methods may also be applied to and developed for Bio 2970 in the future.

✎ Dr. Weisstein's third project this semester is his 10 Equations in Biology Seminar Series for instructors. His main expertise is mathematical biology, which is why Erik Herzog brought him to Wash U. Major national funding agencies, such as NSF (National Science Foundation) and HHMI (Howard Hughes Medical Institute) report problems with biology students graduating without the mathematical confidence and proficiency necessary for most areas of science. These agencies have put out a call for ways to help students develop those math skills. Generally, math concepts are not implemented or reinforced in biology courses taught below the college level. Since they have been so separate up until college course level, many students are thrown off by being asked to do math in a bio course. This seminar series explores ways to integrate and demystify math and demonstrate why it's so important. In some cases, it's a matter of tying them together into a coherent narrative. The first half of the series is an exploration of strategies, while the second half covers developing lesson plans with individual instructors. Seminar topics include statistical distributions, practical applications and explanations of equations.

Dr. Weisstein believes in the power of math. He wants to see students understand mathematical concepts, and how they can be applied to biological concepts. He wants math to be integrated into the larger picture, pointing out that it should add to the experience, not subtract from it. He works hard to develop strategies for helping students take ownership of the material. The idea is to improve their fluency in translating between everyday language and the precise language of math. Ultimately, it is up to individual faculty/departments at educational institutions on how they want to respond to the national call for the improvement of math skills. Dr. Weisstein is available to present the problems and offer tools and strategies needed to help resolve those problems.

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

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?tid=8>

Evolution, Ecology, & Population Biology Seminars, Thursdays, 4:00pm, Rebstock 322, check the website for topics/schedule: <http://wubio.wustl.edu/events?tid=3>

History & Philosophy of Science Seminar Series: <http://wubio.wustl.edu/events?tid=12>

Plant Lunches: most Tuesdays at noon (1st Tuesday of month @ DDSPC, others @ McDonnell 212):
<http://wubio.wustl.edu/events?tid=10>

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/dbbs/website.nsf/SDN>

December 2012

7th Last day of classes

13th FINAL EXAMS begin

January 2013

7th Spring 2013 courses available to students on Blackboard

14th First day of classes

21st Martin Luther King Jr. Holiday—NO CLASSES

29th Last day to add/wait/change Spring 2013 courses

30th Last day to drop/D courses for Spring 2013

February 2013

4th Last day to change Spring 2013 courses grade option to Pass/Fail or Audit

