

Biology Advising Newsletter



Rhode Island College

March 2011

A Message from Biology Department Chair, Dr. Eric Hall

It is the middle of the Spring 2011 semester and students are thinking about courses to take in the upcoming Summer session and Fall semester. Don't forget to visit your advisor and discuss your progress toward graduation. Students will need their advising holds lifted before Fall registration opens for degree students on April 4.

Meanwhile, I'd like to mention some things that have happened or are happening currently in the department.

Bonnie Colantuono received the Mary Keefe Scholarship! The award was made during the annual Holiday Party in December. This award is given to an outstanding sophomore Biology major with an overall GPA of over 3.0 and a GPA in Biology courses over 3.5! **Amanda St.Germain** received the DiStefano Award for Departmental Honors Research and will present her work at the "Northeast Regional Honors Council Conference" in Portland, Maine. Congratulations to Bonnie and Amanda!

There are some changes occurring in Fogarty Life Science, including the installation of a fire emergency sprinkler system throughout the building.

Also, did you know that when FLS was built in the early 1970s, FLS 059 was constructed as a garage for the Biology Department's boat? Yes, that is correct, the department was supposed to have a small boat which would be used for Ecology course laboratory activities. Instead, the room became a multipurpose storage space which accumulated enormous amounts of obsolete computer equipment, scientific apparatus with no discernible purpose, and lots of junk. The faculty got together and cleaned the room out and it is

now scheduled to be renovated into three new research laboratory spaces: a general purpose space for large equipment, a new tissue culture room, and an aquarium room.

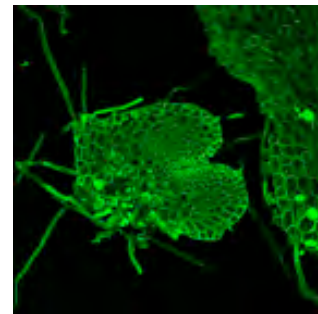
We have also seen the installation of our new Olympus FluoView 1000 confocal laser scanning microscope which faculty are utilizing for their research as I write this letter. **Drs. Eric Roberts** and **Rebeka Merson** have been instrumental in the procurement, installation, and use of this very exciting tool. They will also be offering a 400-level topics course this Fall titled "Light Microscopy" to include its use!

President Carriuolo announced at the mid-year review that a charitable donation bequeathed by **Leslie Cameron '70** will be used to renovate the greenhouse facility!

There have also been changes to the Biology curriculum. The biggest news is that the RI Board of Governors of Higher Education gave final approval to change the degree offered by RIC from a BA in Biology to a BS in Biology. This change will officially be implemented starting in the Fall of 2011 and includes the addition of MATH 240 (Statistics) and a choice of either MATH 181 (Applied Basic Mathematics) or MATH 212 (Calculus). All Biology majors accepted to the college for the Fall of 2011 will need to complete the requirements for the BS in Biology. Students accepted prior to the Fall of 2011 (graduating after Summer 2011) will have a choice of graduating with either the BA or the BS degree. Check with your advisor concerning your eligibility and course requirements.

Course Information

To help you with your planning, here is the list of biology “electives” (upper-level courses not offered every semester) that are tentatively scheduled for the upcoming year. Please note that 500-level courses are open to graduate students, **and advanced undergraduate students (senior status) with permission.**



Fern gametophyte observed by autofluorescence using a laser scanning confocal fluorescence microscope. The image shows the flattened thallus with gametangia near the pointed end. Also visible are numerous single-celled rhizoids.

Summer 2011

BIOL 318 Ecology Dr. Sheriden

Fall 2011

BIOL 321 Invertebrate Zoology^① Dr. Govenar
BIOL 353 Plant Kingdom^① Dr. de Govenain
BIOL 420 Biochemistry of Proteins and Nucleic Acids^③ Dr. Avissar
BIOL 450 Topics: Light Microscopy Drs. Roberts, Merson & Hall
BIOL 526 Molecular Cell Physiology Dr. Avissar

Spring 2012

BIOL 300 Developmental Biology of Animals^{①②} Dr. Meedel
BIOL 329 Comparative Vertebrate Anatomy TBA
BIOL 421 Biochemistry of Carbohydrates and Lipids Dr. Avissar
BIOL 429 Medical Microbiology Dr. Britt
BIOL 440 Evolution Dr. de Govenain
BIOL 550 Topics: Molecular Genetics Dr. Matsumato

- ① Organismal elective for Biology BA
- ② New prerequisite: BIOL 111/112, BIOL 221 and completion of or concurrent enrollment in BIOL 320.
- ③ Starting Fall 2011, changes are in place for courses in biochemistry as follows:
BIOL 410 (CHEM 410) Biochemistry I will become

BIOL 420 (CHEM 420) Biochemistry of Proteins and Nucleic Acids.

The prerequisite for BIOL 420 will be CHEM 206.

BIOL 411 (CHEM 411) Biochemistry II will become

BIO 421 (CHEM 421) Biochemistry of Carbohydrates and Lipids.

The prerequisite for BIO 421 will be CHEM 206.

Biochemistry of Proteins and Nucleic Acids is cross-listed as BIOL 420 and CHEM 420 and Biochemistry of Carbohydrates and Lipids is cross-listed as BIOL 421 and CHEM 421. If you are using either of these courses toward a minor in Chemistry, it is advised that you register as CHEM. If you are using them as Biology electives, it is advised that you register as BIOL.

Also of note:

BIOL 241, Biology Colloquium will be offered every semester for 0.5 credits.
BIOL 460, Biology Senior Seminar, is now offered every Fall and Spring semester.

Research

Contact a faculty member if you are interested in doing a research project (BIOL 49X). Proposals are due April 15 (for Fall semester) or November 15 (for Spring semester).

Featured Courses

Fall 2011

BIOL 321 - Invertebrate Zoology

Invertebrate Zoology will consist of a study of invertebrates living in marine, freshwater, and terrestrial habitats from taxonomic, ecological, and evolutionary perspectives. Laboratory activities will include observation of living and preserved specimens, some dissection, and local field trips. 4 semester hours. Prerequisites: required - BIOL 111/112. Offered by [Dr. Breea Governar](#).

BIOL 353 - The Plant Kingdom

We will learn how green plants evolved from green algae to colonize land, and how they adapted to a variety of habitats on Earth, from the most desolate deserts to the most luxuriant tropical rain forests. To find out how plants managed to deal with life on land, we will study their amazing adaptations and the successful, although sometimes devious ways in which they recruit animals to work for them. A field trip to the Roger Williams Park Botanical Center will provide us with live examples of plant adaptations to various biomes and environments. You will collect, press, and prepare fern specimens to learn about these attractive plants while making your own herbarium. Finally, we will learn how plants have benefited all civilizations on Earth since humans got the idea to domesticate and breed plants for food, medicine, building material and much more. So come join us on this adventure around the Plant Kingdom! Lecture, laboratory, and field trips. 4 semester hours. Prerequisites: required - BIOL 111/112. Offered by [Dr. Roland de Govenain](#).

BIOL 420 - Biochemistry of Proteins and Nucleic Acids

(Formerly BIOL 410 Biochemistry I) Biochemistry is among the fastest developing areas of scientific endeavor today, constantly changing, fascinating and new. The course will lay the groundwork for in-depth understanding of life at the level of molecular structure and function, regulation and interactions. To accommodate working students, the course is offered twice a week, at night. BIOL 420 satisfies the Biochemistry requirements of most graduate programs in the Life Sciences. Lecture only. 3 semester hours. Prerequisite: BIOL 111/112 and CHEM 206. Offered by [Dr. Yael Avissar](#).

BIOL 450 - Topics: Light Microscopy

NEW!

This course will begin by considering the effective use of basic light microscopes (such as how to establish Kohler illumination, set-up of condenser iris diaphragm and diopter adjustment) and then explore the use of research light microscopes, including our new LSCM (laser scanning confocal microscope). Other topics covered include phase contrast, differential interference contrast, polarization, epifluorescence, imaging devices and digital image processing. Students will be expected to demonstrate proficiency in these techniques by completing a project utilizing light microscopy. Workshop (Tues 2-5 pm, Fri 12-3 pm). 3 semester hours. Prerequisite: BIOL 111/112. Offered by Drs. [Rebeka Merson](#), [Eric Roberts](#) and [Eric Hall](#).



Packets of Gram-positive anaerobic bacterium *Sarcina ventriculi* imaged using phase contrast microscopy (top) and fluorescence microscopy (bottom).

BIOL 526 - Molecular Cell Physiology

Molecular Cell Physiology is an advanced molecular biology course designed for those Biology majors who have taken Cell and Molecular Biology and, preferably, Biochemistry, and are interested in delving more into these topics. It is a lecture-only course, offered once a week, in the evening. In addition to the tests (in-class midterm and take-home final), a paper elaborating on one of the topics discussed in the course and a presentation on the same topic are required. Textbook: [Molecular Biology of the Cell](#), written by Alberts *et al.* (the same authors as the wonderful text [Essential Cell Biology](#) used in BIOL 320). Lecture only. 3 semester hours. Prerequisite: BIOL 320 required, BIOL 410 or 411 (former course numbers) recommended. Offered by [Dr. Yael Avissar](#).

News and Announcements

Biology Colloquium Series

There is one more guest speaker scheduled for the Biology Research Colloquium seminar series this semester. Seminars are on Thursday afternoons in FLS 050. Refreshments are served at 4:00 pm, with the seminar following at 4:30 pm. **Dr. Spinette** organizes the colloquium series, and teaches BIOL 241 this semester. (Did you know all students who entered RIC on or after Fall 2010 are required to enroll in 2 semesters of BIOL 241?)

March 31 **Martín García-Castro**, Yale
"Early specification and differentiation potential of neural crest cells."

There is a big group of student presentations scheduled for the end of the semester in FLS 050, on Wednesdays at 12:30 pm and on Thursdays at 4:00 pm. Come out and support fellow students and see what goes on in Senior Seminar! **Dr. Britt** and **Dr. Conklin** are teaching BIOL 460 this semester.

Thurs April 7 **Jennifer Caron, Nozil David Policard, Daniel Osinaga**
Thurs April 14 **Lorenzo Crumbie, Heather Boulanger, Jennifer Loaiza**
Wed April 20 **Janis Hall, Sylvie Gimple, Courtney Deady**
Thurs April 21 **Ericha Fleteau, Caitlin Murphy, Nicole Cote**
Wed April 27 **Kirsten Mello, Kaitlin Geagan**
Wed April 28 **Amanda St.Germain, Carolyn Lewis, Robert Atwell**
Thurs May 5 **Kwame Gyampo, Maryssa Lafond**

Interested in doing research and earning honors in Biology? Get started by checking out **Honors Program in Biology** page on the RIC website (www.ric.edu/biology/generallInfo.php). Contact **Dr. Spinette**, **Dr. Roberts** or **Dr. Matsumoto** for more information.

Club News

The **RIC Student Chapter of the National Science Teachers Association** will be holding elections for officers at the upcoming April 6 meeting (12:30 pm in FLS 108). For more information, contact club officers (NSTA@so.ric.edu).

The **Biology Club** meets on Wednesday during the free period in the Biology Lounge. A trip to the RISD Nature Lab and the Brown Greenhouse is planned for April 9th at 11:00 am. Contact Janis Hall (jhall_3536@ric.edu) for more information.



Attendees enjoy collecting swag at last semester's NSTA-sponsored webcast of the Howard Hughes Medical Institute Holiday Lectures on Science "Viral Outbreak."



Spring 2010 Senior Seminar students Rayna Silva, Daniel Reeves and Amanda Faella get ready to take the stage!

News and Announcements



Biology student C.J. Pickett works at the new confocal microscope with assistance from Dr. Eric Roberts and recent biology graduate Maksim Martirosyan.

Think Small!

A new course in light microscopy and biological imaging will be offered this Fall. Check out BIOL 450!



Where Are They Now?

Elizabeth Rochon (BA '07) is currently in her 3rd year pursuing her PhD in the Molecular, Cell and Developmental Biology Program in the Department of Biological Sciences at the University of Pittsburgh.



The focus of her research is to determine the molecular mechanisms that result in the manifestation of arteriovenous malformations (AVMs) upon loss of the TGF- β type 1 receptor Alk1. During normal vascular development, arteries and veins are connected by a capillary bed. However, in *alk1* mutants, arteries join directly to veins, resulting in abnormally enlarged vessels. These vessels are fragile and susceptible to rupture due to increased flow. This can lead to a myriad of health issues, including ischemic stroke. Using a zebrafish model system which experiences

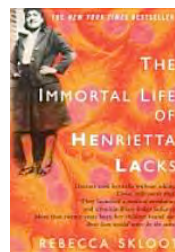
similar phenotypes upon loss of Alk1, she hopes to better understand the molecular missteps downstream of Alk1 that results in AVMs. Some of this work was recently published in the journal Development (2011).

Liz is excited about the opportunities and mentorship she received at RIC. "My education at RIC provided me with a great foundation to successfully go on to grad school and achieve my goals."

Corti P, Young S, Chen CY, Patrick MJ, Rochon ER, Pekkan K, Roman BL (2011) Interaction between *alk1* and blood flow in the development of arteriovenous malformations. *Development* 138(8):1573-82.

Biology Book Club

Cell culture is the theme of this semester's Biology Book club events. The club offered screenings of the BBC documentary *The Way of All Flesh* and the documentary



Mapping Stem Cell Research: Terra Incognita. The discussion of The Immortal Life of Henrietta Lacks by Rebecca Skloot will take place on Friday, April 8 at noon in FLS 200. Lunch will be provided, there will be a door prize for students, and everyone is welcome! We'll wrap up the semester on May 6 at noon in the Biology Lounge to choose a book to read over the summer.

Photo Credits

Botany photos on the title page banner are courtesy of biology senior, photographer and naturalist **Daniel Reeves**.



Fern gametophyte (pg. 2), *Sarcina ventriculi* (pg. 3), and *Drosophila melanogaster* (pg. 5,6) images courtesy of Dr. Roberts.

Photo of Elizabeth Rochon provided by Liz herself (pg. 5).

HHMI lecture and Senior Seminar (pg. 4), confocal microscope and Daniel Reeves with camera (pg. 5) photos by Dr. Conklin.



Drosophila melanogaster (fruit fly) observed by autofluorescence using a laser scanning confocal fluorescence microscope. The image is a maximum intensity projection of a three-dimensional reconstruction and has been digitally pseudocolored.