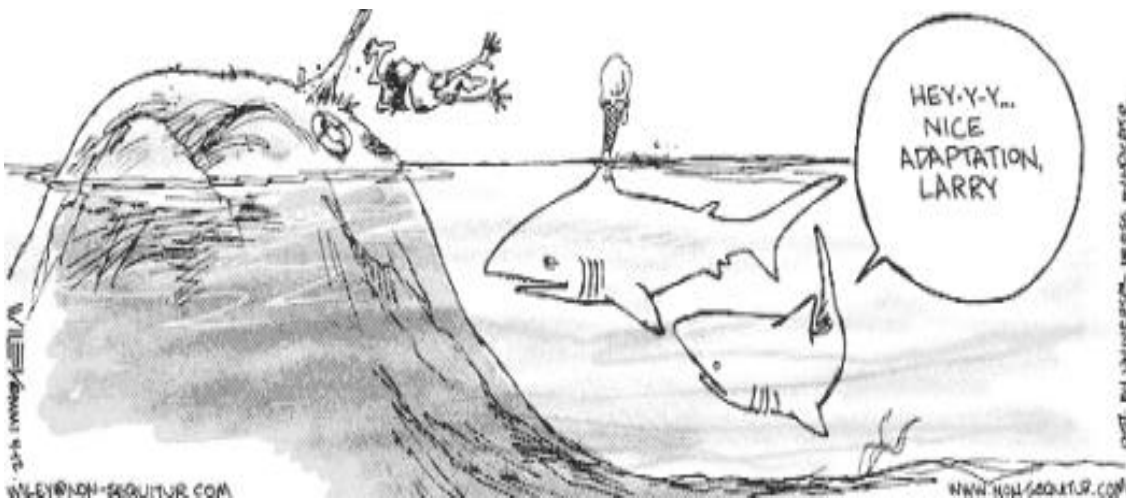


Biology Department

Program Planning Meeting

Fall 2009



- **Professors' Office Hours**
- **Information about Faculty Teaching and Research**
 - **Biology Major/Minor Requirements**
 - **Environmental Biology Major Requirements**
 - **Courses for Spring 2010**
 - **Information on Limited Enrollment Courses**
 - **What you can do with a Biology Degree**

Visit our website at www.barnard.edu/biology for more information!

Department of Biological Sciences
Fall 2009

| FACULTY | OFFICE | EXT. | OFFICE HOURS |
|--|---------------|-------------|-------------------------------|
| Morton, Brian (Chair) | 1204 Alt. | 4-5454 | T 12:30-1:30 W 10:30-11:30 |
| Bauer, Elizabeth ¹ | 1114 Alt. | 4-2349 | W 2:00-4:00 |
| Boylan, Elizabeth | 110 Milbank | 4-2708 | by appointment only |
| Callahan, Hillary ¹ | 1007 Alt. | 4-5405 | by appointment only |
| Glendinning, John | 1107 Alt. | 4-4749 | M 9:30-10:30 W 1:00-2:00 |
| Goldstein, Jessica | 911 Alt. | 4-5298 | W 1:30-3:30 |
| Hertz, Paul | 1106 Alt. | 4-2151 | TH 3:00-5:00 |
| Mansfield, Jennifer ¹ | 1306 Alt. | 4-4381 | by appointment only |
| McGuire, Krista | 1305 Alt. | 4-0440 | TH 1:00-2:00 F 10:00-11:00 |
| Sable, Julia | 1202 Alt. | 4-1415 | by appointment only |
| Seigel, Alison | 1202 Alt. | 4-1415 | by appointment only |
| Shepard, Kristen | 1205 Alt. | 4-2731 | W 12:30-1:30 TH 12:30-1:30 |
| Wallenfang, Matthew ¹ on leave | 1006 Alt. | 4-2084 | T 12:30-2:30 |

Biology Office (1203 Altschul)

Maria Minino

Fax: (212) 854-1950
4-2437

Introductory Biology Office (911 Altschul)

Jessica Goldstein, Director

4-5298

Karolin Rafalski, Associate Director

4-2153

Brianna Desantis, Associate Director

4-9159

Laboratory Maintenance (904 Altschul)

Honah Liles

4-5522

Lisa Paul

4-1402

Supplemental Instruction (1202 Altschul)

Maria Minino

4-1415

Greenhouse (Milbank, 5th floor)

Krystyna Buckarowski

4-5897

Howard Hughes Program (1310 Altschul)

William Carrasco

4-6770

**Department of Biological Sciences
Spring 2010**

| Faculty Member | Office | |
|---|---------------|---|
| Elizabeth Bauer ebauer@barnard.edu 854-2349 | 1114 Altschul | <u>Research:</u> neurobiology of emotional learning and memory <u>Teaching:</u> cellular and molecular neuroscience |
| Elizabeth Boylan eboylan@barnard.edu 854-2708 | 110 Milbank | <u>Research:</u> mammalian development biology, cell biology, endocrinology, hormonal carcinogenesis |
| Hilary Callahan hcallaha@barnard.edu 854-5405 | 1007 Altschul | <u>Research:</u> ecology and evolutionary biology of plants, responses to a changing environment <u>Teaching:</u> plant evolution, applied ecology & evolution On leave Fall 2009, Spring 2010 |
| John Glendinning jglendin@barnard.edu 854-4749 | 1107 Altschul | <u>Research:</u> sensory physiology, feeding behavior, plant/herbivore interactions <u>Teaching:</u> animal physiology, animal behavior, research design and statistics On leave Spring 2010 |
| Jessica Goldstein jgoldstei@barnard.edu 854-5298 | 911 Altschul | <u>Research:</u> development of <i>C. elegans</i> , cell signaling <u>Teaching:</u> introductory laboratories |
| Paul E. Hertz 854-2151 | 1106 Altschul | <u>Research:</u> ecology, evolution and behavior of reptiles, physiological ecology <u>Teaching:</u> general biology, vertebrate zoology, ecology |
| Jennifer Mansfield jmansfie@barnard.edu 854-4381 | 1306 Altschul | <u>Research:</u> vertebrate developmental biology, evolution of development <u>Teaching:</u> molecular biology, genetics, animal development On Leave Fall 2009, Spring 2010 |
| Krista McGuire 854-0440 | 1305 Altschul | <u>Research:</u> microbial ecology, tropical ecology, global change biology <u>Teaching:</u> Microbiology |

Brian Morton
bmorton@barnard.edu
854-5454

1204 Altschul Research: evolutionary genomics; gustatory and olfactory receptor genes

Teaching: genetics, molecular evolution, genomics

Kristen Shepard
kshepard@barnard.edu
854-2731

1205 Altschul Research: genetics of plant development and morphological evolution

Teaching: plant physiology, plant development, and genetics

Alison Seigel
aseigel@barnard.edu
854-1415

1202 Altschul Teaching: ecology and conservation

Matthew Wallenfang
mwallenf@barnard.edu
854-2084

1006 Altschul Research: adult stem cells in *Drosophila*

Teaching: introductory biology, cell biology

Major Requirements Classes starting with BC11

Introductory Biology: Students must complete both semesters of the 1500-level introductory sequence, including the lecture and laboratory components (BIOL BC 1500, 1501, 1502, 1503). The sequence can be completed either with 1500&1501 followed by 1502& 1503 or vice versa.

Genetics: Students must complete BIOL BC2100 Molecular and Mendelian Genetics. It is recommended, but not required, that this be completed immediately following the completion of the Spring semester Introductory courses (BIOL BC1502 and 1503).

Five Upper Level Lecture Courses: Students must complete at least five additional lecture courses at the 2000 and 3000 levels.

One of the five lecture courses must be selected from each of the following two groups:

1. Physiological Level of Organization

BIOL BC 3360 Animal Physiology OR
BIOL BC 3340 Plant Physiology OR
BIOL BC 3320 Microbiology

2. Ecological and Evolutionary Level of Organization

BIOL BC 2278 Evolution OR
BIOL BC 2272 Ecology OR
BIOL BC 3280 Applied Ecology and Evolution OR
BIOL BC 2240 Plant Evolution and Diversity

The three additional lecture courses may be selected from any Barnard Biology offering (including all of the courses listed above) or, with the permission of the department chair, from offerings in the Columbia Department of Biological Sciences and the Columbia Department of Ecology, Evolution, and Environmental Biology.

Three Upper Level Laboratory Courses: Students must complete at least three Biology laboratories beyond the 1500 level. Laboratories may require a lecture course as co-requisite or prerequisite; such requirements are specified in the Barnard catalog. Biology laboratories at Barnard require a lab fee. Appropriate Biology courses at Columbia University may be used to satisfy the lab requirement, as may those at other institutions, with permission of the department chair.

Research Option: A student may count two consecutive semesters of Guided Research and Seminar (BIOL BC3591x followed by BIOL BC3592y) as a laboratory course for the major.

Senior Seminar or Individual Research: Students must enroll in one section of the Senior Seminar (BC 3590) or complete two semesters of Senior Thesis Research (BIOL BC3593x followed by BIOL BC3594y). A student cannot take both Senior Thesis Research and Guided Research and Seminar at the same time.

Chemistry Requirement: One year of Chemistry with laboratory, including one term of Organic Chemistry, is required.

Requirements for a Minor in Biology

A minor in biology must include one year of introductory biology (BIOL BC1500, BC1501, BC1502, BC1503), three additional lecture courses at the 2100 level or higher, and two additional laboratory courses. One of the lab courses may be replaced by two semesters of Guided Research and Seminar (BIOL BC3591x followed by BIOL BC3592y).

Environmental Biology Major

Requirements

- A. **Biology**
 - One year of introductory Biology with lab at the 2000-level sequence
 - One lecture course in ecology with lab
 - One lecture course in organismal biology
 - One additional lecture course in Biology (not including organismal biology)
- B. **Environmental Science**
 - One year of introductory Environmental Science with lab
 - One course in methodology
 - One additional lecture course offered in Environmental Science
- C. **One year of introductory Chemistry** with lab, including one semester of Organic Chemistry
- D. **One course in data handling**
- E. **Senior Thesis** completed in Biology or Environmental Science

For details, see [Major Requirements Worksheet](#) (next page).

Advice

Students may substitute courses taught at Columbia (in the Departments of Biology, Earth and Environmental Sciences, or Statistics) or at other institutions with the prior approval of both major advisers. Calculus, Physics, and a second year of Chemistry are recommended for students planning graduate study in Environmental Biology.

Students interested in Environmental Biology often choose to spend a semester "abroad", at the [School for Field Studies](#) program, the [Organization for Tropical Studies](#), or at comparable programs offered by other institutions. We encourage students to take advantage of such opportunities, and we expect that most of the courses they complete in these programs will be accepted in lieu of some of the major requirements. In addition, we recommend that those students planning to go abroad in the junior year elect to do so in the Fall Semester rather than the Spring Semester in order to take best advantage of senior seminar research planning and programming.

Students who elect a major in Environmental Biology will have a major adviser in each department. Although one member of the faculty will serve as the primary adviser, requests to substitute courses from Columbia or other institutions must be approved by both major advisers.

Internships or some type of work or field experience are extremely valuable in preparing students for careers in the environment. Go to [Research Opportunities](#) for listings. Studies have shown that students who have had related work experience are more attractive to employers and graduate schools.

Students should check the catalogue and the department for additional information on the major and courses offered by Barnard and Columbia. Classes with grades less than C- or taken pass/fail cannot be counted towards the major.

See also Senior Research Seminar for information on senior thesis requirements completed in Environmental Science Department.

BARNARD COLLEGE

Major Requirements for Environmental Biology

| | | |
|---|-----------------------|------------------|
| Student Name: | Class of: | |
| E-mail: | Phone: | |
| Adviser(s): | Meeting Dates: | |
| Part A, Biology (Please note new course names as of Fall 2008) | | Term/Year |
| Introduction to Cell and Molecular Biology (<i>was</i> BC2001y) | BIOL BC1502y | |
| Introduction to Organismal and Evolutionary Biology (<i>was</i> BC2002x) | BIOL BC1500x | |
| Introductory Lab in Organismal and Evolutionary Biology (<i>was</i> BC2003x) | BIOL BC1501x | |
| Introductory Lab in Cell and Molecular Biology (<i>was</i> BC2004y) | BIOL BC1503y | |
| A lecture course in Ecology: Ecology, BC2272 or Applied Ecology and Evolution, BC3380, or another Ecology course. | | |
| Laboratory in Ecology (<i>was</i> BC3373y) | BIOL BC2873y | |
| An Upper Level Course in Organismal Biology: | | |
| Plant Evolution and Diversity (<i>was</i> BC3240x) | BIOL BC2240 | |
| or Invertebrate Biology (<i>was</i> Invertebrate Zoology, BC3250) | BIOL BC2250 | |
| or Vertebrate Biology (<i>was</i> Vertebrate Zoology) | BIOL BC2262y | |
| or Microbiology | BIOL BC3320x | |
| One additional lecture course in Biology (not listed above), for example, Genetics, BC3200. Other Organismal courses may be substituted with the prior permission of the advisor. | | |
| Part B, Environmental Science | | |
| Earth's Environmental Systems: Climate + lab | EESC V2100x,y | |
| Earth's Environmental Systems: Solid Earth + lab | EESC V2200x,y | |
| One of the following courses in methodology: | | |
| Field Methods | EESC BC3014x | |
| or Environmental Measurements | EESC BC3016y | |
| or Global Assessment Remote Sensing | EESC NO356x | |
| or GIS-Remote Sensing, Environmental Infrastructure Mgt. | EAE E4009x,y | |
| One additional lecture course in Environmental Science, for example Ecotoxicology, Case Studies in Land-use Dynamics, Forests and Environmental Change, Hydrology. | | |
| Part C, Chemistry (2 semesters with lab) | | |
| Preferred: General Chemistry I + lab | CHEM BC2001x | |
| Preferred: Organic Chemistry I | CHEM BC3230y | |
| + Organic laboratory | CHEM BC3328y | |
| Part D, Data Handling | | |
| Research Design and Analysis (<i>was</i> BC3386) | BIOL BC2286 | |
| or Data Analysis | EESC BC3017 | |
| or Statistics for Ecology & Evolutionary Bio. (alternate years) | EEEB W3020 | |
| Part E, Senior Thesis (completed with one-year Biology or Environmental Science seminar course) | | |
| Senior Thesis Topic: | | |
| Senior Seminars in Biology | BIOL BC3591x or y | |
| or Senior Thesis Research and Seminar (fall and spring) | BIOL BC3593x/94y | |
| or Senior Research Seminar (fall and spring) | EESC BC3800/01x,y | |

BIOLOGY DEPARTMENT COURSES

Spring 2010

| | | |
|--|------------|----------------------|
| BIOL 1002 Contemporary Issues | Sable | MWF 9-9:50 |
| BIOL 1502 Mol. & Cell. Biology | Wallenfang | MWF 9-9:50 |
| BIOL 1503 Mol. & Cell. Laboratory | Goldstein | M 10-10:50, F 1:10-2 |
| BIOL 3340 Plant Physiology | Shepard | MW 11-12:15 |
| BIOL 2272 Ecology | Seigel | T Th 9:10-10:25 |
| BIOL 3362 Cellular Neuroscience | Bauer | MW 11-12:15 |
| BIOL 2100 Genetics | Shepard | T Th 10:35-11:50 |
| BIOL 2262 Vertebrate Biology | Hertz | T Th 10:35-11:50 |
| BIOL 3320 Microbiology | McGuire | MWF 10-10:50 |
| BIOL 2280 Animal Behavior | TBA | MWF 11-11:50 |
| BIOL 3303 Lab in Molecular Biology | TBA | Th 1:10-6 |
| BIOL 3321 Lab in Microbiology | McGuire | T 1:10-6 |
| BIOL 3363 Lab in Cellular Neuroscience | Bauer | W 1:10-6 |
| BIOL 2873 Lab in Ecology | Hertz | W 1:10-6 |
| BIOL 3590 Senior Seminar | Wallenfang | F 1:10-3 |
| BIOL 3592 Guided Research and Seminar | Shepard | M 6:10-7 |
| BIOL 3594 Senior Thesis Research | Shepard | M 6:10-7 |

Barnard College Biological Sciences Department

Sign up for Spring 2010

Students must sign-up for ALL Barnard Biology upper level Lab Courses and Seminars they intend to take in Spring 2010.

During the period from Friday, November 6th to Monday, November 23rd, you should meet with your advisor for consultation and schedule planning. Once you know which Lab and Seminar courses you are going to take, sign up will take place as follows:

BIOL BC 1002

Sign-up sheets for the lab component of this course will be posted on the **9th Floor** bulletin boards until the end of the fall semester.

BIOL BC 1503

Sign-up sheets for the lab component of this course will be posted on the **9th Floor** bulletin boards until the end of the fall semester. (**No sign-up is necessary for the BIOL BC 1502 lecture**).

For all other limited enrollment courses (listed below)

Sign-up will take place in the Biology Office, room 1203 Altschul. If you are unable to come at the assigned time (see timetable below), you can sign up during the days that follow. But remember, spaces are assigned on a **first come-first served basis**. To sign up for these classes, you must bring a printout of your program showing the approval of your advisor. You may **NOT** sign up for more than **2 (two)** laboratories.

**Timetable for Sign Up for Limited Enrollment
AND Department Approved Courses
(Except BIOL BC 1002 and BIOL BC 1503)**

| | |
|---|--------------------------------|
| Tuesday, November 17th 1203 Altschul 12:00-4:00pm | Sign-up for ALL Seniors |
| Wednesday, November 18th 1203 Altschul 12:00-4:00pm | Sign-up for NON-Seniors |

Limited Enrollment Courses, Spring 2010

| | |
|---|-------------|
| BIOL BC 3303 Lab in Molecular Biology | Th 1:10-6pm |
| BIOL BC 3321 Lab in Microbiology | T 1:10-6pm |
| BIOL BC 3363 Lab in Cellular Neuroscience | W 1:10-6pm |
| BIOL BC 2873 Lab in Ecology | W 1:10-6pm |
| BIOL BC 3590 Senior Seminar | F 1:10-3pm |

What can you do with a Biology degree?

Majoring in Biology at Barnard is a great foundation for a wide range of careers. Many of our alumnae pursue careers as researchers or health care providers, and nearly 50% of our majors become physicians. Other graduates apply the skills they learned as Biology majors to careers in education, law, public policy, and journalism.

How can you get research experience?

- Work for the Biology Department. Look at the Student Positions listing for jobs such as:
 - Introductory Biology Lab assistants
 - Greenhouse assistants

For more information, visit <http://www.barnard.edu/biology/jobs.html>
- Speak directly to professors in the department to see if there is a position open to do research in their lab.
- Check out the Internship link on the Barnard Biology website to see:
 1. Summer opportunities at Barnard/Columbia
 - a. HSPF Internships- for research performed at Barnard
You must see professors directly
 - b. SURF/AMGEN- for research at BC or CU labs
Apply via <http://www.columbia.edu/cu/biology/ug/surf/>
 2. Grants available to support summer internships and research courses
 3. Wide listing of Biology internship opportunities
- Contact professors at nearby colleges and universities for additional research- related opportunities
- Search www.google.com for REU's (research experiences for undergraduates)

Plan ahead! Applications for summer internships are often due in January-February.