Students in the Garden

Students in the Garden is a new course in the Biology Department, offered spring semester through BIO 493 or BIO 500, that introduces undergrads to hands-on research and builds their base of knowledge on ecological and evolutionary topics. There is no official website for the course, but it is listed as an opportunity in the Office of Undergraduate Research. Students in the Garden had a lot of support from faculty and other administrators as a great program tying the Biology curriculum at the university with research at the garden. The program was up and running just two months after being proposed by Wash U graduate students Nicole Miller Struttman and Kyra Krakos.

The lecture portion of the course involves a presentation, typically given by Niki or Kyra, on subjects that introduce the basics of botany. Sometimes research scientists at the Garden will give a talk about a relevant paper. The class is run like a journal club in which students learn to discuss and present scientific papers. Niki and Kyra, among other grad students involved in the program, have offices and lab space for research at the Garden. They each mentor 1-2 undergrads per semester. It’s an equally exciting opportunity for the grad students who essentially manage, mentor and teach under their faculty mentors.

In addition to the lecture, students work in the research labs of their mentors. For example, Niki currently has two students. One works in the greenhouse —cont’d on page 2
Nature Conservancy Speaker Series
This month, The Nature Conservancy in Missouri kicks off a spring speaker series at Schlafly Bottleworks in Maplewood.

Tuesday, April 27 @ 7pm
Speaker: Dr. Alan Templeton; evolutionary biologist at Washington University in St. Louis, “Collared Lizards versus Smokey the Bear; Conservation of an Ozark Landscape through Prescribed Burning.”

Tuesday, May 18 @ 7pm
Speaker: Dr. Patricia G. Parker; Des Lee Professor of Zoological Studies at the University of Missouri - St. Louis

Tuesday, June 15 @ 7pm
Speaker: Doug Ladd; Director of Conservation Science at The Nature Conservancy in Missouri

Look for further details on our website at www.nature.org/missouri, under “Field Trips & Events.”

Please contact Betsy LePoidevin at The Nature Conservancy for additional information at: (314) 968-1105 or bleepoidevin@tnc.org.

Faculty Spotlight: Dr. Rainer W. Bussmann
Professor Rainer Bussmann was born in a tiny village in Southern Germany, close to the Alps. Early in life, he developed an intense interest in botanical research. His research experience started at age 14, when he began to work in the flora and habitat-mapping program of the Federal State of Baden-Wuertemberg in Germany. He published his first paper one year later. At the age of 16, while still in high school, he began teaching plant taxonomy and ecology at a local adult college. He earned his MSc at University of Tuebingen and PhD at University of Bayreuth in Germany.

Bussmann is now Director of the William L. Brown Center (WLBC) at Missouri Botanical Garden, Curator of Economic Botany, and holds adjunct professorships at Washington University and University of Missouri St. Louis. Originally a vegetation ecologist, he focuses now on the interface between plant use, conservation and resource management. Before moving to WLBC he held university appointments as Assistant Professor at University of Bayreuth (Germany), as Associate Professor and Scientific Director of Lyon Arboretum at University of Hawaii, and as Research Fellow at University of Texas, Austin, and taught a wide variety of classes in the US, Germany, Africa and Latin America, using English, German and Spanish as teaching languages.


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Students in the Garden continued— manipulating water, temperature, etc. to examine plant responses to determine if they are stress-adapted or non-stress-adapted. The other student is looking at pollen deposition for a competition experiment. On a broader scale, students learn about ecological niche modeling using the Geo Information System (GIS) to look at finding new habitat for endangered plant species. Scientists use GIS to locate a spot, layer on average temp, diurnal changes, precipitation, and other environmental variables, and look at the known extent of species success. They can then determine which locales might be suitable for the species, gather data, and generate maps.

Research projects like these on climate change or ethnobotany (studies of the relationship between local/community gardens and people) start at the garden but can lead to field work in the US and less often, other countries. Many undergrads who take the course continue research with their mentors as field work in the summer. Mentors sometimes have funding through small grants or students can apply for funding through Wash U’s Summer Undergraduate Research Fellowship (SURF) Program.

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Mentor Kyra Krakos and student Estelle Huang
Washington University and Missouri Botanical Garden

Historically, Missouri Botanical Garden (MoBot) has had a very important role in education at the University. A partnership has existed since Henry Shaw approached Washington University (founded 1853) at the Garden’s inception (founded 1859). Originally, Wash U’s Biology Dept was Henry Shaw’s School of Botany, stationed at the Garden, and included all offices and labs. Shaw also endowed the position of Engelmann professor, named after his scientific advisor George Engelmann, at the university. The person who holds this position is also to be the Director of the Garden, keeping permanent ties between the two. Currently, Peter Raven is Executive Director of MoBot and the Engelmann Professor at Wash U.

The Shaw School of Botany was eventually moved to Wash U’s Danforth campus in the 1930’s. People like Viktor Hamburger (experimental embryologist), Edgar Anderson (founder of the Society for the Study of Evolution), Harrison Stalker (evolutionary biologist), and Thomas Hall (zoologist) were expanding scientific research at Wash U. A Zoology Department was also created around this time. These two departments were joined in 1970 to create a unified “Biology” Department. Now the Garden serves as a lab of Wash U rather than an entire school or department. The first PhD ever from Wash U was a woman from the Shaw School of Botany, Isabelle Munford. The Shaw School used to be a significant player, a huge part of Wash U, producing at least half of the first 100 PhD’s from the university.

By the 1940’s and 50’s not much undergraduate research occurred at the Garden with a few exceptions. When Peter Raven became the new Director of the Garden in the early 1970’s, projects became more accessible to students for summer work. Hands-on experience has become more and more important to education over the years. This combined with the recent diversification of research at the Garden creates the perfect environment for new programs such as Students in the Garden. Undergraduate research also crosses over and ties in with work and programs happening at Tyson Research Center and Shaw Nature Reserve (1925).

An explosion of research and the creation of facilities for this research over the last few decades have kept Missouri Botanical Garden at the forefront of international botanical research. New facilities include:

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William L. Brown Center (WLBC), since 1995: a MoBot center for ethnobotany, the study of the relationship between people and plants. Its mission is “To study, characterize and conserve useful plants and associated traditional knowledge for a sustainable future.” Partnerships nationally and internationally allow WLBC to share data and development/conservation ideas with the rest of the world, potentially leading to new nutritional or pharmaceutical products.  [http://www.wlbcenter.org/](http://www.wlbcenter.org/)

Center for Plant Conservation (CPC), since 1984: a national cooperative organization of 36 gardens focusing on endangered plants in their local areas, headquartered at MoBot. The mission is to prevent the extinction of plants native to the US by conserving current at-risk populations and reintroducing new populations, grown at the institutions, into native habitats. CPC maintains the National Collection of Endangered Plants, containing more than 700 species.  [http://www.centerforplantconservation.org/welcome.asp](http://www.centerforplantconservation.org/welcome.asp)

Center for Conservation and Sustainable Development (CCSD), since 2001: this MoBot organization’s mission is “To safeguard Earth’s biodiversity through the collaborative development and wise application of scientific expertise and resources”. Goals include analyzing and interpreting scientific data as a basis for conservation decision-making, building the capacity for conservation in tropical countries by training local people in conservation science, developing community programs in tropical countries aimed at sound local management of natural resources, conserving rare and endangered plants and habitats in the Midwest, building partnerships with public and private sector organizations and agencies to foster conservation, and participating in and promoting the international conservation endeavor. [http://www.mobot.org/plantscience/ccsd](http://www.mobot.org/plantscience/ccsd)

Students in the Garden is an incredible opportunity for undergraduate students to work with a leading botanical institution of such historic importance as Missouri Botanical Garden. For more information contact Erin Gerrity at gerrity@biology2.wustl.edu and you will be directed to current participating mentors.

Below are four ways the Washington University Career Center and its Web site can help you find a summer opportunity:

1) Create a target list of organizations and make a plan by setting up a personalized, one-on-one appointment with a Career Advisor. Call 314.935.5930 to setup your appointment or stop by the main office.

2) Our data base of jobs and internships, CAREERlink (www.careers.wustl.edu) contains a searchable directory of opportunities by industry including health care products and services; nonprofit; pharmaceuticals; biotech; and agriculture. Currently, CAREERlink has over 800 active internship and job postings with new opportunities added daily.

3) Career Center Web site - Use the “link to web resources” on www.careers.wustl.edu for many great online resources.

4) 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 and writing your resume and cover letters.

Lastly, don’t forget to utilize all the resources on campus. Check out the Office of Undergraduate Research at www.ur.wustl.edu/.

Student Review: Students in the Garden by Scott Fabricant

For the Students in the Garden program, I worked with WashU graduate student Kyra Krakos and MOBOT curator Peter Hoch on the evolution of Oenothera pollination syndromes. At first I was Kyra's field assistant, traveling to local Missouri sites during the school year and with her to more far flung places like Texas and New Mexico to collect field data. Later I was given the freedom to develop my own project, which is the heart of the Students in the Garden program. I worked on climate-induced phenotypic plasticity in one of our study plants, and the pollination syndrome evolution of another of our plants; I was able to present the data on the latter at Ecological Society of America, a massive annual conference.

More importantly perhaps, I was able to present this research as a work in progress during both our weekly seminars and at the end-of-the-year public seminar at MOBOT. For me, and other students, this was our first foray into giving seminars. —cont’d on p. 6
Harrison D. Stalker Award Winner 2010: Fidel Desir

Fidel Desir has been named the winner of the 2010 Harrison D. Stalker Award from the Department of Biology. This award, which is named in honor of the late Professor Stalker, who was a member of the Biology faculty (1942-1982), a world-renowned evolutionary biologist, an inspired teacher, and a true enthusiast of the fine arts, is given annually to the graduating Biology major whose undergraduate career has been marked by outstanding scientific scholarship as well as contributions to the university in areas of artistic expression and/or community service. Fidel Desir exemplifies the spirit of the Stalker Award exceptionally well: during his undergraduate career he not only excelled as a student in the humanities, natural sciences and social sciences, he established stellar credentials in the area of international public health, the professional arena to which he intends to devote his career.

Fidel has been awarded one of two Medical Missionary Fellowships to spend the year 2010-11 at the St. Joseph’s Clinic in Thomassique, Haiti, where he will be responsible for ordering medicines and supplies, and will serve as a translator for American physicians who do not speak Creole and their patients who do not speak English. Following his year in Haiti, Desir will enroll in the MD/PhD program at one of the four top-ranked US medical schools to which he has already been accepted (Washington, Johns Hopkins, Univ. California-San Francisco, and Emory).

Spector Prize Winners 2010: Rebecca Krock and Olga Minkina

Every year the Department of Biology awards a prize in memory of Marion Smith Spector, a 1938 graduate of the University who studied Zoology under the late Professor Viktor Hamburger. Professor Hamburger was a prominent developmental biologist who made many important contributions while a faculty member at Washington University.

The Spector Prize was first awarded in 1974 to recognize academic excellence and outstanding undergraduate achievement in research. Students are nominated by their research mentors for this award. Being nominated means they have done outstanding work in research and have made substantial contributions to the field of that work.

This year the prize has been awarded to two students, Rebecca Krock, and Olga Minkina. Rebecca worked in the lab of Erik Herzog in the Biology Department. Her thesis is titled “GABA and Glutamate Mediate Circadian Functional Connectivity in the SCN”. Rebecca plans to enter the PhD program in Neurobiology at Stanford University in the fall. Olga worked in the lab of Jim Cheverud in the Department of Neurobiology and Anatomy at the School of Medicine. Her thesis is titled “Quantitative Trait Loci Affecting Liver Fat Content in Mice”. Olga plans to enter the PhD program in Molecular and Cell Biology at Harvard University.

As part of the departmental recognition of their outstanding work, Ms. Krock, and Ms. Minkina will both present a research talk at a special Biology Department Seminar on May 3, 2010, which will be followed by a reception. Friends, colleagues, coworkers, Biology Department faculty and other researchers are invited to attend.
The Arts & Sciences Spring Undergraduate Research Symposium was held on Saturday April 17th in the May Auditorium in Simon Hall. This year’s symposium gave over 170 students from all backgrounds the opportunity to present their research projects at a Poster Session following a Platform Talk. Biology’s own Professor Sally Elgin was awarded the Undergraduate Research Career Achievement Award and gave the enthusiastically received Keynote Address titled “Undergraduate Research, a Personal Perspective”. Forty-one Biology majors, including thirty Honors majors presented posters at the event.

Faculty Spotlight: Rainer Bussman continued— On teaching… Dr. Bussmann sees teaching as a tool to create opportunities for students to explore what they are interested in. He likes to create a broad perspective of the field of botany so that students can figure out where their interest lies. Currently he teaches Bio 3262: Medicinal Botany (cross-listed in Anthropology). Both undergrads and grad students take Medicinal Botany, a course created by Dr. Walter Lewis at Wash U over 30 years ago. Bussmann learned from colleagues that many students expressed an interest in this course when it was no longer offered. He realized there was a gap that needed to be filled and helped to bring the course back recently. He also teaches the University College course Bio 490: Plants, People, Culture: Economic Botany. Bussmann’s educational goal is to get the study of plant use back into Wash U’s curriculum and add on other aspects of it, making it as cross-disciplinary as possible including biomedicine, anthropology, law, economics, phytochemistry and more. Bussmann feels that he learns more when teaching students from other disciplines. The knowledge he gains definitely keeps the job interesting and his teaching style fresh.

Dr. Bussmann is a Summer Undergraduate Research Fellowship (SURF) Program mentor and Bio 500: Independent Study mentor as well. Students interested in working with Dr. Bussmann as a mentor can contact him through the William L. Brown Center’s website: http://www.wlbcenter.org/staff_bussmann.htm. Dr. Bussmann states that as cross-disciplinary botanical interests grow, he seems to be found more and more easily by students. Thanks to a growing website and an explosion in research, the Garden (and all of its branches) is also more accessible to students interested in the study of plant use, a good sign that ties between Wash U and the Garden are as strong as ever and that information is readily available.

Student Review of Students in the Garden cont’d— We also learned critical reading of journal articles and got help writing grants, essential skills for any future researcher. That grant writing helped we win funding from the SURF program, and there may be supplemental funding from MOBOT itself. Looking back, it was an invaluable experience I call upon both consciously and unconsciously as I start my PhD. —Scott Fabri-cant, Wash U Biology Alum, 2009

More Biology Jobs on Department Website: http://www.nscl.wustl.edu/research.html

Volunteer Opportunities: subscribe to the Community Service Connection, an email newsletter: http://www.communityservice.wustl.edu/csconnection/
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://www.biology.wustl.edu/seminars/seminar.html

Evolution, Ecology, & Population Biology Seminars, Thursdays, 4:00pm, Rebstock 322, check the website for topics/schedule:  http://www.biology.wustl.edu/seminars/evpop.html

Bioforum, alternating Fridays, 4:00pm, McDonnell 361, check the website for topics/schedule:
http://www.biology.wustl.edu/seminars/biologyforum.html

Plant Lunches: most Tuesdays at noon (1st Tuesday of month @ DDSPC, others @ McDonnell 212) Contact Professors Tuan-hua David Ho or Mark Running for topics/schedule.

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

Division of Biology & Biomedical Sciences (DBBS), all lectures & seminars:  http://dbbs.wustl.edu/dbbs/website.nsf/SDN


April 2009

17th  Online Registration for Fall 2009 Begins

23rd  April 23rd-25th: ThurtenE Carnival, see website for details http://thurtene.org/Home.html

30th  Last Day of Classes
      Spring WILD, see website for details http://wild.wustl.edu/index.html

May 2009

3rd  May 3rd-5th: Reading Period

6th  May 6th-12th: Final Exams

20th  Arts & Sciences Recognition Ceremony
      Biology Major Graduates Celebration

21st  COMMENCEMENT

24th  First Summer Session Begins