Biology Department Receives $1.6 million HHMI Undergraduate Education Grant

Howard Hughes Medical Institute (HHMI) just announced that it will award a 1.6 million dollar grant to Wash U’s Biology Department for a four year project to continue and expand undergraduate education initiatives in the department. These initiatives include providing more opportunities for hands-on experience with real scientific experiments in the classroom and more opportunities for student research. In addition the grant will provide funding for Faculty Development and the Science Outreach program.

The 2010 HHMI grant will be the 6th one the department has received since 1992, making Wash U one of the few institutions to receive continuous funding nationwide. Sally Elgin was the PI for the first grant in 1992; Kathy Miller has been the PI for HHMI grants since 2004. The grant submitted by Kathy Miller last fall will begin September 2010 and last until August 2014. This new award will support ongoing and new projects in Student research and broaden access to research careers, curriculum reform, future faculty development, and science outreach.

The student research component includes continuing the Summer Undergraduate Research Fellowship (SURF) program. Other funds from Children’s discovery Institute and the Office of Undergraduate Research, plus mentor research grants and NSF REU supplements are added to HHMI funds so that many more students can participate. Support for a student to participate in BioMedRAP, a summer research program for disadvantaged students run by DBBS, is included as is continuation of Summer Scholars in Biology and Biomedical Sciences, which brings WU freshman to campus the summer prior to their first semester.

Curriculum and Laboratory Development projects span across the sciences and engineering, with a collaborative project involving computer science and biology to revamp the introductory bio lab with an adaptation of the Phage Hunters curriculum. Computer science introductory labs will introduce biological research applications and students will be offered a freshman summer research program combining the CS course with research in genomics. Revamp of organic chemistry labs will introduce ‘green’ inquiry-based experiments. A project in physics will redesign the introductory labs,
HHMI Grant cont’d

making them more inquiry- and concept-based to better integrate with the new discussion-oriented introductory courses, 196 & 197. The successful mentoring program for under-prepared students in General Chemistry that was initiated with the present grant will continue, as will course development work in Biological Clocks and Immunology. A new Future Faculty Development initiative will allow graduate students and post-docs to partner with faculty members to develop and teach active learning and inquiry-based modules for courses and participate in coaching student course-based research projects.

Science Outreach’s (SO) mission to connect WU’s resources to the K-12 community to support hands-on, inquiry-based science across the St. Louis region will be supported as well. Funding from HHMI for general Science Outreach core activities have helped keep Science Outreach operating and able to compete for major awards from other agencies and foundations. New projects include implementation of a new graduate certificate for grade 4-8 teachers, to deepen teachers’ understanding of science problems and help transfer this learning into inquiry-based curriculum units and establishment of a partnership between WU investigators and grade 6-12 teachers to develop inquiry-based curriculum units in energy sustainability.

—Kathy Miller

Read more in the Record: http://news.wustl.edu/news/Pages/20803.aspx

BLANKENSHIP LAB

The Blankenship Lab would like to congratulate Aaron Collins and Jianzhong Wen on their successful theses defenses!

The title of Jianzhong Wen’s defense is “Structure And Function Of The Fmo Protein From The Photosynthetic Green Sulfur Bacteria”

The title of Aaron Collins’ defense is “Light-harvesting and the Primary Photochemistry of Roseiflexus castenholzii”

We have also hired a new tech, Mindy Prado, who will be the head technician at our Brauer Hall Lab.

HERZOG LAB

Congratulations to Alexis Webb who successfully defended her Ph.D. thesis in Neuroscience in February. Her thesis is titled "Pacemaker heterogeneity in the suprachiasmatic nucleus: Origins and network implications." To celebrate, Alexis took a vacation in Costa Rica. She plans to start her postdoctoral training this June in a developmental biology laboratory in Dresden, Germany. Congratulations also to Tatiana Simon, our fearless technician, who became a US citizen on March 19. —Erik Herzog

LAB NEWS

CHASE LAB

Jon Chase just published a paper in Science on a 7 year long experiment at Tyson about why randomness is so important to species composition, and what the findings mean for conserving and restoring the world’s ecosystems. This experiment has received a lot of international press.

UPCOMING EVENTS

IAPB World Congress, 6/6/10—6/11/10

The International Association for Plant Biotechnology is planning an outstanding scientific meeting to be held right here in the heart of the Midwest this summer. The 12th IAPB World Congress [<http://www.iapb2010.org/>] will be held June 6-11, 2010 in downtown Saint Louis, Missouri. The meeting features 12 plenary lectures by outstanding plant biotechnologists and over 40 hand-picked keynote speakers.

Opportunities still exist for free registration to this compelling meeting for students and post-docs at Wash U. Students may apply for financial aid at registration through: http://www.IAPB2010.org/.

The Nature Conservancy in Missouri—Spring Speaker Series

Last month, The Nature Conservancy in Missouri kicked off a spring speaker series at Schlafly Bottleworks in Maplewood. The last talk will be:

Tuesday, June 15 at 7:00pm—Speaker: Doug Ladd; Director of Conservation Science at The Nature Conservancy in Missouri

Look for further details on the 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 blepoidevin@tnc.org—submitted by Erik Herzog

2010 Tyson Summer Seminar Series in Ecology and Evolution

Seminars take place on Thursday afternoons starting shortly after 4:00 PM in the Living Learning Center at Tyson Research Center (http://tyson.wustl.edu/maps.php). Seminars are followed by an informal BBQ—please bring your favorite side dish! For additional information please contact Meghan Kelly, mkelly@wustl.edu; 935-8430.

MAY 20: BRIAN WILSEY, IOWA STATE UNIVERSITY: Biodiversity and temporal niche differences

MAY 27: BILL RESETARITS, NATIONAL SCIENCE FOUNDATION: Habitat selection and the dynamics of communities and metacommunities

JUNE 3: CANDACE GALEN, UNIVERSITY OF MISSOURI: New insights on the role of floral volatiles as ecological signals in a pollination web

JUNE 10: PAUL NELSON, UNITED STATES FOREST SERVICE: The Homogeneity Era: Planet of weeds

JUNE 17: ALAN COVICH, UNIVERSITY OF GEORGIA: The importance of long-term, place-based studies in ecology: Learning about biotic responses to changing environments and landscapes. June 17 is a special seminar event in honor of former Tyson Director Dr. Owen Sexton. Please RSVP by June 10 for this event (mkelly@wustl.edu; 935-8430).

JUNE 24: MICHAEL ANGILLETTA, INDIANA STATE UNIVERSITY: Adaptation to thermal change: Physiological strategies and their ecological implications

JULY 1: KEITH SUMMerville, DRAKE UNIVERSITY: Is all timber harvest bad? Resistance and resilience in forest lepidopteran communities

JULY 8: JENNIFER WILLIAMS, NATIONAL CENTER FOR ECOLOGICAL ANALYSIS AND SYNTHESIS: One species, two continents: Changes in species interactions between ranges determine invader success

JULY 15: BOB RICKLEFS, UNIVERSITY OF MISSOURI, ST. LOUIS: The regional community: Forest birds of eastern North America

JULY 22: MICHAEL JENKINS, PURDUE UNIVERSITY: Bugs, blights, and burns: Endemic disturbance in a post-invasion landscape

JULY 30: RICARDO HOLDO, UNIVERSITY OF MISSOURI: Herbivory, fire, and landscape change in the Serengeti
Georgia was born in Wichita Falls, Texas, and grew up in Austin. She paid her own way through the University of Texas where, as an undergraduate, she worked in the lab of Jack Myers, a leading photosynthesis researcher. For her MA (1951), she worked on the relationship of auxin to electrically induced growth responses in the Avena coleoptile in A. R. Shrank's lab. At the University of Texas, she developed a lifelong commitment to leftwing politics, grounded in an unshakable belief in fairness, equity, and equality. While in graduate school, she was encouraged to go on for a PhD, but she declined. In later years, she said she wanted her education to allow her to do interesting and useful work, but that she had no interest in running her own lab. Given the norms of the time, which were less than welcoming to women in science, it is hard to know whether in today’s, fortunately much more welcoming, world of US science she would have made the same choice.

Georgia moved to New Orleans in 1951 and found a job in Art Hodes' neurophysiology lab at Tulane University Medical School. (She liked working on plants a lot, lot more than she did on cats.) At the height of the Joe McCarthy Red Scare era, Hodes was fired, despite being tenured, after being accused of being a Communist. The department head called Georgia in to tell her that, although they would love to keep her, in view of the fact that she had worked for Hodes, this would not be possible! Hodes called a friend from college, Barry Commoner at Washington University, and Barry told him to have Georgia come to St. Louis. Although, he said, he did not have a budget line at the moment, he would find money somewhere until the next grant came in. So that is why she moved to St. Louis in 1953. She worked on replication of the RNA virus, tobacco mosaic virus (TMV), for the next 15 years. During this time, she began doing isotope ratio mass spectrometry, in which she measured the ratio of 15N to 14N in the NH3 produced by digestion or oxidation of the compound(s) of interest. (This is a very different technique, using very different instrumentation, from the usual contemporary uses of mass spectrometry.)

In the late 1960s, nitrate concentrations in many agricultural watersheds routinely exceeded the Public Health Service limit of acceptability. Commoner had the idea that small but measurable differences in the 15N abundance between inorganic N originating from the oxidation of soil organic matter vs. that coming from inorganic fertilizer N would make it possible to calculate the fraction of the nitrate that came from fertilizer-N. Commoner was anxious to turn the project over to Georgia and me. Since I was between projects and it was an interesting problem and since it seemed to both Georgia and me that it would be fun and productive to work together, we agreed to take it on. We published our first paper together in 1971 in Science. We continued to use variations in natural 15N abundance as a window into nitrogen transformations from the biochemical to the ecological level for more than 20 years. We worked on estimating the contribution of biological N2-fixation to an ecosystem, on the biochemistry of N-transformations in nodules on the roots of N2-fixing plants and biological denitrification. Georgia also worked on organic farming in the US Corn Belt and co-authored a seminal paper in Science (211: 540-547, 1981). Although she did significant work on proline metabolism and metabolic channeling of pathway intermediates, the 15N work was always her favorite. In all, she published over 80 papers, many as first author.

Georgia spent her entire career at Washington University on soft money. In 1990, Washington University established a Research Professor track. Georgia was among the first to be appointed Research Professor. While it resulted in a modicum of security, it was mostly honorific. Nonetheless, the university required outside letters of evaluation as if it were an appointment to a tenured position. I was asked to solicit evaluations. Since I wanted our colleagues to know of her stature, I requested 13 letters from around the world. All responded with effusive endorsements of her appointment as Research Professor. While the rules of the game are that such letters are normally confidential, I cannot
imagine that 20 years later, any of her colleagues object to your knowing the high esteem in which she was held both as a scientist and human being. I have selected excerpts from a few of the letters below with the permission of the writers.

John Hayes, a leading geochemist recently retired from Woods Hole Oceanographic Institution, wrote, in part: “I count 21 papers in the last 5 years, including the J. Biol. Chem. masterpiece (1988, all 15 pages of it). I can remember when Georgia got started on that project, and I have admired her attack on a most difficult, but definitely worthy, objective. In particular, her use of both oxygen and nitrogen isotopic techniques allowed clean conclusions to be drawn regarding problems that other people had been fiddling with for years. It sets a new standard, and, to summarize its importance, I’d have to compare it to the seminal contributions to the carbon- and oxygen-isotopic literature made by Mo Cleland and Marion O’Leary. “ Anyone familiar with the field will recognize this as high praise indeed.

Fraser Bergerson, at CSIRO, Canberra, Australia, a leading N2-fixation researcher wrote: “All of this research has culminated … in the development of reliable methods for estimating the magnitude of the biological fixation of atmospheric N2 using measurements of the natural abundance of 15N in plants grown in field settings. It is in this area that my own research has greatly benefited from Georgia Shearer’s contributions. Initially, I was very skeptical about the practical feasibility of these procedures and after some experiments of my own in 1992-3 and extensive exchange of information between Canberra and St. Louis my views have changed… We have successfully employed the technique in cropland legumes in Australia, in various crop legumes in Malaysia and Thailand … In all of this research we were greatly stimulated by the St. Louis work in general and in particular by the scholarly review by Shearer and Kohl (Austral. J. Plant Physiol.13, 699- 757).”

Peter Vitousek, a well-known ecologist at Stanford wrote: “My own experience in working with Georgia (and Danny Kohl) started when I became interested in using 15N natural abundance to analyze ecosystem development in Hawaii. Georgia kindly did a few analyses in a straightforward attempt to apply “her” technique for estimating nitrogen fixation; the results were contrary to (opposite to) the expected pattern. With Georgia you know the numbers are right (that’s not common in this field), so something interesting had to be going on. A number of other people (“experts” in the field) told me to just go ahead and use the technique anyway—N-fixers differed from non-fixers, and who cares if it is in the “wrong” direction—but Georgia (and I) wanted to find out why. Over a period of 18 months or so, we discussed possible mechanisms collected and analyzed new samples, considered the patterns, and iterated through field sampling again. We spent a stimulating several months rewriting each other’s discussion of the results. I co-author many papers, but I have never learned as much as I did from Georgia (and Danny Kohl) in the process of this work (recently published in Oecologia). The quality of her thought is as impressive as the quality of her data … A question that would arise at my university is ‘how much of this productivity reflects Georgia vs. Danny Kohl?:’. I’m rarely interested in disentangling collaborations—I can’t even do it with my own sometimes—but I know from serious 3-way arguments that Georgia makes a full, strong and creative contribution to the joint work. She has my strongest support.”

A colleague in Brazil, where she spent several months as an International Atomic Energy Agency, Soils, Irrigation and Crop Production Section visiting expert, wrote to me: “In my view, this method (15N natural abundance variation) is the only one with any potential for assessing nitrogen fixation in the field in woody plants … It was my good fortune to meet her again in Rio de Janeiro where she was giving a very clear account of potentials and limitations of 15N methods in natural systems … she was much sought after for informal discussions. In these she has —cont’d on page 7
Ho, Quatrano And Graduate Student Galant Recognized By American Society Of Plant Biologists

Assuming the presidency

Ho’s research concentrates on the hormonal regulation of seed germination, on plant responses to environmental stresses, and on the use of plants for biofuel. In the late 1980s, Ho and Quatrano helped discover genes called late embryogenesis abundant (LEA) genes that are expressed near the end of seed development, a time when plant tissue must be highly resistant to stresses such as dessication.

In the early 1990s, Ho discovered a LEA gene, originally isolated from a barley plant under stress, that when inserted into the genomes of wheat and rice increased their tolerance of drought or salinity. This discovery refuted the long-held notion that something as broad as stress tolerance must be controlled by dozens of different genes and never could be “engineered” into a plant.

Ho continues to study proteins that are expressed when plants are stressed, but his group also has embarked on a project to find enzymes that can help digest the tough lignocellulose in plant materials such as corn stover and wood chips so that the cellulose can be more easily converted into biofuel.

In his role as president, Ho plans to promote the role of the society in the international arena and as a bridge between academic and industrial interests.

“It has never been more important to emphasize the importance of plant biology in meeting the challenges of food security, human nutrition, alternative energy and climate change we currently face,” Ho says.

A Lifetime Of Service

Quatrano’s award recognizes both his research and his service to the plant biology community. His research interests include the means by which seeds establish polarity, so that the roots grow down and the shoots grow even if the seed is upside down in the soil, and the molecular mechanisms that underlie plant responses to environmental stress.

Quatrano recently was in the news for the discovery that the genes responsible for desiccation tolerance in the seeds of flowering plants also are present in the...
As much as Georgia enjoyed being held in high esteem by her colleagues worldwide, her pride and joy was her relationship with the undergraduates who passed through our lab. They adored her, returned to visit often and uniformly told her of both their personal and scientific growth that resulted from time spent with us.

Georgia died pain-free (hospice doesn’t believe in pain) in her own home surrounded by people she loved and who loved her. She was lucid much of the time until a day or two before she died. Days before she died, she scolded me and told me to lose the long face. She insisted that everyone dies, that she had lived almost 81 quite glorious years. It would have been greedy to have asked for more.

At the time of Georgia’s death, we were working on an invited review on the subject of our latest interest, the channeling of intermediates in metabolic pathways. She pressed me very hard to get on with it. Especially, she was anxious that I finally articulate my objection to her derivation of a function that could be used to calculate the fraction of the flux through the pathway that was channeled. I was never able to get my thoughts in proper order to see if she would agree to the revised point of view I was advocating. I think I finally have it and I think she would approve.

It was my very great privilege to have been Georgia’s close friend for 50 years and intimate collaborator for 40 years. Many in the department will miss her warmth, imposing intellect, generosity of spirit, and easy laugh—the essence of my dear friend. I treasure the hours we spent at the table in our hall “conference room”, arguing and exchanging ideas about the work we had done and that we planned to do. It is, of course, a paradox that the closer and more important a friendship has been the greater is the loss. But I wouldn’t have it otherwise.—Danny Kohl

Ho, Quatrano & Gallant cont’d

vegetative tissue of some mosses. Their carefully timed expression gives the mosses the seed-like ability to survive total desiccation, an ability flowering plants have lost.

Over the course of his career, Quatrano has played an important role in repositioning plant biology as a key science for the future. He was a member of the original editorial board of The Plant Cell and served as its chief editor from 1998-2003.

He was the ASPB president in 1992-93 and, during that time, created an office of public affairs to promote the visibility and funding of plant science. Quatrano then served as the first chair of the public affairs committee, testifying regularly before Congress on behalf of plant biology. His nomination for the award makes particular mention of Quatrano’s support for young plant scientists around the globe, encouragement that “has benefited the entire plant biology community as well as the young scientists themselves.”

—cont’d on page 9
Gar Allen Named As A Fellow Of The American Association For The Advancement Of Science

Garland E. Allen, Ph.D., professor of biology in Arts & Sciences, was elected to the Section on History and Philosophy of Science for his sustained commitment to understanding the history and social implications of genetics and eugenics, for exemplary work in biology education and for professional leadership and service.

Allen focuses his research on the history and philosophy of biology — particularly genetics, embryology and evolution — and their interrelationships between 1880-1950.

The major focus of his research is on the history of genetics and its relationship to eugenics and agriculture in the United States in the first half of the 20th century. Allen explores the funding and institutional base for eugenics: who paid for it, what were their motives, and what was the scientific or genetic basis for eugenic arguments.

The history of eugenics provides a number of insights into the interrelationships between science and its social context and raises many issues of ethical, legal and social importance that are surfacing in the wake of the Human Genome Project. Allen has repeatedly used his knowledge of the history of eugenics to inform the ongoing debate over behavior genetics and to argue against the notion that genes correspond in any simple way to complex traits.

Allen also has been involved in the Cold Spring Harbor Laboratory’s creation of an online archive on the American Eugenics Movement and is finishing a book on the history of genetics in the 20th century. He is also preparing a study of the relationship between the eugenics and conservation movements in the United States between 1880-1965.

This year, the 531 members who were named AAAS Fellows were announced in the Dec. 18 issue of the journal Science, published by AAAS. Fellows will be recognized in February at the AAAS Annual Meeting in San Diego.

An international nonprofit organization, AAAS is dedicated to advancing science around the world by serving as an educator, leader, spokesperson and professional association. Founded in 1848, the association includes some 262 affiliated societies and academies of science serving 10 million individuals.

Yehuda Ben Shahar’s Recent Work Selected As Science Signaling Breakthrough Of The Year

Yehuda Ben Shahar’s recent paper in Science Signaling provides “an intriguing example of a signaling system well known for its function in one context turning up quite unexpectedly in another system... [it shows] that cilia in airway epithelial cells contain taste receptors and can respond to bitter substances with an increase in beat frequency...” This discovery was selected by the American Association for the Advancement of Science as Science Signaling Breakthrough of the Year.
“Dear Sally and Colleagues,

Congratulations to all of you, but mostly to Sally for her selection as the Midstates Consortium 2010 Janet Andersen Lecture Award winner. Sally was chosen from a strong field of nine nominees by the members of the Consortium’s Executive Committee who met last weekend in Chicago.

Janet Andersen was a Hope College Math Professor and the Consortium’s Director for five years before her death in the fall of 2005. As a teacher and scholar, Janet was devoted to providing creative, high quality learning experiences for her students, and she herself was always learning as she was teaching. As Consortium Director, she looked for ways to connect with and support natural science faculty, both new and experienced. To honor Janet Andersen’s dedication and commitment to her work with students and faculty in her teaching, research and service to the Consortium, the Janet Andersen Lecture Award was established in 2008. The award is given each year to two faculty members, one in the biological sciences or psychology and one in the physical sciences, mathematics or computer science. The award winners present one of the plenary seminars at the two Undergraduate Research Symposia each fall.

We appreciate the efforts so many of you made in gathering the nomination information about Sally. The letter from faculty colleagues was a pleasure to read and described beautifully many of Sally’s accomplishments and her outstanding commitment to teaching and research with students and colleagues. It was also a wonderful addition to have letters from two of Sally’s students. These make it clear just what an impact she has had on the learning and development of undergraduates at Wash U.

We are eager to hear about Sally’s research in her award lecture at this year’s Undergraduate Research Symposium for the Biological Sciences and Psychology at The University of Chicago during the weekend of November 5-7, 2010. In addition to the opportunity to share your research with the conference attendees, you will also be given a modest honorarium as part of the award.

We have posted information about Sally on the Consortium’s website. http://www.mathsciconsortium.org/event_information/2010-janet-andersen-lecture-award-recipients. Congratulations to Sally and thanks again for her nomination.

Regards, Karen Pearson and all of the Consortium’s Campus Representatives”

Sally Elgin wins Midstates Consortium 2010 Janet Andersen Lecture Award

“A Rising Star

Galant’s research continues the WUSTL tradition of research in plant stress responses, but with a newfound urgency. The goal of her research is to design soybean plants that are better able to withstand high ozone concentrations. Ozone, an air pollutant, has harmful effects on both plants and animals.

“The U.S. is the world’s largest harvester of soybeans,” Galant says, “and the annual value of our crop is higher than the budget expenditures of most of the world’s countries. From an environmentalist’s perspective, the reliance on soybeans is a recipe for disaster.

“Soybeans, like many other crop plants, are extremely sensitive to atmospheric ozone concentrations,” she says. “A one percent increase in ozone concentrations results in a one percent decrease in soybean seed yield. To make matters worse, according to some predictions, atmospheric ozone concentrations, already quite high, may double in the next 100 years.

“The hope,” she says, “is that we will be able to design soybean plants that can withstand high ozone concentrations without sacrificing yield.

“Most aspiring scientists want to work on issues associated with human disease and development,” she says, “because it’s much easier to relate to a sick human than to a sick plant. But ultimately, all the advancements in medical science will mean very little if we have nothing left to eat.”

The awards will be presented at a ceremony at the ASPB meeting in July in Montréal, Canada.—read more in The Record—http://news.wustl.edu/news/Pages/20675.aspx

Ho, Quatrano & Gallant cont’d
Sally Elgin, an HHMI professor since 2002, is awarded $800,000

Sarah (Sally) Elgin remembers being drawn to science as a child because it offered a concrete way to understand the world around her. “I liked poking and prodding things,” she says. “I wanted to figure how they worked.” It’s that joy in learning new things that has pushed Elgin to create a program that provides the same opportunity for her students at Washington University in St. Louis, Missouri.

Elgin does research on genomes, a field of study focused on the DNA sequence of individuals and organisms. In the past 15 years, high-throughput machines that can quickly determine an organism’s DNA sequence have revolutionized the field, turning it from a lab-based field that looked at the genome one gene at a time to a computationally-based field focused on large-scale data collection and analysis, a field now referred to as “genomics.”

As the field has become increasingly complex and data-oriented in recent years, Elgin realized that her students no longer had the same sort of easy access to the science that she had loved as a kid. Biologists often spent their days studying numbers on computer screens, not microscope slides wriggling with life.

Elgin thought she could motivate students by having them play a real role in the scientific process—not just sitting in a classroom jotting down notes—so she decided to develop a curriculum to do just that. “The goal is twofold. One is to bring more genomics into the undergraduate curriculum, most of which was written before we knew how to sequence genomes. The other goal is to do it in such a way that students are actually involved in the research project,” she explains.

The result was a research-based course where students learn to work with large data sets and work with the University’s Genome Sequencing Center in transforming a genome’s raw sequence data into a more polished, finished sequence. The task of sifting through mountains of data to find relevant information requires both brute force and brainpower. “Think of a genome like a copy of Moby Dick—but instead of being its usual thick volume, it’s 20 times longer because someone has inserted gibberish at random places,” Elgin says. “Our job is to find the sentences.” Computers have gotten good at finding the ‘words’ within a genome, but they often fail to construct good sentences. The students analyze the computer output and learn to use several lines of evidence to construct testable models of genes and chromosomes.

As she was developing and testing the curriculum, Elgin quickly realized that there was so much interesting work to do that the class could become a nationwide effort that provided a research experience for students across the nation. With the help of her colleagues at Washington University, that vision became the Genomics Education Partnership, which Elgin began in 2005 with her first HHMI professor grant. The partnership now includes more than 60 colleges and universities across the country that provide students the opportunity to work on large-scale DNA sequencing projects.

The work is challenging in its own right, but it also offers students an opportunity to move the science forward. The results of the students’ work serves as a foundation for papers that Elgin and others submit for publication in research journals; two journal articles based on the scientific research have been published since 2006. The information also goes into a national database that scientists use for their own research. In addition, the GEP faculty have published two papers in the science education literature to help others adopt this style of teaching.

For students, the chance to do something that matters is an incentive to do top-notch work. Currently, the project focuses on the fruit fly’s dot chromosome, which may hold important information about genome organization and gene expression. “Students are so excited to do something that doesn’t end up in the wastebasket at the end of the semester,” says Elgin, who also serves as an advisor for HHMI’s Science Education Alliance. “They’ve been apprentices for so long, and they’re just dying for the chance to do something real.” — http://wubio.wustl.edu/news/728
Jean Fuchs Wins Outstanding Staff Award

A grant/administrative coordinator in the Department of Biology, Jean’s kind, positive and professional attitude make her a tremendous asset to the department’s faculty and staff. She oversees grants, ensuring that requirements are met, funds correctly allocated, and that all records are in order.

In addition, she compiles monthly reports on spending activities, processing travel and expense forms and assists with payroll. She is efficient, capable and consistently goes the extra mile, and her personable attitude makes her a pleasure to work with.

GRANT AWARDS

Kathy Miller: “CDI Summer Undergraduate Research Fellowship Program,” 1/10, CDI continuation—$40,000

Erik Herzog: “In Vivo Chronochemotherapy Against Brain Cancer,” 1/10, CDI—$25,000

Olga Pontes: “RNA and Protein Trafficking in the Arabidopsis Sirna-Directed DNA Methylation Pathway,” 3/10, Mallinkrodt Foundation—$60,000


Sally Elgin Wins Award for Mentoring

Sally Elgin was awarded the Undergraduate Research Career Achievement Award and gave the Keynote Address entitled "Undergraduate Research, a Personal Perspective" which was very enthusiastically received at the 2010 Symposium.

VIKTOR HAMBURGER OUTSTANDING EDUCATOR PRIZE FOR 2009 GOES TO DR. SEAN CARROLL

National Center for Science Education (NCSE) Supporter Sean B. Carroll is to be awarded the Viktor Hamburger Outstanding Educator Prize for 2009 from the Society for Developmental Biology, at the society’s sixty-eighth annual meeting in San Francisco. Carroll, Professor of Molecular Biology, Genetics, and Medical Genetics and Howard Hughes Medical Institute Investigator at the University of Wisconsin, Madison, will be honored "in recognition of his pioneering role in elucidating the genetic and molecular basis of morphological evolution, and for his exceptional contributions to making scientific advances in this field accessible to both students and the general public."

After summarizing Carroll’s scientific achievements, the SDB’s citation notes that he “has also led a second life, equally successful, as a public educator in the realm of evolution," listing his books From DNA to Diversity: Molecular Genetics and the Evolution of Animal Design, Endless Forms Most Beautiful, The Making of the Fittest, Into the Jungle and Remarkable Creatures. "Indeed," the citation continued, “the philosopher Michael Ruse has opined that if Charles Darwin were alive today, there would be no scientist that he would rather spend an evening with than Sean Carroll.”

SAFETY SPOTLIGHT—Gerry Rohde

Welcome to “safety spotlight”. Thankfully, we have no recent chemical spills or laboratory fires to write about.

However, a few weeks ago, one of our labs did experience a foot injury resulting from a falling, but empty, liquid nitrogen dewar. Although no bones were broken, this incident, once again, illustrates the need for wearing sturdy shoes in the lab environment, rather than sandals, perforated, or cloth footwear. Any type of accidental spill, or, in this case, drop, will be more likely to end up on or near your feet and ankles than anywhere else.

Our second focus during this safety spotlight is Ethidium Bromide (EtBr). Since the University’s environmental health and safety (E.H. & S.) department has recently strongly recommended that material containing unwanted EtBr be treated as hazardous waste, generators are now faced with occasionally large amounts of material that suddenly require hazardous waste appropriate storage, handling, and documentation. For those labs in particular, but for the casual EtBr waste generator as well, the stockroom now carries this extractor filtration kit that can cut the volume of EtBr contaminated aqueous solutions significantly by trapping the EtBr via a charcoal filter disk. The remaining water filtrate can be seweried, while the disk, after circa twenty uses, must be disposed of as hazardous waste through E.H. & S.. Each extractor kit is sold for approximately twelve dollars and sixty-one cents and comes with two number ten Whatman glass fiber pre-filter disks designed to remove gel particles and, thus, avoid premature clogging of the charcoal filter.

For a complete look at the University’s guidelines for EtBr use and disposal, please consult this link: http://ehs.wustl.edu/policy/Ethidium%20Bromide%20Disposal%20Guidelines%20090416.pdf

Continue to be safe—and remember: “Falling objects can be brutal if you don’t protect your noodle”.

Thanks Mike Dyer and the Greenhouse Staff for organizing the Annual Plant Sale last month!

Do you have any exciting news to share? Please submit announcements, lab notes and photos to Erin Gerrity:
gerrity@biology2.wustl.edu