

BIOLOGYCURRENTS

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GENOMICS RESEARCH

In spring 2008, the Science Education Alliance (SEA) of the Howard Hughes Medical Institute (HHMI) awarded John Dennehy associate member status to establish a course at Queens College on the genomics of bacteriophages (viruses that attack bacteria). HHMI created the SEA to encourage the formation of a nationwide network of scientists and educators committed to developing and sharing new materials and methods with the education community. QC was one of 28 colleges and universities chosen to participate in this initiative on the basis of a nationwide competition. SEA's pilot project, which Dennehy adapted to QC's General Education Curriculum and Freshman Year Initiative, is a genomics course that involves first-year college students in authentic research. Since Dennehy himself is a microbial ecologist working on bacteriophages, this program is a perfect fit.

The project curriculum is quite straightforward and requires little prior knowledge of molecular genetics or microbiology on the part of the students. Graham F. Hatfull (University of Pittsburgh) conceived the course curriculum based on work carried out by him and Sara Elgin (Washington University). Hatfull piloted the program at the University of Pittsburgh with a heterogeneous group of students who had yet to select a major. As an SEA associate member, Dennehy received a complete set of student laboratory manuals, instructor manuals with

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John Dennehy observes the work of two students participating in the new Genomics Research Experience.

Letter from the Chair

Corinne A. Michels '63, PhD
Distinguished Professor Emerita

Each issue of *Biology Currents* is an opportunity for the Department to review the highlights of the year.

We spotlight faculty and student scholarly pursuits that go beyond the classroom—ones that we feel enrich the education of our students by allowing them to experience the excitement of science, and develop critical thinking skills. This said, you should rest assured that the Department's curricular offerings still focus on the core topics of the life sciences and are as strong as ever. Where noteworthy additions or changes to our curriculum have been made, we will update you. This issue of *Biology Currents* is a case in point. Fall 2009/Spring 2010 marked the first year of an innovative two-semester program designed for freshmen who are not necessarily considering a major in the sciences—Genomics Research Experience. John Dennehy spearheaded this very exciting program, which has been recognized for its many successes by its sponsor (the Howard Hughes Medical Institute's Science Education Alliance), students, and the college's administration.

This will be my last letter as chair of the Biology Department. Effective January 2011, I retired from the full-time faculty after 38.5 years. These have been extraordinary years for me, both personally and professionally. I thank my colleagues and students in the Biology Department, Queens College, and the Graduate School of CUNY for a truly rewarding and fulfilling experience. I will never forget you. My past decade as Department chair was the icing on the cake. I oversaw the expansion of the Department in faculty

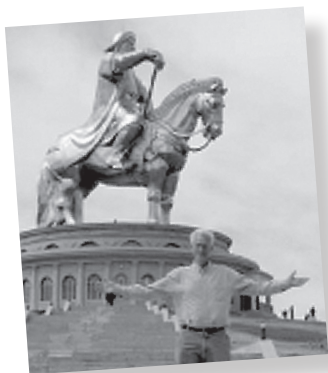


and student numbers, the addition of new curricular areas like genomics and conservation biology, the funding of new student-oriented programs like NIH MARC U-STAR (Zakeri, PI) and NSF URM (Boissinot, PI), and a significant increase in the scholarly activities of our internationally renowned faculty.

I will continue to support the Biology Department with unabated enthusiasm, but a somewhat different focus. I will remain editor in chief of *Biology Currents*, and will still serve on the Department's Alumni Funds Committee, which oversees expenditures of your donations, and the Seymour Fogel Endowment Fund Advisory Committee, which funds genetics and genomics programs within the Department. When time allows, I plan to organize a Biology Alumni Association so that each of you can become more directly involved with this fantastic Department. In addition to spending more time with my family and traveling, I will be working on two research projects. The first, in collaboration with former doctoral student Nidhi Gadura, who is now on the faculty of Queensborough Community College, is a study of the mechanism by which copper alloy surfaces kill microbes on contact. This is a QCC student-based research project. Many QCC students transition to Queens College to continue their education and research careers. The second is a clinical study of the human inherited deaf-blindness disorder called Usher syndrome. Here, I am collaborating with colleagues at the Helen Keller National

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JOHN WALDMAN BEGINS RESEARCH PROGRAM IN MONGOLIA



John Waldman in Ulan Bator, Mongolia

In 2010, Queens College celebrated the Year of China, the first in an interdisciplinary series in which the college focuses its resources on studies of a specific nation. One aspect of this effort is to encourage faculty and students to pursue collaborative research programs with individuals from the highlighted country. Biology professor John Waldman visited Ulan Bator, Mongolia, to lay the groundwork for a conservation genetics study of taimen, a trout species native to the area. A carnivorous fish that eats small mammals—such as mice and rodents—taimen can weigh up to 100 pounds

or more, according to Waldman, making it the largest example of its species. He is internationally renowned for his work on the ecology, evolution, and conservation biology of North American fishes, particularly those that migrate between fresh and salt water.

This Mongolian project marks a new avenue of research, one Waldman hopes will attract grant funding from federal and private agencies. He will apply research skills honed in collaborative studies of the New York Harbor and the Hudson River Estuary ecosystem that used molecular approaches to investigate the stock structure of this fascinating group of fishes. Waldman's brief visit to the Mongolian capital provided him with the opportunity to network with local authorities, establish collaborations with Mongolian fish biologists, and scope out the project's requirements. He also spoke at the American Center for Mongolian Studies, and even gave a lecture on taimen to a third-grade class for the children of Americans working in Ulan Bator.

GENOMICS RESEARCH

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detailed experimental protocols, and lists of reagents and equipment. SEA provides an annual weeklong training program for the course instructor and an assistant at the HHMI's Janelia Farm Research Campus in Northern Virginia.

Based on SEA materials, Dennehy designed Genomics Research Experience I and II (Biology 034/035) to meet QC's General Education science requirement, which must include a component that teaches the scientific method and critical thinking skills. There is no better way of achieving these goals than to immerse students in original research. In fall 2009, 16 students, most from Freshman Year Initiative, enrolled in Genomics Research Experience I. They began the semester by collecting soil samples from sites around the campus and from their backyards. Brought to the laboratory, the samples were used to infect *Mycobacterium*

smegmatis, a common benign free-living bacterial species related to the human pathogen *M. tuberculosis*. Each student spent the remainder of the semester investigating the characteristics of his or her own bacteriophage. Growth patterns, such as plaque size and shape, were determined and the viruses viewed with a transmission electron microscope. Then, using molecular genetic techniques, the students isolated DNA from their virus and analyzed the restriction enzyme digestion patterns using PAGE, polyacrylamide gel electrophoresis. One virus was sent to HHMI for genome sequencing—a detailed analysis of the virus's genetic code, which contains between 50,000 and 150,000 base pairs. The Biology Department partially offset the cost of the viral DNA sequencing from alumni funds.

DNA sequence in hand, the students enrolled in the second semester of Genomic Research Experience II (Biology

035). They used bioinformatics tools and the Biology Department's computer laboratory to identify the viral genes (open reading frames), postulate the function of the gene products, and create a map of the genome of their virus. They then compared their virus' genome to that of viruses isolated elsewhere in the country by other students participating in this HHMI program. Dennehy says the students were very enthusiastic, spending extra hours in the lab. "They have a sense they are contributing to science, rather than doing laboratory experiments that have been done a thousand times before," he says. The research goals of these courses is to analyze the genomes of bacteriophage isolated from the wild (soil), identify new bacteriophage species, and incorporate them into a comparative genomic study sponsored by the Howard Hughes Medical Institute's Science Education Alliance to better understand the genetic organization and evolution of this group of organisms. A long-term goal of the project is to find phages and phage genes potentially useful in combating tuberculosis.

Our first year's offering of Bio 034/035 met and exceeded all expectations. Many novel species of *Mycobacterium smegmatis* bacteriophage were identified; one phage had its genome fully characterized. Dennehy, undergraduate Alex Vives, and the bioinformatics instructor, Peter Novick, were invited to present the class's results at a conference held at the HHMI's Janelia Farm in June 2010. Their findings and those of the SEA consortium were included in a manuscript published in the *Journal of Virology* and another submitted to *Science*.

With perseverance and skill, Dennehy brought this incredible opportunity to QC students for the first time in the 2009/2010 academic year. The courses attract students to the sciences by demonstrating the thrill and creativity of first-hand scientific investigation. Curricular support from HHMI will last only two years. But we expect to continue to offer these popular courses, because the college and the Biology Department are covering other expenses, such as supplies and faculty salary. Dennehy has received extramural funding in the form of an NSF CAREER award to enhance and expand this exciting program.

ASSOCIATE PROFESSOR DANIEL C. WEINSTEIN



We are pleased to introduce **Daniel C. Weinstein**, an associate professor who joined the Biology Department faculty in September 2008 (becoming tenured in 2011). In contrast to the Department's most recent appointments, Weinstein arrived here with an established research program in vertebrate developmental biology: He spent eight years as a faculty member in the Department of Pharmacology and Systems Therapeutics of the Mount Sinai School of Medicine. He had a strong publication record, was highly regarded by the developmental biology community, and ran a well-funded research program that received awards from several agencies, including the NIH. Although his research work had flourished, Weinstein yearned to teach and be part of an institution where the primary focus was undergraduate education.

He comes from a family of academics—his mother was an English professor, and his father was a math professor at CCNY—and thus Weinstein is well aware of the challenges and rewards of college-level teaching. Although the medical school environment offers little opportunity to teach, his talents and dedication to education were obvious. His students at MSSM awarded him an Excellence in Teaching Award in 2005 and he was a contributing author of a very useful teaching resource on cell signaling on the Science STKE website. Weinstein has successfully transitioned to the Queens College environment where he now plays a central role in both undergraduate and graduate education and is a productive member of the Department's developmental biology research focus.

As a high school student, Weinstein loved literature. When he enrolled at Yale University, he planned to major in English; however, a freshman course in introductory biology, he says, “knocked me off my

feet,” and he soon switched his major to biology. He took courses in ecology, molecular biology, chemistry, and physics, all of which, he feels, “laid the foundation for an interest in developmental biology, which straddles many areas of biology.” Weinstein's research career started with his senior project in Adrian Hayday's immunology laboratory. He learned molecular biology techniques, even using a gene gun to transform cultured cells with oncogenes, and generally fell in love with the laboratory environment and research.

Following graduation from Yale University in 1990 with honors in biology, Weinstein decided to attend graduate school at the Rockefeller University, New York, to work with the renowned molecular biologist James Darnell on transcription regulation in mammalian cells. His thesis research brought home the concept that the sum total of expressed transcription regulators of a cell defines the tissue type of that cell. He made mouse knockouts, targeted deletion mutations of transcription factor genes, and soon realized that these genes act early in development as well as later in the maintenance of specific tissue types. He continued this line of investigation of vertebrate embryology during his postdoctoral work, also at the Rockefeller University, with Ali Brivanlou, a highly respected *Xenopus* developmental biologist. Brivanlou had indulged Weinstein's “incessant questioning” about developmental biology while he was still a doctoral student and agreed to take him on as a postdoc. Under Brivanlou's tutelage, Weinstein was extraordinarily productive and soon established himself as a player in the developmental genetics field.

Weinstein's primary research focus is to elucidate the mechanisms of early development in vertebrates. He continues to use the well-established frog model system, *Xenopus laevis*, and investigates the signaling cascades underlying the formation and morphogenesis of the primary embryonic germ layers. A key question is how a small number of morphogens, or signaling peptides, act at different times during development and lead to quite different outcomes.



Weinstein has uncovered the answer for one morphogen, fibroblast growth factor, by demonstrating that the intracellular signal is differentially routed based on the actions of a second protein, Ctr1, a key regulator of cellular differentiation. In its absence, differentiation is suppressed. By taking this finding to the mouse system, Weinstein found that targeted deletion of Ctr1 enhances pluripotency of mouse embryonic stem cells. This discovery is likely to be of tremendous significance in adult stem cell research, an area that he has recently begun to investigate. He is also exploring the role of other transcription regulators and messenger RNA splicing in early development.

Weinstein teaches developmental biology at the graduate level, and the cell, molecular, and developmental biology sections of the majors-level introductory course, Biology 105. He was eager to take on the Biology 105 assignment because this course at Yale was a turning point in his own life. Weinstein designs his lectures to grab the interest of students by getting them to see and be excited by the “overarching and unifying principles that make one willing to memorize the details,” he explains. He is also a believer in the role of research in undergraduate education in the sciences. His research experience at Yale opened the door to his life's career, and he endeavors to provide this opportunity to our students. “You have got to see biology as a dynamic, exciting field,” Weinstein says. “It's what's happening NOW—not something entombed in the pages of a ten-pound textbook.”

The Third Annual Biology Department Symposium was held on January 25, 2010, organized by John Dennehy and Mike Hickerson. The speakers included professors, doctoral students, and other researchers working in Biology faculty labs. The symposium is a great way for us to learn more about the research activities of our colleagues and is well attended by the Biology Department community. We heard about Dan Weinstein's progress in his study of early embryology, "Germ layer induction and suppression in *Xenopus laevis*," and about Hickerson's work on "Using geographic, genetic, and environmental data to predict how communities respond to climate change." Tim Short updated us on his work with "*Ceratopteris richardii* as a model for fern photobiology, genetics, and development" and Stéphane Boissinot described his lab's most recent results on "Evolutionary dynamics of non-LTR retrotransposons in vertebrate genomes." Alex Ruck,

Alicia Meléndez's student, spoke on his research on "The role of *bec-1* in *C. elegans* development," and George Jackman, a doctoral student working with John Waldman, reviewed progress on his thesis research, "Estimating population structure of winter flounder using elemental composition of otoliths." Sai Kappagantula, an undergraduate, and Bruce Sun, a master's student, both from John Dennehy's laboratory, presented their work on "Bacteriophage models for virus emergence and inhibition." Carlos Penaloza, Zahra Zakeri's doctoral student, reported his studies of "Cellular sensitivity and sex"; Jianghua Yin, from Cathy Savage-Dunn's group, described his thesis research on "Target gene regulation by DBL-1/BMP signaling in *C. elegans*"; and Kit Schnaars, Mitchell Baker's doctoral student, described progress on her thesis project, "Insecticide resistance and movement in *Leptinotarsa decemlineata*." A great tradition continues.

Zahava Rubel Awarded a Jonas E. Salk Scholarship



Zahava Rubel, who graduated with High Honors in 2009, is one of four outstanding Queens College premedical students receiving CUNY's highly prestigious Jonas E. Salk Scholarship in 2010. Only eight Salk awards are given each year to CUNY graduating seniors who plan careers in medicine and have been accepted to a medical school. Zahava will be attending the New York College of Osteopathic Medicine. We expect great things from this truly impressive young woman.

Zahava's research investigated a specific class of genetic mutations affecting the early embryology of *Caenorhabditis elegans*, a multicellular genetic model system. Her work helped to demonstrate that protein encoded by this gene, which has a human homologue, can also play a role in cancer development and longevity. "Zahava's genetic experiments may expand our studies and may eventually lead to new genetic and pharmacologic approaches in the treatment of certain cancers and in the prevention of aging," wrote her mentor, Alicia Meléndez. Zahava majored in biology and anthropology and earned high honors in both. In addition, she received the Biology Department's highest honor, the Donald E. Lancefield Award, given to the graduating senior with the most outstanding academic record. Zahava is also an accomplished pianist and a student at the Queens College Aaron Copland School of Music. Music and medicine are "profoundly intertwined," wrote Rubel. "My passion for science, medicine and the human body, combined with the skill set I have gained from music, continue to

Queens College Biology in the News

Peter Malaty, a student in the QC Biology Master's Program, and his faculty adviser John Waldman, a conservation biologist and renowned fish biologist, have undertaken a study of the fish fauna in local salt waters. They replicated a study done in 1938 with the goal of characterizing changes in fish populations that have occurred over the past 75 years. You can read about the project in a September 1, 2010, *Newsday* story that mentions two QC undergraduates, Ezra Frager and Kevin Jhun. The full article can be found at:

<http://prod.newsday.com/student-recreates-1938-survey-of-li-s-saltwater-fish-1.2251569>

Waldman, author of *Heartbeats in the Muck* and *100 Weird Ways to Catch Fish*, joined food writer Paul Greenberg, author of *Four Fish: The Future of the Last Wild Food* and frequent contributor to the *New York Times Magazine*, on Brian Lehrer's WNYC radio show. The two discussed local fishing and the likelihood of seeing seafood from New York City waters in our food stores. You can listen to the show segment at: <http://www.wnyc.org/shows/bl/2010/nov/18/wild-food/>

Waldman and Greenberg also moderated "How to Make New York City Seafood Local Again," an evening presentation at the South Street Seaport Museum. The discussion centered on changes in the fish and shellfish available in the waters around Manhattan. Early Dutch settlers found an unbelievable array of seafood in the estuary at the mouth of the Hudson River, including ten-foot sturgeon, oysters the size of dinner plates, bluefin tuna, shad, striped bass, bluefish, herring, fluke, and flounder, all in fantastic abundance. Over 300 years of pollution, habitat destruction, and overfishing led to their near-extinction. However, improving water conditions over the last twenty years has fostered the return of many of these species.

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drive me forward in my quest to become a doctor.”

The Salk Scholarships honor Jonas E. Salk, the 1934 City College alum who developed a polio vaccine in 1955. Forgoing a ticker-tape parade,

Salk asked that its funding go instead toward scholarships for students interested in medical research; an endowment was established by the City of New York. The awards recognize outstanding scholarship and research accomplishments, as judged by a

manuscript describing the original scientific research undertaken by the applicant with mentors. The endowment provides each scholar with an \$8,000 stipend to help defray medical school costs, and diagnostic kits that include an otoscope and ophthalmoscope.

Sheldon Aaronson (1922–2010) | By Corinne A. Michels



Sadly, I report that Sheldon Aaronson passed away on October 3, 2010, just days shy of his 88th birthday. Corky, as his friends and colleagues fondly knew

him, had the office next to mine after the Department moved to the Science Building in 1987. We spoke frequently and I found him to be very supportive of a busy young female scientist. Unfortunately, our discussions rarely focused on his research interests; it was only through writing this obituary that I came to fully appreciate the breadth of the large body of scientific studies produced by this distinguished colleague.

Aaronson earned a BS degree from the City College of New York in 1944. Following graduation, he served as a microbiologist in the U.S. Army until 1946, at which time he returned to academia. He earned a Master of Science degree from the University of Pennsylvania in 1948, and a PhD from New York University in 1953. During his thesis work, he held an Atomic Energy Commission pre-doctoral fellowship in biology and began an affiliation with the Haskins Marine Institute Laboratories that continued from 1949 to 1967. In September 1953, Aaronson joined the Biology Department faculty, where he actively pursued research on the biochemistry of algae, particularly lipid biosynthesis, and taught, mostly courses in microbiology. He was a very productive researcher and won grants from the National Institutes of Health, the National Science Foundation, the Petroleum Research Fund of the

American Chemical Society, and the Israel Binational Science Foundation. Aaronson was recognized in the United States and overseas. He received a President's Fellowship from the American Society for Microbiology (1957), an NSF Science Faculty Fellowship (1959–60), and was elected a fellow of the American Association for the Advancement of Science (1964). He was invited to participate in a variety of international venues. Aaronson taught as a Fulbright senior medical lecturer in Turkey, lectured on “Basic research techniques in industrial and environmental microbiology” for UNEP / UNESCO / ICRO in Nairobi, Kenya (1976), and was a visiting professor at Israel's Weizmann Institute (1975) and Ben Gurion University of the Negev (1975). In addition, he carried out research collaborations with faculty at the Brookhaven National Laboratory (1957–8) and the Department of Physiology and Anatomy of UC-Berkeley (1963).

To his colleagues and students, Aaronson was an iconic scientist. During his long and productive career, which continued for years after his retirement in 1995 from Queens College, he published 107 scientific papers and two books on a variety of microbiological fields, especially algae biochemistry. His first book, *Experimental Microbial Ecology*, was published in 1970 by Academic Press. In a book review titled “Microbial ecology comes of age,” Ricardo Guerrero credits Aaronson as a founding leader in the field of microbial ecology, which Guerrero defines as dealing “with natural processes, with interactions between microorganisms, and between microorganisms and other species and the envi-

ronment.” In his second book, the two-volume *Chemical Communication at the Microbial Level*, published by CRC Press in 1981, Aaronson explored a topic that remains greatly significant, particularly in the area of infectious disease.

Starting in the mid-1980s and continuing well after his retirement, Aaronson became involved in the ethnobiology of microbes. In the course of his studies of algae for food and chemical production, he “realized that we knew nothing about the origins of the human use of microorganisms,” he recalled. “I began to examine the archaeological, anthropological, historical, and primatological literature and soon found traces of the use of microorganisms as food for animals and ancient peoples.” By 1986 he was publishing articles in journals such as *Food and Foodways*, *Antiquity*, *Garden*, and the *Journal of Ethnopharmacology*, with titles like, “Fungal parasites of grasses and cereals: their role as food or medicine, now and in the past,” “The vapours of one entrance to Hades,” and “Ergot fungus used in India 2,400 years ago.” Among his final works are “Algae” and “Fungi,” two chapters that he contributed to the highly acclaimed two-volume book, *The Cambridge World History of Food* (Eds. Kenneth F. Kiple and Kriemhild Coneè Ornelas), published by Cambridge University Press in 2000. A review of the book that appeared in the *Journal of Ethnobiology* lauded Aaronson's chapter on fungi as giving “a monumental list of all the major fungi eaten in the world.” He was one of those scientists who is happiest when pursuing research on a much-loved subject. We should all be so lucky.

FACULTY NOTES 2010

This section reviews the highlights of Biology Department faculty members, staff, and students' extracurricular scholarly activities in 2012. The diversity of these activities is a clear indicator of international recognition of our dedicated faculty. You should note the extent to which undergraduate students are integrated into their research programs.

MITCHELL BAKER's research on



dispersal behaviors in insects continues to be funded by two awards from the US Department of Agriculture. Baker spoke at the Queens College President's

Roundtable on the "Ecological consequences of the BP Oil Spill." His doctoral student Kit Schnaars-Uvino presented her thesis research at the USDA-AFRI Awardee Workshop of the Entomological Society of America meeting in San Diego, California, and graduating senior Simon Greenbaum, who was mentored by Baker, won the Darwin Prize.

STEPHANE BOISSINOT continues



as director of the NSF Undergraduate Research Mentoring Award, "Mentoring urban undergraduate students in an integrated research ecological research experience,"

a program that offers undergraduate students opportunities to do field studies at sites around the world. Boissinot also spoke on his research on "Evolutionary dynamics of transposable elements in the lizard genome" at venues including the Mid-Atlantic Transposon meeting, Johns Hopkins University, and seminars at the Biology Departments of the City College of New York, Long Island University, and Brooklyn College.

JOHN DENNEHY administers a large research group of students ranging from CUNY doctoral students to Townsend Harris High School students. Major support for his laboratory comes from an NSF



Research Initiation Grant, "Genetic and molecular bases of bacteriophage life history." He also received a highly competitive grant from the Queens College Undergraduate Research/Mentoring Education Award program to support the research expenses of the undergraduates working in his laboratory. Dennehy spoke on "Bacteriophages in Biological Education and Research" at a symposium on Innovation in Biological Research and Education in the Molecular and Cellular Biosciences held at the Division of Molecular and Cellular Biosciences, National Science Foundation, Arlington, Virginia. His review of *Bacteriophage Ecology: Population Growth, Evolution and Impact of Bacterial Viruses*, Stephen T. Abedon (Ed.) (*Advances in Molecular and Cellular Microbiology*, Vol. 15, Cambridge University Press) appeared in the *Quarterly Review of Biology*, 2010. Dennehy served on the NSF Advisory Panel in the Evolutionary Processes Cluster of the Division of Environmental Biology and on the Steering Committee of The PHAGE Galaxy: A Consortium for Phage Hunting and Genomics Education for Undergraduates. His students routinely join him at local science fairs to present posters on their research; Dipabali Chowdhury, Katherine Valles, and Shalini Singh won poster presentation awards in 2010.

KARL FATH's article (Johnson, K. T., K. R. Fath, M. M. Henricus, and I. A. Banerjee (2009) "Self-assembly and growth of smart cell-adhesive mucin-bound microtubes." *Soft Materials* 7:21–36)



was selected one of that journal's Top-Ten Editor's Choice Articles for 2009. Samira Rabbanifar, an undergraduate working in Fath's lab, was awarded a travel grant from Queens College to attend the 239th national meeting of

the American Chemical Society, San Francisco, California, and present a poster on her work, "Copper-based nanoparticles as antibacterial agents."

ANDREW GRELLER (with M. Goudket) submitted a report to *The Quarterly Newsletter* of the Long Island Botanical Society on plants from the upper Cretaceous of Long Island. Greller also presented a talk on "Bioclimatology of evergreen sclerophyll woodland" at the 53rd International Symposium of the International Association of Vegetation Science, Ensenada, Mexico. He is a member of the editorial review committee of the Torrey Botanical Society.

MICHAEL HICKERSON spoke on his research on "Multi-taxa phylogeography and approximate Bayesian computation" at the Philadelphia Natural Academy of Sciences and the Yale University Department of Ecology and Evolution. He co-taught a weeklong course/workshop on "Statistical Phylogeography" at the Southwestern Research Station (an American Museum of Natural History field station) in April 2010. Hickerson spoke on "The future and history of Biogeography: Conceptual and methodological challenges" at the 2010 Society for the Study of Evolution annual meeting in Portland, Oregon. His article with postdoctoral fellow Katriina Ives, et al. 2010 was featured in *Molecular Ecology News and Views* (DOI: 10.1111/j.1365-294X.2010.04800.x).



NATHALIA HOLTZMAN's research on "Origins and patterning of the epicardium"



continues to be supported by an R03 NIH Research Award. Holtzman was invited to speak at the St. John's University, Department

of Biological Sciences seminar series on "The beat goes on: development and maturation of the zebrafish heart," and discussed her work carried out with undergraduate student Olivier Noel, "Endocardial-Myocardial Interactions Direct Cardiac Morphogenesis," at the Society for Developmental Biology Conference, in Albuquerque, New Mexico. She served as a panel member on the NSF/NIH Joint DMS/NIGMS Initiative to Support Research in the Area of Mathematical Biology.

DAVID LAHTI spoke about his research



into the evolution of bird behavior at several venues: the University of Windsor Department of Biological Science, Windsor, Ontario; Columbia University Department of Ecology,

Evolution, and Environmental Biology, New York; Hunter College Department of Psychology; Queens County Bird Club; and Sigma Xi, The Scientific Research Society, Queens College Chapter. His titles included "The evolution of behavior in African weaverbirds," "Evolution of bird eggs and songs," and "Modes of behavioral evolution." Lahti was appointed to the John Templeton Foundation's board of advisors. He also created the Online Bibliography of Environmental Thought (www.isee-obet.org) and a tribute/reference website for the work of Richard D. Alexander (<http://www.richarddalexander.com>). Lahti chaired the NESCent Working Group on Relaxed Selection and Trait Loss in Evolution held at Duke University. His doctoral student Elliot Aguilar received a National Science Foundation Graduate Research Fellowship.

ALICIA MELÉNDEZ continues to



maintain an outstanding record of research grant funding with an Aging New Scholar Award from the Ellison Medical Foundation entitled, "Autophagy and

the relationship between lifespan and fat metabolism," an NSF Research Initiation Grant on "Role of *bec-1* mediated autophagy in aging and fat metabolism," and an NIH Score Grant (with J. Bargonetti of Hunter College - CUNY) on "p53-Independent Cell Death signaling by Mitomycin DNA Adducts." Meléndez spoke at the Gordon Research Conference on the Biology of Aging in Les Diablerets, Switzerland, on "The role of autophagy in *C. elegans* longevity," as well as at the Gordon Research Conference on Autophagy in Stress, Development and Disease, in Il Ciocco, Italy, and the Keystone Symposia on Cell Death Pathways: Apoptosis, Autophagy and Necrosis, in Vancouver, British Columbia. Her lab group includes doctoral, master's and undergraduate students, and poster presentations describing their contributions to her research program were presented at meetings, including the Keystone Symposia on New Insights into Healthspan and Diseases of Aging: From Molecular to Functional Senescence, in Tahoe City, California, and the 101st annual meeting of the American Association of Cancer Research, in Washington, DC. Meléndez was invited to become a regional member of the Albert Einstein College of Medicine Nathan Shock Center for Excellence Basic Biology of Aging and served as an ad hoc reviewer, Austrian Science Fund (ASF), Biological and Medical Sciences.

ULDIS ROZE presented his long-term



studies on porcupine life history, "Walking with a porcupine," to the White Memorial Conservation Society in Litchfield, Connecticut.

CATHY SAVAGE-DUNN's research



on "Body size control genes and TGF β signaling in *C. elegans*" continues to be supported by a National Institutes of Health R15 award. She is a co-organizer of the

New York Area Worm Meeting (since 1998) and serves on the NIH K99/R00 Grant Review Panel.

ARETI TSIOLA spoke at the Northeast



Regional Life Sciences Core Directors Meeting in Worcester, Massachusetts, on "Core Facility for Imaging, Cellular & Molecular Biology: A facility for CUNY researchers

at Queens College" and at the Queens College Neuroscience Society Seminar asking, "So you think you (can) see."

JOHN WALDMAN was given a



subcontract from a National Oceanic and Atmospheric Administration award to the New York City Audubon Community Waterbird Monitoring Project, a grant from

the Hudson River Foundation to carry out a "Genetic mixed-stock analysis of coastal American shad fisheries," and a subcontract of a grant to SUNY to continue work by his doctoral student George Jackman on "Geochemical markers in otoliths to aid in stock identification and conservation."

Waldman spoke on his conservation

and population genetics studies of diadromous fishes at the Manhattan College Biology Department, Columbia University, the American Center for Mongolian Studies, Ulan Bator, Mongolia (see companion article in this issue), the Saul O. Sidore Memorial Lecture Series, Sea Stories for the Future at the Center for the Humanities, University of New Hampshire, and in the Yale Environment 360 series.

Waldman participated in lecture series, panels, workshops, a writers' reading, radio programs, and other media events. He moderated a lecture series, "Turning the Tide: New York's Waterfront in Transition" at Roosevelt House of Hunter College, and panel discussions on "The Oyster and the Clean Water Act, 2010" for the Waterfront Conference, The Metropolitan Waterfront Alliance and the Environmental Sciences Forum at the CUNY Graduate Center. He organized the forum on "How to Make New York City Seafood Local Again" held at the South Street Seaport Museum and participated in workshops on the Hudson River Biological Monitoring Program in Norrie Point, New York, and on "Resilience of North Atlantic Diadromous Fish Assemblages Workshop" at the University of Maine, Orono. Waldman read from his book *Heartbeats in the Muck: The History, Sea Life and Environment of New York Harbor* at the Waterfront Books and Authors Festival in Red Hook, Brooklyn, New York, and was interviewed about bringing local seafood back on the Brian Lehrer Show on WNYC. He spoke to The City Council of New York's Committee on Waterfronts on "Marine Invasives in New York Harbor" and reports regularly on the fish population of New York Harbor to the Northeastern Division American Fisheries Society and others. Waldman is an institute fellow of the CUNY Institute for Sustainable Cities and a member of the Hudson River Estuarine Management Advisory Committee.

ZAHRA ZAKERI continues as the director of the college's longstanding NIH Minority Access to Careers in Research (MARC) program, which encourages minority students to become involved in



scientific research. She also received an NIH Conference Grant in support of The Cell Death Society's conference on "Mechanism of Cell Death" held in Cape Town, South Africa. She was the keynote speaker at the Cape Town conference on "How viruses manipulate the cell death machinery." Zakeri was invited to attend a symposium on "The Cell Cycle and Apoptosis in Disease" to celebrate the two-hundred-year anniversary of the Karolinska Institute, which awards the Nobel Prize. She spoke on her work on "Viral manipulation of cell death machinery" at the Department of Microbiology/ Division of Infectious Diseases Seminar Series at Boston University School of Medicine, on "Cell Death in Developing Embryo" at the 10th National Histology & Embryology Congress in Turkey, and at the Department of Biology and Molecular Biology, Montclair State University, in Montclair, New Jersey. Zakeri's undergraduate student Emmanuel Datan and doctoral student Jeff McLean each spoke at the American Society of Microbiology Biodefense and Emerging Diseases Research Meeting in Baltimore, Maryland, on their research investigating the role of viruses in cell death induction.

PSC-CUNY Research Awards were received by **Stephane Boissinot, Karl Fath, Else Fjerdingsstad, Mike Hickerson, David Lahti, Pokay Ma, Paul Mundinger, Cathy Savage-Dunn, Tim Short, and Zahra Zakeri.**

LETTER FROM THE CHAIR

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Center for the Deaf-Blind in Port Washington, New York, and a research team at the National Eye Institute of the National Institutes of Health. My affiliation with Queens College is essential to our ability to carry out this study. I look forward to devoting myself to these new endeavors and enjoying my family. I invite anyone interested in either of these two projects to contact me for more information, to collaborate, or suggest possible study subjects.

In calendar year 2009, 59 of our alumni donated a total of \$10,361 to the Biology Department (see later sections of this newsletter). Let me thank all of you who contributed so generously in this time of serious economic turmoil. While the overall number has gone down, we are pleased to see so many new donors and hope we can count you among our loyal supporters. The Alumni Fund is a valued resource for the Department. Speaking as a Biology Department alumna (class of '63) and one of the persons who oversee the expenditures, I can assure you that your money is much appreciated and prudently used to enhance the education of the Department's undergraduate students. I hope you agree.

We have made it easier for you to contact us. Please check out the Department's website at <http://qcpages.qc.edu/Biology/>. Follow us on Facebook (<https://www.facebook.com/pages/Queens-College-CUNY-Biology-Department/133250930074226?v=wall>). Become a Facebook friend. Email me at Corinne.Michels@qc.cuny.edu, and be sure to put "Biology alum" in the subject line. Or send me a note by U.S. mail. We would love to include articles about you, our alums, but we need to hear from you. We want your perspective on how we are doing. If you like what you see in *Biology Currents*, tell us. What concerns do you have? WE WANT TO KNOW!!! Your input is essential and much appreciated.

D = Doctoral student **M** = Master's student **U** = Undergraduate student

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ALUMNI FUND

DONORS 2009

In calendar year 2009, fifty-nine of our alumni generously donated \$10,361. We are pleased to see many new donors and hope we will be able to count you among our loyal supporters. Both the number of donors and the total funds received are significantly lower than in past years. We very much appreciate your commitment to us in this time of serious economic turmoil.

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We want to keep in touch! If you just wish to say hello, or tell us what is new in your life, please fill in the information below and return to: Distinguished Professor Corinne Michels, Department of Biology, 65-30 Kissena Blvd., Queens, NY 11367-1597. Alternately, just provide the information below in an email (**Corinne.Michels@qc.cuny.edu**) and be sure to write "Biology alum" in the subject line.

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