

BIOLOGY CURRENTS

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David Lahti joins the Biology Dept.

David Lahti joined the Biology Department in fall 2009. He is unique in the department not only because of his research field, animal behavior, but because he holds two doctoral degrees: a PhD in Ecology and Evolutionary Biology from the University of Michigan and a PhD in Moral Philosophy and Philosophy of Biology from the Whitefield Institute at Oxford, UK. Since coming to Queens College, Dr. Lahti's teaching has centered on animal behavior and behavioral ecology at both the undergraduate and graduate level. He also participates in the team-taught Division of Math & Natural Sciences course entitled Great Ideas in Science, a capstone course in the college's General Education Curriculum. His research focuses on bird behavior, ecology, and evolution, particularly African weaverbirds, and genetic and cultural diversification in the house finch. Dr. Lahti is working to analyze, extend, and publish the foundational data on birdsong amassed by Prof. Emeritus Paul Mundinger, who passed away in 2011. Additionally, he still maintains an



Assistant Professor David Lahti

interest in human behavior, writing on evolutionary and cultural history and the functions of morality and religion. Dr. Lahti's research is supported by a grant from the National Science Foundation entitled "Collaborative research: Multi-ancestor coalescent theory for cultural evolution." He supervises a very busy research laboratory and is active in the department, especially in support of our undergraduate student research program. Dr. Lahti publishes prolifically and is an active participant in his field nationally and internationally.

I interviewed Dr. Lahti by posing a series of questions. His responses were so wonderful and provide such insight into this fascinating member of the faculty that I felt it best to let him speak for himself. I think you will see why the Biology Department was so excited when we attracted Dr. Lahti to Queens College and CUNY.

Please tell me a bit about your childhood. Where did you grow up? Were your parents academics?

I grew up in Leominster, Massachusetts, in a family that has owned and operated a car dealership since 1928. I worked for my father and uncles at the dealership throughout my young years. I am the first person in my family to get a college degree. I always loved nature and assumed that I would live in the woods forever. My younger brother and sister and I would go on adventures in the few acres behind our house, and would bring back anything interesting to our "laboratory" in the back of our garage. I was also obsessed with reading, and immersed myself in the books I read to such an extent that I would practically lose my identity while reading them, half believing that it wasn't David Lahti exploring the woods, but Tom

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Letter from the Chair



Pokay Ma, Chair of Biology

After over ten years at the helm, Dr. Corinne Michels (BA '63) had stepped down as chairperson of the Department of Biology, and retired from the full-time faculty of the college. She will, however, remain in the department as Distinguished Professor Emerita, and has initiated a new project on the genetic bases of Usher Syndrome in collaboration with the Helen Keller National Center for the Deaf-Blind on Long Island and the National Institutes of Health. She also plans to participate in our teaching effort on a part-time basis by developing a genetic counseling master's program, which has been a passion of hers for many years. Perhaps most important to our effort to keep in touch with our alumni and friends, Dr. Michels has agreed to remain as a member of our Alumni Affairs and Alumni Funds Committees, to take over the editorship of *Biology Currents*, our alumni newsletter, and to spearhead some of our outreach efforts.

Since summer 2011, I have assumed the duties of the chair of the department. It is now incumbent upon me to keep in touch with you and to update you on our activities. First and foremost, on behalf of my colleagues and our students, I wish to express our deep appreciation for your interest and involvement in this department over the years. Your support has augmented significantly our ability to provide our students with an outstanding educational experience, and prepare them for careers in the life sciences and health professions. In the 2010-11 academic year, 55 majors

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JOHN WALDMAN IN MONGOLIA



John Waldman in Ulan Bator, Mongolia

In the summer of 2011, John Waldman embarked on a fish biologist's dream adventure: the hunt for one of the world's most renowned game fish, the taimen. Taimen are found in the region of Mongolia surrounding Lake Hovsgol, located northwest of Ulan Bator and bordering Russia. Dr. Waldman and Biology Department undergraduate research student Ivana Roman were members of a joint expedition funded by the National Science Foundation. Led by Dr. Olaf Jensen of Rutgers University, the expedition included professors, undergraduates, and graduate students from a number of US universities. The project undertaken by Dr. Waldman and Ivana was

an evolutionary study of the crocodylian-like primitive member of the trout and salmon family called the taimen, which is found in the rivers of the Lake Hovsgol region. Taimen evolved during the previous 10,000 years when ancestor species repopulated Lake Hovsgol following the retreat of the ice sheet of the most recent ice age. Ivana and Dr. Waldman collected tissue samples from individuals caught in Lake Hovsgol and from possible source populations that somehow survived glaciation. Once back in the lab, Ivana would compare DNA sequence variation among these different source populations of fish in an effort to determine the oldest ancestor. A daily diary of this 11-day trip to the far reaches of civilization is chronicled in a very entertaining blog (<http://www1.cuny.edu/mu/decade-of-science/2011/07/>). The photographs alone are well worth the visit, to the website of course. Taimen fishing trips can be arranged by local guides, but at a steep price.

junior year of college at Oxford—in fact, I actually stipulated that I be able to do this before accepting a scholarship to my alma mater Gordon College a couple of years earlier. I wanted to sit in the same pub where Tolkien wrote and write my own adventure story. While there, reading Tolkien led me to C. S. Lewis, including his critique of modernity. I took a philosophy tutorial on Plato and Aristotle, the very first reading I had ever done in philosophy. I decided, upon return to Gordon, that my senior projects in biology would all be on the degree to which biology should inform our worldview; for instance, are we a part of nature or apart from nature? In a sense, this had been the defining question of my young life without my ever having realized it. After graduating, I ran into my old Oxford philosophy tutor at a conference. He asked me what I was doing, and I said that I would eventually get a PhD in biology and become a field ecologist and evolutionary biologist. But our conversation turned soon to matters in the philosophy of science and of environmental ethics, and he eventually invited me to get a “quick master's” in philosophy before coming back to the US to pursue my biology PhD.

I took him up on his offer. I got married first, to my college girlfriend April (20 years this August!), and stored up some money for the upcoming schooling by working a year as a high school teacher and a year as a forest ranger (the only two jobs that were tempting me away from academia). When I submitted my thesis proposal a year or so into my studies, my supervisor told me that it was a PhD dissertation proposal, not a master's. I was glad to stay longer—before long I was a doctoral student. My dissertation was on the extent to which science can inform morality or lay the foundations for ethical theory. I didn't lose sight of my main goal of the biology PhD, however, and applied for programs in the US while I was still working on my philosophy dissertation. For one nightmarishly busy year I was in both programs simultaneously, preparing for my qualifying exam in biology at UMichigan even as I traveled to the UK for my philosophy viva, or dissertation defense.

DAVID LAHTI JOINS THE BIOLOGY DEPT. *continued from page 1*

Sawyer or Aragorn or the boy Jim from *Treasure Island*.

When did your interest in science begin? Was there a particular mentor that stimulated your interest?

In some way, science was always in my life because I was curious about what was out there, in the woods. However, that was quite different than the biology of the classroom, in which I was only mildly interested by comparison. I would rather have been a druid, Indian chief, or an elf than a scientist if there were any such positions open. Eventually, in college, I realized that I would have to become more practical and see whether there was a way for the real world to provide scope for my interests. The moment of discovery came at a summer course in northern Michigan, where I followed after field biologists who knew, it seemed, everything about the

wild world of nature and loved nothing better than to be out there experiencing it. If there was any job that brought me closest to what I enjoyed, this must be it. From then on I knew I wanted to be one of them. The dedication of my PhD dissertation in biology reads as follows:

“To four individuals who, through their knowledge and their willingness to share it with me generously and enthusiastically, encouraged my love for nature and showed me that I could make a career out of exploring and seeking to understand it.

(the memory of) Thomas C. Dent, Botanist
David C. Mahan, Aquatic Biologist
Joseph K. Sheldon, Entomologist
Richard T. Wright, Ecologist”

You have two doctoral degrees. Please tell me how that came about. Which one was the first PhD? What led you to pursue the second PhD?

My interest in things fantastic and medieval led me to go abroad for my

When did you first become interested in animal behavior? What aspect is your main focus—African weavers?

Animal behavior was bound up with my interest in nature, although to be honest, I applied for all sorts of ecology and evolutionary biology programs for my PhD, and all of my statements of purpose were different. If I had gone to Harvard Forest I would have become a plant community ecologist; if I had gone to University of Georgia I would have been an ecosystem ecologist; but as it happened, I went to University of Michigan and studied animal behavior and trait evolution. My dissertation was on short-term evolution of behavior and related traits in African weaverbirds. Today my main focus is on the function and evolution of complex traits, especially those that involve learning. Following the very sensible strategy of my doctoral advisor, I have one research program abroad (the weavers), but another local research program that is less dependent on the vagaries of funding, teaching, and family. This local research program for me is cultural evolution in the house finch.

What are the main projects that are currently ongoing in your lab? I am told you have NSF funding jointly with someone at Brooklyn College. Please elaborate.

For the most part my lab is investigating the function and evolution (whether cultural or genetic) of complex behavioral traits. Most of our mechanistic empirical studies are focused on the vocalizations of birds because these, like our own language, are learned from their elders and passed on with modifications to the next generation. Other students, more of a psychological or anthropological bent, are studying the same sorts of things in humans. Still others are more computational or theoretical in focus and are developing general tools and theory to address broad questions in cultural evolution. Our current NSF funding is for a project aimed at an understanding of cultural evolution that spans all of these modes of biological investigation, and is a collaboration between my lab and that of Prof. Stefano Ghirlanda, a theoretical

cultural evolutionary biologist at Brooklyn College. Roughly half of my lab works on this project. My lab currently has 23 members, including four CUNY PhD students, six QC master's students, several post-baccalaureate students, a postdoctoral research associate, and several QC undergraduates. I am very grateful to be in a department that allows me this flexibility and can provide these hardworking students.



Lahti reaching for a weaver nest.

Tell me about your analysis work on Paul Mundinger's data. Are you actively pursuing this? Paul had hundreds of students who I am sure would like to hear what you are doing.

I began a collaboration with QC Emeritus Prof. Paul Mundinger on the cultural evolution of house finch song shortly after my arrival at QC. Paul had recorded wild house finches throughout the country between 1964 and 1982, but had then shelved these data after publishing some classic papers, in favor of breeding experiments with canaries. His data provide a rare opportunity for a three-dimensional analysis of a learned trait: my own students are recording finches in the very same locations dozens of generations later, and soon we will have a picture of how a cultural feature changes and diverges through time and space. Paul died in late 2011, and so, sadly, he won't

be able to see the fruits of this research. When Paul died, he left over a decade of research on his canaries unpublished. Although he had not fully analyzed the results, he knew that they would reveal something special about the relationship between genes and environment in the development of learned behavior, a topic that was close to his heart throughout his career. I spent nearly a year going through his data, the outcome of which was a marvelous discovery. Paul's work had revealed, for the first time in any species, a genetic basis for differences in a learned behavior within a species. The resulting paper was published in Paul's favorite journal, the *Proceedings of the Royal Society of London*, in March of 2014. I also collaborated on a memorial piece describing Paul's career and his contributions to our understanding of the evolution of learned traits with Prof. Fernando Nottebohm of the Rockefeller University, which was published in February 2014 in the flagship journal of ornithology in the US, *The Auk*. Other collaborations with former Mundering students are in the works, including one with Javier Monzón, who has recently earned a PhD from Stony Brook.

What do you teach? What other QC Biology non-teaching responsibilities do you have?

I teach Animal Behavior annually to undergraduates, and I have recently cross-listed this course so that graduate students can take it with a few extra requirements. I also teach an advanced course in Behavior & Evolution where graduate students analyze recent research and propose future directions for the field. I have also taught Great Ideas in Science with Pete Chabora and Esther Muehlbauer, a course where we present scientific concepts and issues important in modern society to non-science majors. This fall I will begin a seminar I intend to continue indefinitely, Advanced Topics in Ecology and Evolution, where upper-level undergraduates and graduate students will discuss important issues and research in this field. One of the excellent things about QC Biology is the fact that junior faculty are encouraged to teach in our own areas of interest and expertise.

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BIOLOGY DEPARTMENT SYMPOSIUM 2011

The third annual Biology Research Symposium was organized by Drs. Michael Hickerson and John Dennehy and took place on April 26. The presentations, given by a mix of faculty and graduate students, illustrated the diversity of interests in the department. A sampling of topics is given below, along with a group photo of the participants.

The symposium audience included faculty and students of the Biology Department and also faculty from other science departments, the Dean of the Division of Math & Natural Sciences, and other members of the college administration.

Distinguished Professor Emerita Corinne Michels spoke on her ongoing research project entitled “Genetics, cell biology, and natural history of the Usher Syndromes.” This work is being carried out at the Helen Keller National Center for Deaf-Blind Youths and Adults in Port Washington, NY, in conjunction with the National Eye Institute of the NIH. Usher syndrome is a complex inherited disorder affecting vision, hearing, and balance and results from mutations in any one of at least ten genes that have been identified so far. Nathalia Holtzman spoke about her research on “Cardiac maturation and formation of the epicardium.” Dr. Holtzman’s lab uses the genetic model *Danio rerio*, zebrafish, to investigate the early development of the embryonic heart. PoKay Ma discussed his ongoing studies of morphology in various fish species, including guppy spine development and possible genetic implications in somite number determination.

Graduate student presentations dominated the program. The annual Biology Symposium provides an excellent opportunity for these students to discuss progress on their thesis research projects and for us to stay abreast of

our colleagues’ research activities. It also provides students a chance to hone their oral presentation skills. **Bruce Sun** (Dennehy lab) spoke on his research on “Frequency and fitness consequences of bacteriophage $\Phi 6$ mutations allowing infection of the novel host, *Pseudomonas pseudoalcaligenes*.” **Sheng Xiong**



Biology Research Symposium 2011 attendees.

(Savage-Dunn Lab) gave us an update on the progress of her thesis research using molecular genetics to investigate “Protein phosphatases that modulate TGF β signaling in *C. elegans*.” **J.T. Boehm**

(Hickerson Lab) described his studies on “Using molecular tools to study the ecology and evolution of Syngnathidae.” This is a family of fishes that includes the pipefish and seahorses. J.T. is an ardent field biologist and collects for his own work and for museum collections.

Marc Tollis’s research (Boissinot lab), “Population genomics of non-LTR retrotransposons in *Anolis carolinensis*,” has provided significant insights into the evolution of vertebrate genome size and structure. Kristina Ames (Melendez lab) updated us on her research on “The Role of autophagy in germline development” using the genetic model *C. elegans*.

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LETTER FROM THE CHAIR

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graduated from the department, which was almost 50% higher than each of the past five years. We hope that this is the beginning of a lasting trend. While it is too early to determine conclusively the contributing factors for this increase, we suspect that an increase in the variety of courses in our curriculum—made possible by the recruitment of talented faculty members—and improvements in our facilities and equipment have played major roles. Many of the latter in particular were made possible by generous contributions from our friends and alumni.

We have developed several lines of communication to keep in touch. You can view some of the exciting improvements and meet new members of the department by visiting our new website at <http://biology.qc.cuny.edu/>. This year we have initiated a Facebook page, which you can access through a link from our website. And of course, *Biology Currents* will continue to come to you in the post. Communication is bi-directional, so I hope you will reach out often to provide us with news of yourself through our website or Facebook, or contact me directly via regular mail or at pokay.ma@qc.cuny.edu. I would be delighted to hear from you.

I have taken over the chair at an exciting time in the department. The increase in the number of majors and the corresponding increase in enrollment in

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NYC Women Make it here, make it happen

On March 1, 2011, Mayor Michael R. Bloomberg celebrated Women’s History Month with the launch of *NYC Women: Make it Here, Make it Happen*, a series of one-minute videos produced by New York City’s Commission on Women’s Issues in collaboration with NYC Media, the radio, television, and online media network of the city of New York. The videos were designed to highlight 31 extraordinary New York City women. Our own Distinguished Professor Corinne Michels was one of these celebrated women. Her special day was Saturday, March 19, when her video was shown several times on WNYC Media and was played on the video screens in NYC taxicabs. Perhaps you saw it. Check it out at <http://www.youtube.com/watch?v=HrnIAQsA6AY>. You can see all 31 of these honored women at http://www.nyc.gov/html/media/wcproject/wc_home.html

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Surely the students benefit from this policy as well.

Other than teaching, I am on the QC Animal Care Committee (IACUC), I maintain the Biology Department website, and I am the Undergraduate Research Coordinator for our department, in which capacity I match students to mentors and facilitate their registration. In this connection also I introduced a new course in which students train in the fundamentals of biological research, and I instituted a Biology Honors Thesis option where students taking four semesters of research for credit can defend a thesis before a faculty committee. At the CUNY level I am on the Advisory Committee for Ecology, Evolution and Behavior in the Biology doctoral program, which functions also as an admissions committee for incoming doctoral students. I am also a member of the CUNY Psychology graduate program and am active in CUNY

Philosophy as well. We really have some wonderful faculty in all three of these departments at Queens College, as well as at the university level.

Discuss any other programs you are involved in that you think our readers would like to hear about.

I am the founder and curator of the Online Bibliography of Environmental Thought. OBET is a comprehensive online database of literature dealing with the relationship between humans and nature. It is the largest environmental literature resource in the world, and the first user-managed academic database. It is hosted by Queens College, and supported by the International Society for Environmental Ethics. <http://www.isee-obet.org>.

Our lab, including alumni, sponsors promising African naturalists and biologists, including financial and academic support and professional collaboration. Current recipients of

support and collaboration include Baba Jarra (The Gambia), Mansa Dampha (The Gambia), Tsyon Asfaw (Ethiopia), and Girum Tewelde (Ethiopia), as outlined in <http://qcpages.qc.edu/Biology/Lahti/Outreach/Outreach.html>.

I am an advocate for the public understanding and acceptance of evolution, especially in the areas of public school curricula and religious misunderstanding or opposition. In this capacity I have spoken throughout the US as well as in the UK, Europe, and South America. I recently chaired a National Evolutionary Synthesis Center Working Group on Relaxed Selection and Trait Loss in Evolution.

Our lab seems to like exploration and nature observation almost as much as we like research! We love our field trips. I hope to incorporate the nature of New York City and surrounding areas into my teaching and research in years to come.

Paul Munding (1934–2011) | By Corinne A. Michels and David C. Lahti

Sadly, we report the passing of Professor Emeritus Paul Munding on November 10, 2011, just 10 months after he retired. Most will remember Prof. Munding as one of the department's most highly regarded teachers. But Prof. Munding was also a distinguished scientist whose work impacted the field of the evolution and genetics of learned behavior, specifically birdsong. Friends and colleagues remember his warm and generous personality, his quick smile and easy manner, his devotion to family, his love of the outdoors, and his enthusiasm for sports sailing and skiing. Paul Munding was a unique individual, and he is sorely missed by all.



Prof. Munding grew up in the Midwest. He was born in Illinois and developed his passion for animals and the outdoors as a child, bird-watching and fishing on the lakes of Wisconsin and spending summers on his grandparents'

farm in North Dakota. He received his BS and MS degrees from the University of Michigan and his PhD from Cornell University.

It was during his doctoral thesis research that his interest in the inheritance of complex behaviors in birds began. The sound spectrograph was developed in Europe during the 1950s as a means of visually recording and quantitatively analyzing birdsong, thereby making birdsong the model system for the study of learned behavior. This technique was central to Prof. Munding's research. Those of you who took Prof. Munding's Animal Behavior course will be familiar with the sound spectrograph recordings of finch and canary calls and will have learned how to analyze the tapes during lab class. In this way, Prof. Munding was able to integrate original research methodology into the classroom experience, lab exercises that stimulated many students to enter the field of behavioral research.

In 1967 when Prof. Munding began his postdoctoral work with Peter Marler at the Rockefeller University here in New York, he embarked on the first of his two major areas of investigation: vocal learning plasticity in the house finch. The house finch is native to California but had been brought to New York in the early 1940s and quickly spread throughout the East Coast. As they spread to new areas, the songs sung by the birds in the new localities diverged, forming local "dialects" that could be distinguished in a quantifiable way using the sound spectrograph.

To document these dialects, he traveled throughout the range of the house finch—especially on Long Island and in Westchester County and Connecticut—to record house finch songs in the field and document the differentiation of a socially learned trait. As you can imagine, much of his recording was done in residential areas, and not all residents appreciated seeing a stranger carrying large recording equipment, binoculars, and a camera with telephoto lens. He loved to tell of the occasions when the police were called and he had to talk his way out of a potential arrest.

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FACULTY NOTES 2011

This section reviews some highlights of the extracurricular scholarly activities of Biology Department faculty members, staff, and students in 2011. The diversity of these activities is a clear indicator of the international recognition of our dedicated faculty. You should note the extent to which undergraduate students are integrated into their research programs.

STEPHANE BOISSINOT was awarded



a three-year research grant by the National Institutes of Health to study the “Population genomics of non-LTR retrotransposons in vertebrates.” He also presented a talk on

“Genome size evolution in vertebrates” at the St. John’s University Department of Biology seminar series.

JOHN DENNEHY served on a National Science Foundation Science and Technology Center Site Review grant panel. In the last issue of *Biology Currents* we reported on Dr. Dennehy’s activities supported by the Science



Education Alliance of the Howard Hughes Medical Institute. Thirteen students from this year’s Genomic Research II class—along with Dr. Dennehy and course graduate assistant Mark Tollis—presented their research results at the 3rd Annual Symposium of the Science Education Alliance. Their presentation, entitled “MeeZee: A Subcluster A4 Mycobacteriophage from New York City,” characterized the mycobacterial virus isolated during this original research class. This work is being prepared for publication. Undergraduate students L. Mordukhaev and K. Jhun each presented their research at the 2011 Queens College Undergraduate Research Symposium. Y. Choi and Dr. Dennehy presented their studies on the bacteriophage $\Phi 6$ at the New Mexico Bioinformatics Symposium in Santa Fe.

KARL FATH continued his research on nanoparticles and their use, which was carried out in collaboration with **ARETI TSIOLA**, director of the Biology Core Facility, and researchers at Fordham University. This research program resulted in journal publications



(see “Faculty Scholarship”) and several conference presentations, including a talk and two posters at the 241st American Chemical Society National Meeting, Anaheim, CA, and a poster at the 55th Annual Biophysical Society Meeting, Baltimore, MD. Dr. Fath also served as a reviewer for the journal *Biomacromolecules*.

ANDREW GRELLER actively continued his studies of native flora and forests, particularly those found locally on Long Island, and serves as a founding member of the Advisory Board of the Long Island Native Plant Initiative. With Garrett Herth, Dr. Greller reported on the distribution of two native flowering plants in two NY state parks on Long Island’s south shore. He spoke on “A Plant Lover’s Guide to Habitats and Plants of the Caumsett State Historical Park” at the Huntington Public Library, and at the NY Botanical Garden on “Vegetation of the Baja California Peninsula,” and to the Long Island Botanical Society on “Biodiversity, Suburban Style.” Most exciting, a lucky few of you may have heard his five-lecture series on the “Natural History of the West Indies,” presented for the Royal Caribbean International cruise line’s *Explorer of the Seas*, during cruises on February 6–18, 2011 and November 10–20, 2011.

NATHALIA HOLTZMAN



continued her research on early heart development with two research awards from the NIH entitled “Defining endocardial requirements for myocardial

morphogenesis” and “Origins and Patterning of the Epicardium.” She also received a small Education Activities Grant from the Society for Developmental Biology entitled “Exploring Developmental Biology in the Kindergarten and First Grade Classroom.” Dr. Holtzman served on the Joint NSF Division of Mathematical Sciences/NIH National Institute of General Medical Sciences Initiative to Support Research in the Area of Mathematical Biology Review Panel. She spoke on her research on zebrafish heart development in the Brooklyn College, CUNY Biology Department seminar series and on the challenges of “Conducting Research at an Undergraduate Institution” in the Tri-Institutional Career Symposium held at the Rockefeller University. Dr. Holtzman and her students (undergraduates Corinna Singleman and Olivier Noel; master’s student Diane Gutierrez; and doctoral students Sana Khan and Kevin Werkheiser) presented their work on zebrafish heart development at several prestigious venues: the Mid-Atlantic Society for Developmental Biology Conference, Chicago, IL; the 70th Annual Conference Society for Developmental Biology Conference, Chicago, IL; the Mid-Atlantic Society for Developmental Biology Conference, Philadelphia, PA; and the North East Society for Developmental Biology Conference, Woods Hole, MA.

DAVID LAHTI continued working with co-Principal Investigator Stefano Ghirlanda of Brooklyn College on their collaborative National Science Foundation research grant, “Multi-ancestor coalescent theory for cultural evolution.” He reviewed the *Handbook of the Birds of the World*, vol. 15: *Weavers to New World Warblers* for the *Wilson Journal of Ornithology*.



FACULTY NOTES 2011

Dr. Lahti spoke on various aspects of his research on the evolution of bird behavior at several venues, including the Linnaean Society of New York; SUNY – Stony Brook University Department of Ecology and Evolution; College of New Jersey Department of Biology, Ewing, NJ; Cambridge University Department of Zoology, Cambridge, UK; SUNY – Binghamton University EvoS Program; and City College – CUNY Department of Biology. He was a participant in the Cambridge University Faraday Institute Summer Course, Cambridge, UK, where he spoke on “Is human behavior in the genes?” and “Has religion evolved?” and took part in panel discussions. Other presentations at University of St. Andrews School of Psychology, St. Andrews, UK, and Cambridge University, St. Edmunds College, Cambridge, UK, focused on his studies of human behavior. Dr. Lahti’s doctoral student M. Aaron Owen spoke on his research on zebrafish behavior at the Society for the Study of Evolution, Norman, OK, and at the Joint Meeting of the Animal Behavior Society and the International Ethological Society, Bloomington, IN.

ALICIA MELÉNDEZ, along with Malene Hansen of the Sanford Burnham Medical Research Institute, La Jolla, CA, received a research grant from the NIH National Institute on Aging to study the



“Role of autophagy and lipid metabolism in organismal aging.” The Faculty of 1000 cited their article (see “Faculty Scholarship”) that appeared in the prestigious journal *Current Biology*. Dr. Meléndez continues as an associate of the Nathan Shock Centers of Excellence in the Basic Biology of Aging, NIA, Albert Einstein College of Medicine. She was invited to speak at the International Cell Death Society Meeting, São Paulo, Brazil, and the 18th International Worm Meeting, UC – Los Angeles, CA. Doctoral student Nick Palmisano also attended the Worm Meeting and presented their research on the characterization of suppressors of *bec-1* lethality.

CATHY SAVAGE-DUNN received a new NIH R15 research grant to investigate the “Genetics of cell signaling in *C. elegans* growth regulation” and continued her NIH-funded research on body size control genes and TGF β signaling in *C. elegans*. She was a co-organizer of the New York Area Worm Meeting held at New York University and served as a member of an NIH K99/R00 Grant Review Panel. Dr. Savage-Dunn, along with doctoral students Sheng Xiong, Jianhua Yin, and Sushuma Teegala, presented their research on the regulation of TGF β signaling in *C. elegans* at the 18th International Worm Meeting, UC – Los Angeles, CA, and the FASEB Conference on the TGF- β Superfamily: Signaling in Development and Diseases in Barga, Italy.



JOHN WALDMAN convened a workshop for Hudson River Pier 26 CUNY Marine Field Station Planning Session held at Borough of Manhattan Community College. He reviewed the book *Challenges for Diadromous Fishes*



in a Dynamic Global Environment edited by Alex Haro *et al.* for the journal *Fisheries*, and wrote an essay entitled “How fisheries can gain from the world of sustainable food” for *Yale Environment 360*. Dr. Waldman gave two guest lectures on his books *Heartbeats in the Muck* and *Aquatic Vertebrates of New York Harbor* at New York University. He spoke at the New York City Parks Urban Field Station on “Diadromous Fish Status & Restoration – The Big Picture & the Not as Big Picture,” on “Environmental Recovery of New York Harbor” at Rutgers University, and “Tracking Mouse-Eating Taimen and Other Fishes in Mongolia” for the Hudson River Foundation Seminar Series. Colin Grubel, a master’s student with Dr. Waldman, presented his work on “Diet Study of Double-crested Cormorants in the NY Harbor” at the Greater New York/New

Jersey Harbor Herons and Waterbirds Working Group Annual Meeting in Fort Wadsworth, NY.

DANIEL WEINSTEIN spoke on the “Role of Xtox1 (Xenopus Target of Xema 1), a novel Mab-21 family protein, in vertebrate development” at the Society for Developmental Biology 70th Annual Meeting, Chicago, IL.

ZAHRA ZAKERI was awarded a three-year NIH R15 research grant to work on the “Characterization of flavivirus NS4A induced autophagy.” She was the co-organizer of a meeting of



the International Cell Death Society on “Signaling in cell death survival, proliferation and degeneration” held in São Paulo, Brazil. In support of this conference, she received a grant from the NIH. Dr. Zakeri also serves as the Queens College coordinator of a Bridges to the Baccalaureate Program, a grant administered by Queensborough Community College that is designed to encourage their students to complete the baccalaureate degree working with Queens College science faculty. Dr. Zakeri spoke on her work on “Viral manipulation of cell death machinery” at several venues, including at the 2nd Mini Symposium on Cell Fate Signaling in Health and Disease in Singapore; the Department of Microbiology/Division of Infectious Diseases, Boston University School of Medicine; and the South African Cell Death Society Symposium on Cell Death in Diseases, Cape Town, South Africa.

PSC-CUNY Research Awards were received by Stephane Boissinot, John Dennehy, Cathy Savage-Dunn, Timothy Short, and John Waldman.

Paul Munding (1934–2011)

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Prof. Munding’s work on the house finch soon convinced him that cultural transmission of birdsongs could not be the whole story, and he began his second area of investigation: the genetic inheritance of song patterns. He called the interplay of genetics and culture in behavior “bio-cultural evolution.”

To investigate the question of nature versus nurture, Prof. Munding switched to a different bird species, the canary. Canaries have been bred in captivity for over 500 years, some for their plumage and others for their song, which can vary in pitch, song length, and the extent of frequency modulation. Work in Marler’s lab had shown that young canaries learned songs by imitating the adults they were exposed to early in life. Prof. Munding postulated that inherited factors also contributed to the song pattern sung by an individual. He focused on the German Roller canary that sings a low-pitched “rolling” song, and the Border canary that sings a high-pitched, bubbly song similar to wild canaries. He bred canaries, and during the song-learning period exposed Borders to Roller songs, Rollers to Border songs, or raised them in total sound isolation. In essence, he showed “strain-specific inherited predispositions” in birdsong learning, that is, the transmission of this socially learned behavior was modulated by genetic differences. The findings were so remarkable that they were published in *Science*, the prestigious journal of the American Association for the Advancement of Science.

Prof. Munding pursued both lines of research after joining the faculty of the Queens College Biology Department in 1974. He accumulated a great deal of data but only occasionally published his results. Much of his thinking on these research topics was presented in classroom lectures, seminars, and posters. Thankfully, his entire extensive collection of wild birdsong recordings will soon be available through Cornell’s Macaulay Library of Natural Sounds, where it can be accessed online. In addition, Prof. David Lahti is working with Prof. Munding’s former students to publish articles based on his data. The first of what is expected

to be several manuscripts appeared in *Proceedings of the Royal Society* in March 2014 (Paul Munding and David Lahti, “Quantitative integration of genetic factors in the learning and production of canary song,” *Proc. R. Soc. B* 281: 20132631). Prof. Munding was an enthusiastic teacher and devoted to his students. Students appreciated this and flocked to enroll in his classes. There was never an empty seat in any of Prof. Munding’s classes, and his classes were the first to “close out” during registration. For the most part, he taught classes for students majoring in Biology, Psychology, and Neuroscience, but he also regularly offered a seminar course on sociobiology that was open to both Biology and Sociology majors. This course developed from his ideas on cultural evolution and grew out of concepts presented in his favorite book, *The Selfish Gene* by Richard Dawkins. Prof. Munding labored over his lectures and kept them current by updating them regularly. It was obvious to all that he truly cared about the education he provided students.

Prof. Munding was also a devoted family man. He took great pride in his wife of 53 years, Dr. Mary Munding, who distinguished herself as Dean of the Columbia University School of Nursing, his four children, and his seven grandchildren. Prof. Munding loved life. He enjoyed science, travelled a great deal, and was a true outdoorsman. The Biology Department of Queens College benefited greatly from having had Prof. Munding as a member of our faculty. If you wish to read more details on Prof. Munding’s career, you can find his professional memorial article at: <http://aoucospubs.org/doi/pdf/10.1642/AUK-13-240.1>.

BIOLOGY DEPARTMENT SYMPOSIUM 2011

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Elliot Aguilar (Lahti lab) discussed his work using statistical modeling of human language evolution. **Karyn Collie** (Baker Lab) presented her studies on neonate egg cannibalism in the Colorado potato beetle. **George Jackman** (Waldman Lab) described the progress he has made on the conservation biology of the flounder population in the waters around Long Island.

LETTER FROM THE CHAIR

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upper-level courses pose considerable challenges. We are meeting these challenges by drawing on the hard work and resourcefulness of the faculty. Our mission to provide a quality education for our students is primary. To this end, we continue to develop new courses in modern Biology, and to partner with other departments to develop new curricula. Some of the exciting items on our agenda for this year include initiating a program in Biological Anthropology in collaboration with the Department of Anthropology, and a new Bachelor of Science Program in Biology. I hope you will participate in these projects and our mission in whichever way you choose. If you choose to make a gift to the Annual Fund, be sure to select the Department of Biology as the recipient. With your help, we can continue to strengthen our academic programs, support new research, and enhance the overall educational experience of our students.

Student Highlights



George Jackman and alewife

We are pleased to tell you some of what Biology Department students have been doing and the honors earned.

Elliot Aguilar, doctoral student in the Lahti lab, was awarded two back-to-back NSF fellowships: the Graduate Research Fellowship and the Graduate STEM Fellowship in K–12 Education. He also received an invitation and was awarded a scholarship to attend the Santa Fe Institute’s Complex System Seminar.

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Maureen Banach, an undergraduate in the Lahti lab, was awarded a CUNY Pipeline Program Fellowship. This provides educational and financial support to minority undergraduates interested in pursuing doctoral studies with the goal of a career in college-level teaching and research.

Doctoral student Terrence Demos, of the Hickerson lab, was just awarded a dissertation improvement grant from the National Science Foundation to fund the project “Comparative Phylogeography of

Small Mammals in Montane Africa: Integrating Climatic History and Genetic Variation.” Excellent work!!!

After an absence of almost 300 years, the alewife returned to the Bronx River three years ago. Fortunately, champion fisherman George Jackman, a doctoral student in the Waldman laboratory studying fish conservation, caught the first Bronx River alewife of the year. The photo of man and fish (shown below) appeared in the New York Times on April 12, 2011 and can be seen at [http://](http://cityroom.blogs.nytimes.com/2011/04/12/whats-with-the-fish/)

cityroom.blogs.nytimes.com/2011/04/12/whats-with-the-fish/.

Stephanie Kandaasami, an undergraduate student in the Lahti lab, was awarded a fellowship to the Traveler’s Summer Research Fellowship Program at Cornell University.

Congratulations to undergraduate Surei Quintana (Lahti lab), who was awarded a travel fellowship by the Society for the Study of Evolution to attend the annual Evolution meeting in Norman, OK.

BIOLOGY GRADUATION HONOREES 2011

AWARD RECIPIENTS

Laura H. and Arthur L. Colwin Prize

Jordana Lovett

Darwin Prize

Yeong Mi Shin

Muriel and Philip Feigelson Award

Samera Rabbanifar

Donald E. Lancefield Award

Maggie Reinlieb

LIST OF GRADUATES

Aida Abbasiazam – *Honors*

Nikil Abraham – *Honors*

Yaakov Abramov – *Honors*

Laura Adams – *Honors*

Neha Aggarwal – *High Honors*

Farhana Ahmed

Osama Ahmed

Chris Azarnejad – *High Honors*

Erik Battilana – *Honors*

James Besong

Daniella Cabral

Catherine Cantor – *High Honors*

Cameron Cardoza

Hsueh-Yung Chen – *Honors*

Christina Corvea – *High Honors*

Jose-Antonio Garcia

Dhurba Ghimire – *Honors*

Julianna Giraldo-Ramirez – *High Honors*

Tamara Goodman – *Honors*

Alphonse Guylsda

Shamina Haque – *Honors*

Esha Hassan

Siying Huang – *Honors*

Nathalie Jean-Baptiste

Stephanie Kandasami

Sang-Ho Kim

Yeree Kim – *High Honors*

Huang Kun – *High Honors*

Samantha Kuppler – *Honors*

Jenny Lai – *Honors*

Zerla Lau

Rivka Lederman – *Honors*

David Lee – *Honors*

Erang Lim – *Honors*

Jordana Lovett – *Honors*

Walter Martinez

Sarah Maurice – *High Honors*

Puha Mehta – *Honors*

Mitova Michelle – *High Honors*

Danielle Mitchell

Suzanne Mourad – *Honors*

Mohiba Nasimi – *High Honors*

Tomasz Opalinski – *Honors*

Manu Paka – *Honors*

Maria Palacios

Chatura Patirane

Sharda Persaud

Jennifer Polish – *Honors*

Prakash Prasad

Surei Quintana – *Honors*

Samera Rabbanifar – *High Honors*

Margaret Reinlieb – *High Honors*

Sana Rizvi

Beata Sadigh

David Scheideler

Nicku Sebastian

Sarah Shahab – *Honors*

Priyanka Sharma – *Honors*

Yeong Shin – *High Honors*

Shridevi Singh – *Honors*

Aryeh Sokolov

Margaret Szydlak – *Honors*

Ka-Wei Tan – *Honors*

Tison Thomas – *Honors*

Pablo Velastegui

MASTER’S DEGREE RECIPIENTS

Faizzan Ahmad

Joel Boehm

Lahiru Kannangara

Wassem Moarsi

Fiorella Penalzoa

Akasha Sookdeo

FACULTY SCHOLARSHIP 2011

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

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BIOLOGY ALUMNI FUND DONORS 2010

In calendar year 2010, 68 of our alumni generously donated \$13,093. We are pleased to see many new donors and hope we will be able to count you among our loyal supporters. Thank you also to our donors with doctoral degrees for remembering us. Both the number of donors and the total funds received are significantly higher than in past years. We very much appreciate your commitment to us and will use your gift to advance the interests of our students.

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