

BIOLOGY CURRENTS

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A Message from the Chair: Dr. Nathalia Holtzman



Dr. Nathalia Holtzman

What a year to take on the role of Chair of Biology. I am proud to report that we have overcome the year's challenges in both our research and teaching. As COVID hit NYC hard in March, our physical campus closed. All teaching was moved online and the research labs closed. As the campus begins to reopen, I am excited to see the work accomplished by Dr. John Dennehy's lab in advancing COVID research. John sprang into action at the very start of the COVID pandemic by leveraging the work in his lab on viruses to determine how his lab could best make a meaningful contribution. To this end, he has focused his lab on understanding how COVID is transmitted in the built environment. As a part of this endeavor, the lab is also exploring the levels of COVID in wastewater. John has been monitoring the wastewater for evidence of newly emerging COVID variants. Current identification of such new variants around the world highlight the importance of this work. This work, and that of other department faculty in the last year, has led to the department faculty being awarded eight external grants totaling over \$1.5 million from sources including the National Science Foundation, the National Institutes of Health, the NYC Department of Environmental Protection, and the Binational Science Foundation. In addition, department faculty received seven internal CUNY grants.

On the faculty front, our Dr. Saima Cheema was awarded CCE, a Certificate of Continuing Employment. Congratulations, Saima! In addition, we are eagerly anticipating the addition of a new faculty member to our department in the fall of 2021, Dr. Joanna Coleman.

This year, our number of majors jumped by 400 students to over 1,200. In addition, we currently have 48 matriculated master's degree students. To meet the needs of these students during COVID, we are teaching over 100 classes online in spring including almost all labs; only one class will have in-person activities. The department collaborated with the campus Center for Teaching and Learning to train over 40 of our instructors in an intensive two-week online class over the summer of 2020 to ensure our students are receiving effective online education. While we still believe in-person learning is best for our students, I am hopeful that our faculty can take the online teaching skills they have learned this year and include the best practices into their courses moving forward.

I envision a great year ahead. With the COVID vaccine distributions beginning and plans to begin a return to in-person teaching for Fall 2021, I expect research programs on our campus to fully reopen. The dedication the faculty and staff have shown during this difficult time has been incredible, and I know we are all looking forward to being together on campus again.

– Dr. Nathalia Holtzman

In Memoriam David W. Alsop, PhD (1939–2020)



David W. Alsop, PhD

In the recesses of the taxonomic literature concerning cockroaches, one will find reference to a species newly described in 1993 named *Paramusoa alsopi*. The name of this tropical species will exist in the literature for perpetuity as will the person for whom it is named, Dr. David W. Alsop. Similarly, Dave will long remain in our Queens College memories as a faithful and active contributor to the college and university, a passionate teacher, and someone whose name was instantly equated with cockroaches.

Dave, who retired in June 2007 after almost 37 years, died on July 25, 2020 at his bucolic mountainside home on RT 209 between Waynesville and Hot Springs, NC—the road known to the motorcycle crowd as “The Rattler.” On August 16, 2016, Dave fell over a wall onto his drive while cutting the lawn; recovery proved to be difficult. Transported by medevac to the nearest trauma center at Johnson City (TN), he spent several months at the medical center and rehabs in Tennessee and later North Carolina, finally returning home in January 2017. Since then and until his passing, Dave had 24/7 nursing aides. Winter conditions necessitated a move to nursing homes until his aides could once again navigate the mountain. Conversations with Dave became difficult in 2020, but I’m sure he would have given us an enthusiastic farewell.

Born in Canada, then moving to the wilds of Northern New Jersey in the Ramsey area, Dave was always entranced with wooded spaces and nature where, among other things, he collected insects. His first several years at Cornell University were in the engineering school until the lure of entomology brought him to Comstock Hall, the home of the Eisner lab, where he obtained his BS in 1964 and PhD in 1970. Even as a graduate student, Dave was skilled at microdissection and drawing, and his drawings of tiny glands and structures of arthropods have appeared in many publications. His drawing of the bombardier beetle anatomy, for example, was featured in several general biology texts. Soon after joining our faculty in 1970,

Dave became immersed in serving the department, college and university in such a degree that some used the term “staggering.” And, it was not only the amount, continuity, variety and significance of his service, but the seminal contributions that he made to our academy that must be considered his most important legacy.

His service to the department included a term as chair, member of the departmental P&B, chair and member of a long list of committees dealing with every aspect of departmental function—including working on the space and design in the “New” Science Building—to acting as the graduation advisor. Perhaps one specific mention should be included because it went on to affect the entire college. In 1980, the department began reevaluating the numbering of our courses—a random hodgepodge that had been in place since the college’s founding. This effort resulted in our current numbering system, which was soon adopted by the entire college. Parallel actions resulted in the restructuring of the major and minor requirements and the establishment of the biology-education major, an effort which catalyzed similar actions throughout the college.

Dave focused much of his energy on the Academic Senate. Shortly after his arrival, he became a senator and member, then chair of the Elections Committee. Serving many terms as a senator representing the departmental, divisional, and at-large roles, he chaired the Senate Executive Committee and Governance and Nominations Committees, during which time he continually attempted to formalize and codify the manner by which the Senate functioned. Additionally, he served as senate secretary and parliamentarian, and he would often be seen carrying around his well-worn copy of *Robert’s Rules*.

Dave’s service to the college included years on the Faculty-Student Disciplinary Committee, a large variety of Provost’s and Presidential Committees involving sabbaticals, course scheduling, course registrations, and Executive Committee assignments. He also chaired the Committee on the Organization and Administration of the College for the 1984–1986 Middle State Evaluation Self-Study. If this were not enough, Dave also served the university as a senator representing Queens College, the University Faculty on Governance chair, University Senate Parliamentarian, University Disciplinary Committee, and as a member of the Biology Committee of the CUNY Faculty Research Award Committee,

a representative to the CUNY Legislative Action Council and the CUNY Graduate Faculty Council. Yes, the extent of his contributions was staggering.

Dave’s research, which of course focused on cockroaches, brought him to the tropics, where he was a member of the first course taught at La Selva, Costa Rica in what became the Organization of Tropical Studies. More recently, he had been a serial visitor at the Asa Wright Nature Centre in Trinidad. He once maintained about 50 species of roaches in culture, and occasionally, an escapee could be found hissing along the corridors and invading labs and lecture halls in the Science Building.

Dave published 15 peer-reviewed papers, mostly with collaborators in the Eisner lab. His thesis entitled “Defensive glands of the arthropods: Comparative morphology of selected types” set the research direction he would follow throughout his career. After retiring, he lived happily on 5+ acres of heavily wooded North Carolina mountains and built a beautiful and fully functioning lab for the collection of local insects. In the lepidoptera (moths and butterflies) alone, he claimed to have collected and mounted about 750 species, all collected on his property—an amazing number. His porch had black-light sheets and several other types of collecting apparatuses, so no insect could possibly escape his grasp. He taught several short-duration insect courses at the Highlands Biological Station—to which he willed his collections. Additionally, he had been a continuous supporter and donor to the National Wildlife Foundation since 1991.

Once, on an ecology field trip that entailed a long bus ride, Dave caught sight of a fellow passenger who he said was the most beautiful woman he had ever seen. That was in the mid-70s and that fair lady, Barbara, became his spouse, and he never failed to speak so very lovingly about her. Dave would often say that Barbara was the only woman in the world who could put up with him, and then add that the reverse might also have been true. They were a fine match, even to the point that he agreed to take dancing lessons because Barbara loved to dance.

Dave was bereft after Barbara died, and decided to make a new home in the North Carolina mountains because it had been their favorite vacation spot. Whenever we would visit him in his mountain hideaway, Dave would remind us that we were now in a little bit of Heaven on Earth.

Rest well, David.

– Peter C. Chabora

Student Highlights 2020

We are pleased to report on the special honors earned by Biology Department students and their other accomplishments despite the shutdown. The “List of Graduates” section includes those who received department and college honors for achieving excellent grade-point averages. In this section, we highlight other college-wide awards received at graduation and over the course of their college careers as well as the award-winning research work carried out by our graduates. We also report on honors and awards received by masters and doctoral students doing thesis research with biology faculty members, as well as by other undergraduate and graduate students who distinguished themselves this year. Our students, at all levels, work hard to advance their education and careers. The rigorous research and academic environment engendered by the department’s faculty encourages their progress and successes. Your donations offer significant support for these activities. Thank you!

BACHELOR OF ARTS CLASS OF 2020 GRADUATION HONORS:

MORDECHAI CAPLAN received the Donald E. Lancefield Award for excellence which is available to Biology majors in recognition of their outstanding grade-point average in Biology courses. Mordechai shared this award with two of his fellow graduating seniors.

DONNA EPISCOPIO, winner of the Muriel and Philip Feigelson Award for outstanding undergraduate research, is currently a student in a Doctor of Pharmacy program at the Arnold and Marie Schwartz College of Pharmacy at LIU Brooklyn. While a Macaulay Honors College student, she majored in biology and did research in the Zakeri lab for three years. This led first to her participation and authorship on one published project, “Sexual dimorphism in cell behavior and sensitivity to death of primary macrophages” published in the Italian *Journal of Gender-Specific Medicine*. Next, Donna went on to launch her own project on the growth of influenza virus. She is first author on an article published in the prestigious *FASEB Journal*, “Atorvastatin restricts the ability of influenza virus to generate lipid droplets and severely suppresses the replication of the virus” which showed that a common cholesterol medication can almost completely suppress influenza virus growth.

TIANHUI “ANNA” GAO was awarded the very prestigious Kenneth Kupferberg Memorial Scholarship, a Queens College award. This award funds summer stipends to support students who work as laboratory interns with faculty in the Division of Math and Natural Sciences. The guidelines, established in 1995 by Harriet Kupferberg, state “Academic excellence as well as financial aid are to be considered.”

In the Dennehy Lab, Anna contributed to a project investigating how cells regulate the timing of cellular events. Anna and her team found that mutations in a timekeeper protein alter event timing and noise in event timing. Noise in event timings followed a concave up shape with increasing threshold protein concentration required to trigger an event. Mathematical modeling identified an optimal threshold that minimizes noise in event timing. These results imply that noise in event timing can be a target of natural selection. The work was published in *iScience* with Anna as second author. Anna graduated with a BA in Biology and is currently working as a technician in the Dennehy Lab on monitoring SARS-CoV-2 prevalence in NYC wastewater. She intends to apply for medical school in the upcoming cycle.

JASMINE GILDON was a Queens College Transfer Honors Program (THP) award recipient. The Program offers scholarships and academic support for highly motivated and creative prospective students who wish to complete their bachelor’s degree at Queens College where they will be challenged to do their best.

ARYA HAWKINS-ZAFARNIA received several Queens College graduation honors. Arya received a Con Edison STEM Scholarship. This scholarship is awarded to a graduating senior on the basis of scholarly merit. Applicants must write about their future plans in their field and how the scholarship will help achieve their goals.

He also received the John G. & Yorka C. Linakis Scholarship in recognition of his outstanding academic performance and keen interest in the betterment of his community. In addition, Arya was awarded a Mitarotonda Family Scholarship in Science & Business awarded to juniors/seniors majoring in science or business with an excellent academic record. Each of these awards require demonstrated financial need.

SAKEENAH HOSSAIN was awarded a Pre-Med Support Award, which provides a scholarship of up to \$2,000 to help defray the costs associated with applying to medical school. Sakeenah was also awarded a scholarship from the Adele Gottschalk Memorial Scholarship Endowment Fund. These scholarships are offered to sophomores, juniors, or senior students pursuing the pre-med curriculum that have a strong academic performance, and who have demonstrated exemplary character through volunteerism or assistance in care and nurturing others.

Sakeenah also received the John G. & Yorka C. Linakis Scholarship in recognition of her outstanding record of service and academic performance and demonstrated financial need.



Sidra Jabeen

SIDRA JABEEN received an Adele Gottschalk Memorial Scholarship Endowment Fund Scholarship for students pursuing the pre-med curriculum. The scholarship was awarded in recognition of her

strong academic record and for her exemplary character through volunteerism or assistance in the care and nurturing others. Sidra also received a Dr. Peter Chabora Biology Scholarship for biology majors with financial need. She entered Queens College in 2015 as the first in her family to attend a four-year college, and she majored in biology with a minor in chemistry. She graduated *magna cum laude* with her BA in 2020.

Sidra’s interest in research began in Dr. Zakeri’s laboratory. In the summer of 2019, she did an internship in the Department of Immunology at the Mayo Clinic Graduate School of Biomedical Studies as part of their very competitive Summer Undergraduate Research Fellowship (SURF) program. She is currently enrolled in the Accelerated Graduate Track at CUNY Queens College Biology Program and received the Linda Markaloff Accelerated Master’s Scholarship. She plans to complete her master’s degree in summer 2021. Sidra is currently working as an adjunct lecturer for CUNY Queens College Biology Department.

Sidra presented her research at national conferences and is an author on two publications, including one as the first author. (Jabeen, S., J. Landazuri, S.

Nagvenkar, B. Czuj, A. Maghsoudi, M. Javdan, M. Entezari, R. A. Lockshin, and Z. Zakeri, 2020. TLR4 sex dimorphism correlates with sex dimorphic phagocytosis in primary macrophages *Ital J Gender-Specific Med* 6(3):100-106. <https://www.gendermedjournal.it/archivio/3432/articoli/34214/>

In fall of 2021, Sidra enrolled in the MD/PhD program of the University of Wisconsin School of Medicine and Public Health.

SHMUEL (SAM) KASSIRER received the Donald E. Lancefield Award, given to Biology majors in recognition of their outstanding grade-point average in biology courses. Shmuel shared this award with two of his fellow graduating seniors.

Sam is taking a gap year while he goes through the interview process for medical school, with the hope of beginning medical school in the fall of 2021. Currently, he is a research assistant in a dermatology and plastic surgery office. He is working on several research projects and case reports as well as contributing updates to The Skin Cancer Foundation's *Guide to Skin Cancers & Precancers*. Sam reports that he is able "to observe the doctors in a clinical setting, an experience that I know will further prepare me for my future as a physician."



Dr. Jashandeep Kaur

JASHANDEEP KAUR graduated in spring 2020 with a major in mathematics and a minor in biology's new health science curriculum. She graduated in spring 2020 and began medical training in the fall of 2020 at New York Institute of Technology College of Osteopathic Medicine.

Jashandeep received the Salman Hamdani Memorial Award which is presented to a "graduating senior who has maintained high standards in scholarship and character and has been accepted to medical school." This very special award is funded by the family of Salman Hamdani, a June 2000 graduate of the college who was a chemistry major and pre-med student. On September 11, 2001, Salman, a paramedic, ambulance driver, and NYPD cadet, died while rescuing victims from the North Tower at the World Trade Center.

Jashandeep was also a Queens College Scholarship recipient and was awarded a Joan Bluestone Foundation Scholarship for academically qualified students with financial need.

NANAMI KUBOTA, winner of the Laura H. and Arthur L. Colwin Prize for outstanding research, is in her first year of study in the Microbiology and Molecular Genetics PhD program at the University of Pittsburgh Department of Microbiology and Immunology. She started working with Professor Anadon while still in high school, which drove her to choose Queens College for undergraduate work. After starting at the college, she continued to work with Professor Anadon. Sensing her talent, Anadon recommended she broaden her experience. Nana worked in the Dennehy lab for three years on two projects, first helping a masters student studying the effects of urbanization on the soil microbiome, then developing her own project on phage virus adaptation to bacterial *Erwinia* hosts, and how phages that cannot code for their own transfer RNA have to evolve faster to match the bacterial tools available.

This project investigated virus adaptation to new hosts. She experimentally evolved three different bacteriophages on the host *Erwinia amylovora*, the causative agent of Apple Fire Blight. These phages differed in that one possessed a codon usage pattern like that of the host, one was highly divergent from the host, and a third was also highly divergent but encoded its own tRNAs. The major question addressed was whether adaptation to the new host was dominated by selection for codon optimization or nucleic acid selection. Nana's results showed that nucleic acid level selection dominated in virus adaptation to *E. amylovora*. Nana presented her research at the Annual Meeting of the American Society for Virology and is preparing a manuscript for publication as a first author.

ARWA LATIF received a scholarship from the Pearl Foster MD Scholarship Fund, which is awarded to a lower junior majoring in the biological sciences who has an outstanding academic record and has been involved in community activities, particularly issues related to women in science, women's studies or history, and/or studies related to marginalized communities.

SHMULIK (SAM) ROTH received the Donald E. Lancefield Award for excellence available to Biology majors in recognition of their outstanding grade-point average in biology courses. Sam shared this award with two of his fellow graduating seniors.

Sam is in his first year at Stony Brook University School of Dental Medicine, which is done jointly with the SUNY Medical School first-year courses. After these are completed, he will be fully immersed in dental school courses. Sam was elected to serve on the honor court committee of the School of Dental Medicine which ensures that everyone has an equal and fair chance when it comes to their education. Overall, he reports: "I am enjoying every minute of it as I am getting one step closer to my goal of becoming a dentist and constantly learning new things."

ISRAEL WEISS was awarded the Biology Department's Charles Darwin Prize, which is awarded to the biology major with the second highest grade-point average who has demonstrated an interest in research. Israel did research with Dr. Mitchell Baker where he studied Colorado potato beetles ever-evolving resistance to pesticides. "I was particularly excited about joining this lab because I felt that it was a perfect blend of field work and lab work," he wrote. "I learned in the field the techniques and strategies employed for data analysis in the lab, the discipline of showing up day after day and week after week for observations, and the confidence of being able to read through and discuss other researchers' publications about topics relating to ours. The breadth and depth of knowledge I was exposed to over the course of my research experience was beyond incredible."

Israel is taking a gap year to apply to medical school, but the COVID-19 pandemic has complicated his plans for the year. Hopefully, he will be back on track soon. In the meantime, he is working with Dr. Tajerian.

GRADUATE DEGREES

The department is pleased to report that participation in our master's degree programs is increasing, as is the number of degree recipients. In the 2020–2021 academic year, 25 new biology master's degree students matriculated, a record high number.

Noteworthy is that most of those receiving their masters complete a research thesis. PDF copies of the master's theses listed below are available at <http://biology.qc.cuny.edu/qcbio-masters-research-theses/>.

DONNA BEDASE received a course-work Master of Arts degree in biology. She was a researcher in the Dennehy Lab and is currently matriculated in the Graduate Center of CUNY in the Subprogram in Molecular, Cellular, and Developmental Biology of the PhD Program in Biology.

KUMARIE BUDHU received a master's degree with a research thesis (mentors Joshua Brumberg, PoKay Ma). Her thesis title: "Brain characterization of perineuronal nets in the male Long Evans rat."

MACARENA G. GOMEZ DE LA TORRE CLAVEL received a master's degree with a research thesis (mentor David Lahti). Her thesis title: "Relationship between personality and cognitive traits in domestic rabbits (*Oryctolagus cuniculus*)."

She has also published a preprint paper with Mason Youngblood and David Lahti: Gomez de la Torre Clavel, M. G., M. Youngblood, and D. Lahti, D. (2020). "Relationship between personality and cognitive traits in domestic rabbits (*Oryctolagus cuniculus*)."

bioRxiv. DOI:10.1101/2020.10.12.336024

CRISTIANNA COLELLA received a course-work master of arts degree in biology (mentor Daniel Weinstein). Her library thesis title: "TGF Signal Regulation in Epithelial to Mesenchymal Transition During Gastrulation."

CHRIS COTRONEO received a master's degree with a research thesis (mentor John Waldman). His thesis title: "Submersed aquatic vegetation in a Hudson River watershed: The Great Swamp of New York."

CRISTINA MORALES received a course-work master of arts degree in biology (mentor David Lahti).

DANNA SHIMUNY received a master's degree with a research thesis (mentors Joshua Brumberg, PoKay Ma). Her thesis title: "A quantitative morphological analysis of sensory deprived supragranular neurons in the mouse barrel cortex."

OTHER NOTABLE STUDENT ACTIVITIES

IRENE HOXIE, a doctoral student in the Dennehy Lab, published an article titled, "Intragenic recombination influences rotavirus diversity and evolution" in *Virus Evolution* 6: vez059. In this article, Irene demonstrates that recombination in the segmented dsRNA rotaviruses is more common than previously believed and that it can significantly impact virus evolutionary trajectories.

MASON YOUNGBLOOD, a doctoral student in the Lahti laboratory, is expected to complete the requirements for the PhD in May 2021. You can read about Mason in this issue of *Biology Currents* in "Student Profile: Mason Youngblood". Listed here are Mason's accomplishments for 2020 alone.

JOURNAL ARTICLES

Youngblood, M., 2020. Extremist ideology as a complex contagion: the spread of far-right radicalization in the United States between 2005 and 2017. *Humanities & Social Sciences Communications* 7(49). DOI:10.1057/s41599-020-00546-3

Youngblood, M., 2020. A Raspberry Pi-based, RFID-equipped birdfeeder for the remote monitoring of wild bird populations. *Ringing & Migration* DOI:10.1080/03078698.2019.1759908

PREPRINTS

Youngblood, M., K. Baraghith, and P. E. Savage, 2020. Phylogenetic reconstruction of the cultural evolution of electronic music via dynamic community detection (1975–1999). *arXiv* ID: 2011.02460

Gomez de la Torre Clavel, M. G., M. Youngblood, and D. Lahti, 2020. Relationship between personality and cognitive traits in domestic rabbits (*Oryctolagus cuniculus*). *bioRxiv* DOI:10.1101/2020.10.12.336024

POPULAR PRESS

Friedman, A. and M. Youngblood, 2020. Poorer cities spend more of budget on police, even where crime is lower. *Sludge*. URL: <https://bit.ly/2BhR5H4>

Youngblood, M., 2020 DynCommPhylo: phylogenetic reconstruction via dynamic community detection (R package).

INVITED TALKS

Principles of Evolutionary Biology at Queens College (Flushing, NY, November 2020) "Cultural evolution" Animal Behavior Society (Virtual Conference, July 2020) "A Raspberry Pi-based, RFID-equipped birdfeeder for the remote monitoring of wild bird populations"

Alumni Highlight – Dr. Heidi J. Zapata (Class of 2000)

by Uldis Roze



Heidi Zapata

Dr. Heidi J. Zapata, MD/PhD is an assistant professor at the Yale School of Medicine, Section of Infectious Diseases, where she treats patients and runs a research lab. She lives in a new house she

designed herself in Guilford, CT, some 20 minutes west of New Haven. Her path to her present has not been a smooth one.

Born in Nicaragua, Heidi and her mother arrived in New York on the last commercial flight out of Managua, as the country's decades-long civil war was heating up. Heidi was three months old. Her father could not get out at the time; he joined them later.

Since Heidi's mother had to work, Heidi was taken care of by her grandmother. Both English and Spanish were spoken at home, but when the time came to attend public school, Heidi became aware her English was not up to the level of the other children. She remembers being puzzled by phrases like "piece of cake", which does not translate well in Spanish, but she caught up and thrived in school.

The choice of Queens College for higher education was dictated by the family's finances; Queens College offered a full-tuition scholarship. Heidi says that some of her happiest memories from Queens College involve the times spent in the HMNS student lounge—then located on the first floor of Remsen, before the building was renovated. She made good friends and has kept in touch with many, including Steve Rodriguez ('01).

Heidi graduated Phi Beta Kappa, won the Colwin Prize, and was accepted to three medical schools. The one she chose was SUNY Upstate Medical University in Syracuse, NY. The school offered a PhD/MD program with free tuition. She credits her medical school for defining the research philosophy she has followed later. She went on to an internal medicine residency at the University of Virginia, which offered a strong clinical program. From there, she went on to

an infectious disease fellowship at Yale. During fellowship, what struck her was seeing a given pathogen elicit different responses in different patients. She continues seeing the same pattern in the COVID-19 pandemic today. The immune systems of young people can usually shrug off the attack of the virus. Older patients, or patients with type 2 diabetes, sickle cell disease, HIV, kidney disease, Down syndrome, obesity, and other factors are at risk of severe reaction to a COVID-19 attack.

In her research at SUNY-Upstate and at Yale, Heidi has explored the host-microbe relationship, starting with a study of *Varicella zoster* virus and its interactions with the host signaling pathways, and now with her studies at Yale that focus on how aging, HIV infection, and other comorbidities influence how the innate immune system works. But the wave of COVID-19 infections that swept over her clinic in spring and summer 2020 was unprecedented, not only because of the scale of the epidemic but also because so little was known about effective treatment when the virus first struck. "We spent hours each day discussing each patient case, trending inflammatory markers and other clinical parameters — trying to figure out how to best treat each patient. Every day brought new evidence in the literature that changed practice. It was exhausting keeping up with the literature. In the end many of the treatments we started with were found not to be effective."

She remembers arriving at the wards at 7:30 am and often staying up until 10 pm writing notes. She says she remembers every one of her patients, an experience that has left a scar on her soul. She was so emotionally exhausted she took the month of August off. Her mother came up to stay with her, and Heidi regained her equilibrium.

Though the second wave of COVID-19 that started in winter 2020 continues to cause deaths in this country, more is known about treatment and clinical outcomes are more successful. "We are definitely in a better place than when the first wave hit."

Heidi is now spending about a third of her time clinically, organized in two week

blocks. When she is not seeing patients, she is writing and working on her research (along with her post-doctoral fellow) which focuses on understanding why the immune system functions differently in the setting of aging, HIV-infection, and other comorbidities. She focuses particularly on the innate immune branch which is our initial response to pathogens.

Heidi is convinced that only an effective vaccine administered to everybody will stop the pandemic. She was dismayed by a letter to the editor of the *New Haven Register*. The writer, an African American, declared he would not accept a vaccine, because of the past history of U.S. medicine, which repeatedly used Black Americans for research.

With two other faculty from the Yale School of Medicine, Heidi wrote a response to the letter, identifying herself as a member of the LatinX community. She acknowledged that for the Black and LatinX communities, mistrust of the U.S. medical establishment is grounded in history. But the writers said that a group of infectious disease physicians have established an anti-racism curriculum. The doctors want to meet with people who have reservations about the current U.S. medical system. They promise to listen carefully to understand the basis of the mistrust and to gather suggestions on how to build a future that is better than the past.

Student Portrait: Mason Youngblood

by Uldis Roze



Mason Youngblood

Mason Youngblood's PhD thesis defense in animal behavior and comparative psychology is scheduled for May 2021. The PhD will come from the Graduate School of CUNY's Doctoral Program in

Psychology, although Mason carried out his thesis research in David Lahti's lab that studies the cultural evolution of birdsong.

Mason comes from the little town of Hartsville, South Carolina and credits his town's Math and Science High School with starting his love affair with biology. It was the high school course in ornithology that brought him to the swamps and rich forests of his state, all filled with birdsong and endless life. An image he still recalls is that of the red, blue, black, and yellow painted bunting he saw on a field trip. He followed this with a biology neuroscience program at the University of South Carolina Honors College, then the Graduate School of CUNY, where his studies encompassed psychology at Hunter College and animal behavior and comparative psychology at Queens College.

Mason's path has been a distinctive one. While still a graduate student, he wrote nine scientific papers, published a statistical package in the R program, gave 14 talks (4 in international venues), participated as peer reviewer for seven science journals, mentored eight undergraduate and two master's students, and served as teaching assistant or instructor at Hunter College and Queens College. The *New York Times* has quoted his expert commentary on the evolution of birdsong in the white-throated sparrow. Mason is now focusing on preparing publications based directly on his doctoral thesis. A listing of his accomplishments in 2020 can be found in the "Student Highlights" section.

What brought him to New York? Academically, he was attracted to the Lahti lab at Queens College, and Ofer Tchernichovski's work at Hunter College. Both study the evolution of birdsong. The second attractant was New York's active electronic music community.

Besides training as a scientist, Mason is a composer of electronic music, actively involved in both composition and study of the cultural evolution of popular and electronic music.

Cultural evolution of birdsong and the cultural evolution of "humansong" have been the major foci of his studies at Queens College. Both are good models of cultural evolution. The Lahti lab has rights to publish the late Dr. Paul Mundinger's sound spectrograph recordings of house finch song dating back to the 1970s as well as more recent recordings. This rare longterm record provides a rich resource to study temporal changes in birdsong. Mason used the combined data along with his own computational innovations to describe how variation in a socially learned trait would diversify and change over time. This study forms the empirical anchor of Mason's PhD thesis and should dominate the next wave of his publications.

In the study of the cultural evolution of hip-hop and electronic music, the raw data is found in online data sets that record collaborations and sampling events (the use of previously recorded material in a new creation). The data sets allow a reconstruction of artist networks and follow the diffusion of music fragments from late 1980s to today. Questions that can be addressed include the roles of novelty vs. conformity in cultural transfer, geographical biases, gender bias, and the impact of growing internet use.

But cultural evolution is not restricted to the field of music or birdsong. Using his statistical skills, Mason applied a novel epidemiological analysis to the subject of far-right radicalization in the United States. The study data came from the PIRUS database, a compilation of publicly sourced information maintained by a University of Maryland-based research consortium supported by a grant from the U.S. Department of Homeland Security. The study data covered 416 individuals radicalized between 2005 and 2017. In an article that appeared in a November 2020 issue of *Humanities and Social Sciences Communications* (published by *Nature*), Mason published his findings suggesting that patterns of far-right radicalization in the United States are consistent with a complex contagion process, i.e., "the endemic causes alone are not sufficient

to explain the spatio-temporal clustering observed in the data." For those who are familiar with epidemiological terminology, what Mason found is that the reproduction number, or R_0 , for radicalization is significantly lower than 1 ($R_0 = 0.31$) strongly suggesting that extremist ideologies require significant reinforcement for transmission.

Mason explored several endemic factors showing a positive effect on the growth of terrorism, the most significant of which were poverty and the presence of hate groups, but these alone were not enough. Social media usage, group membership, and physical organizing remain primary reinforcement tools by which radical terrorism spreads. Following the events of January 6, 2021 at the US Capitol building, Mason's *Nature* article experienced a strong jump in readership including individuals from the House of Representatives. Mason has also been interviewed on the topic by a radio station in the UK.

Besides his cultural evolution studies, Mason fondly remembers another aspect of his life at Queens College: serving as a teaching assistant in the laboratory sections of Biology 11 (Introductory Biology for Non-majors), Biology 287 (Evolution), and Biology 345 (Animal Behavior). The students were diverse, and Mason worked hard to explain complex concepts. He says the teaching experience changed him and, in an important way, made him what he is. The students appreciated him. Here are a few comments students made about his teaching:

"He gives clear and detailed explanations, and if you're not understanding something, he will explain it in different ways until you do understand it."

"He is one of the best TAs I have ever had."

"TAKE HIM!"

Following his thesis defense, Mason will be moving on with his career. He has accepted a post-doctoral fellowship at the prestigious Max Planck Institute in Jena, Germany, where he will join the international lab of Olivier Morin and focus on cultural evolution in both humans and non-human animals. We wish him all the best.

Alumni Update



Annelle Amsellem

Annelle Amsellem '17 never stopped pursuing her desire to become a physician. She engaged the assistance of the college's newly invigorated Health Professions Advisory office, and Dr. Mika Vesanen helped make this a possibility for Annelle. Annelle was accepted to NYIT College of Osteopathic Medicine in 2021 and feels that all of the HPA's services were invaluable for her successful admission to the school.



James Clark (left) and Philippe Soriano

Dr. James Clark left Queens College in 2018 after completing his doctoral degree from the Graduate School of CUNY with Dr. Cathy Savage-Dunn as mentor. He is currently a postdoctoral fellow in Dr. Philippe Soriano's laboratory at the Icahn School of Medicine at Mt. Sinai. In the Soriano lab, he is working to tease apart the intricacies of Fibroblast Growth Factor (FGF) signaling in embryonic development using mouse facial morphogenesis as a model. Clark is right in his element. While in the Savage-Dunn lab, he studied another signaling pathway, the insulin signaling pathway in another genetic model, *C. elegans*. Signaling pathways are the ways that cells respond to the presence of extracellular "signals" to activate a series of intracellular reactions and stimulate downstream events like cell growth, division, or morphological change. Clark is using a combination of genetic engineering, biochemistry, and proteomics to identify as yet unknown environmental factors that stimulate this developmental pathway.

Clark speaks fondly of his time at Queens College, saying it was a wonderful learning experience. "The varied fields of work and knowledge of the faculty, as well as the strong sense of collegiality, provided a vital bedrock for my future work."



Carlos Peñaloza

Dr. Carlos Peñaloza '05 was appointed chancellor of the University of Hawaii's - Leeward Community College, the largest community college and second largest higher education institution in the state. Born and raised in Venezuela, Carlos benefited from the mentorship of many as he progressed through his education and career.

Peñaloza joined Dr. Zakeri's lab through an undergraduate research program at Queensborough Community College (QCC). Upon completing his associate degree at QCC, he transferred to Queens College to complete his bachelor's degree in biology. Ultimately, Peñaloza was awarded the PhD from the CUNY Graduate School's Doctoral Program in Biology Subprogram in Molecular, Cellular, and Developmental Biology. While Peñaloza set his goals to earning a medical degree, his experience doing research with Zakeri contributed to his increasing commitment to support underserved populations in STEM, resulting in shifting his goals toward the professorate. Peñaloza has presented and published his scientific and academic work nationally and internationally. He is a member of Sigma Xi and serves as board member for various organizations. Carlos is an evaluator for various accrediting bodies and has been a recipient of numerous fellowships and grants.

Carlos has been fortunate professionally; he served as science faculty and progressed to hold other titles including Dean, Vice Chancellor, Provost and currently Chancellor, each time increasing his capacity to support students in achieving greater success. At Leeward Community College, he serves a very diverse student population, with close to 30% of the student body identifying as Native Hawaiian; a population currently underserved in most academic areas. His personal and professional focus has been to strengthen the student life cycle to promote students' success and upward financial mobility.

Carlos met his wife Fiorella ('09,'11) at Queens College, they married in 2010 and have 4 children: Damian, Julian, Isabel

and Elizabeth. They reside in Hawaii, are both biologists, worked with Dr. Zakeri, and remained in higher education.



Fiorella Peñaloza

Dr. Fiorella Peñaloza '09,'11 is a senior academic research officer at the University of Hawaii System Institutional Research, Analysis, and Planning Office where she supports system-wide planning efforts.

Fiorella worked in Zakeri's lab through undergraduate and graduate research programs at Queens College and City College. She benefited tremendously from the research and mentorship experience, earning a BA in biology; MA in molecular, cellular, and developmental biology; and a Doctor of Management in organizational development and change. Her experience doing research with Zakeri contributed to her professional goals to support educational research and advancement of underrepresented students, steering her into academia. Prior to her current role, Fiorella served as science faculty and director of institutional effectiveness and assessment. She serves as a board member for various organizations and is an evaluator for several regional accrediting agencies.

Fiorella met her husband, Carlos (see above), at Queens College while working with Zakeri.

Faculty Notes 2020

This section highlights national and international scholarly activities of Biology Department faculty members in 2020 as well as noteworthy Queens College and CUNY events and recognition. Many scholarly activities were severely curtailed by the pandemic. Along with in-person teaching, access to Queens College research facilities was denied or severely limited for most of the spring and summer months. Scholarly conferences, seminars, and other opportunities for oral presentations moved to virtual modes. Poster presentations at conferences, an extremely valuable forum for discussing one's science with colleagues, did not occur. Despite all of this, Biology faculty advanced their research. This is clearly a testament to their dedication to their fields and to science.



Saima Cheema

SAIMA CHEEMA was named the first director of the college’s new health science minor of the Division of Math and Natural Sciences. This program was designed to help students achieve their goal of pursuing

the health professions. Included are classes across the division with the intention of providing targeted advice and mentoring for the growing number of students pursuing careers in the health professions. None of the majors offered by departments in the division currently include all the classes needed for admission to post-graduate health professions programs. The development of this minor fills this need. Since the founding of the minor in fall of 2019, Cheema has advised over 250 students, and over 40 students have already completed their degrees with the minor.



John Dennehy

JOHN DENNEHY received three grants to study the SARS-CoV-2 virus and COVID-19 transmission in metropolitan areas.

The National Science Foundation’s Division of Environmental Biology awarded Dennehy \$200,000 for “Metapopulation Modeling to Develop Strategies to Reduce COVID-19 Transmission in Public Spaces.” This proposal combines mathematical models and *in situ* experiments to better understand how SARS-CoV-2 spreads in built environments, such as classrooms and offices.

He also received \$357,255 from the NYC Department of Environmental Protection Project to investigate “Phylogenomic and Socioeconomic Correlates of COVID-19 Transmission in NYC.” This award supports the monitoring of SARS-CoV-2 in wastewater streams of NYC to determine virus prevalence in NYC communities and detect the appearance of new SARS-CoV-2 variants. A Qiagen Next Generation Sequencing Award of \$20,000 will further support this project.

In addition, the National Institutes of Health’s National Institute of Allergy and Infectious Diseases awarded Dennehy \$275,000 for “Novel Strategies for Treating Biofilm-Forming Pathogens with Phage Therapy.” The aim of the proposed work is to assess the viability of a multi-pronged

phage therapy approach to eliminate biofilm-associated bacteria by employing prophages contained within the genomes of pathogenic bacteria.

Dennehy gave several virtual presentations in different venues. He spoke on, “A SARS-Cov-2 Vaccine Candidate Would Likely Match All Currently Circulating Variants” for the American Society for Microbiology’s Virtual Journal Club. He discussed “Testing for COVID-19,” in CUNY TV’s *Simply Science* program, “Learning About COVID-19 with John Dennehy” on the QC Podcast Lab, and “Coronavirus: Are We Back Where We Started?” on Gimlet Media’s Science Vs podcast. Finally, he presented, “What Does SARS-CoV-2 Evolution Mean for the Future of the Pandemic?” for an alumni event, “At Home with Queens College.”



Andrew Greller

ANDREW GRELLER is actively doing field studies on Long Island. His reports of novel species and photographs were published in *Shoreprint*, the newsletter of the Long Island Mycological Club:

Greller, A., 2020 “Sand *Laccaria*’s” *Sporeprint* **28**(1):5.

Greller, A., 2020. “*Cryptoporus volvatus interior*” and “*Megacollobybia rodmanii*.” *Sporeprint* **28**(2):8.

Greller, A., 2020. *Leucoprinus cretaceus* (new to Long Island; Basidiomycetes, Agaricales, Agaricaceae). *Sporeprint* **28**(3):6.

Greller, A.M., 2020. *Rectipilus* sp. (new to Long Island; Basidiomycetes). *Sporeprint* **28**(3):6.

Greller was the plant sciences judge in round one of Long Island Science & Engineering Fair (LISEF) held on February 5 at the Crest Hollow Country Club in Woodbury, Long Island. Also, he was invited to submit five framed images of Long Island natural history to the Four Harbors Audubon Society’s photography exhibition, “A Valentine for Whitman’s Paumanok.” The exhibition was at the Bates House in Frank Melville Park, Setauket, New York from February 15–20.



Dr. Alicia Meléndez

ALICIA MELÉNDEZ was honored this year with a Graduate Center of CUNY Mentoring and Teaching Award for her noteworthy work with the many doctoral students who have carried out their thesis

research under her direction. The award recognizes her “long-term commitment to students at all stages of graduate research.” Meléndez’ significant contribution as a research scholar was also acknowledged by serving on the DEV2 Study Section, a National Institutes of Health grant review panel, and by being asked to serve in the *Caenorhabditis* Genetics Center (CGC) Advisory Committee. The CGC is the international repository of all *Caenorhabditis elegans* strains, and its objective is to promote research on this small metazoan, by acquiring, maintaining, and distributing genetically characterized strains. Studies in this small nematode have led to fundamental insights into basic biological programs, such as programmed cell death, the discoveries of microRNAs, and RNAi interference, as well as basic underlying mechanisms of human development, cancer progression, and aging.

Meléndez was awarded a third consecutive renewal of her NIH R15 grant to continue her studies on “Autophagy in germline development.” This study aims to explore the role of autophagy— a cellular pathway by which cytoplasmic components are recycled – in the control of stem cell proliferation, the repair of DNA damage, and maintenance of genome integrity. Autophagy has been previously associated with aging and cancer, as well as with several neurodegenerative diseases. Thus, any insights on the molecular mechanisms involving autophagy are likely to advance our understanding of the signaling pathways relevant to cancer, aging, and age-related disorders.



Corinne Michels

CORINNE MICHELS, along with her husband Harold Michels, continued their efforts to advance public information regarding the anti-microbial activity of copper alloy surfaces. Their article,

“Can copper help fight COVID-19?” appeared in *ADVANCED MATERIALS & PROCESSES*, the magazine of ASM International (<https://bit.ly/3qvqpGI>). The Michels recommend the expanded use of copper alloys in public spaces to reduce the spread of COVID-19 and minimize future pandemics. They also oversee a website for the Antimicrobial Copper Action Network (<https://www.amcopper.com/>) where anyone from private citizen to research scientist can go to learn about copper alloy surfaces and how they can reduce the spread of infections due to bacteria, viruses, and fungi.

Michels is also an active member of the Board of Trustees of the Science Museum of Long Island, a STEM education center for children. Her most significant effort has gone into chairing the Grant Writing Committee. In 2020, she and a team of fellow board members raised over \$66,000 from a variety of foundations. Most significant was an award from the Long Island Sound Futures Fund for “Green Infrastructure at the Leeds Pond Preserve and Science Museum to Improve Water Quality in Long Island Sound.” The project will design and install green infrastructures, such as rain gardens and bio-swales, to control storm water runoff on Leeds Pond Preserve, the home of the Science Museum of Long Island, located on Manhasset Bay along the north shore of Long Island.



Maral Tajerian

MARAL TAJERIAN received an NIH Score grant of \$457,215 for “Hippocampal Extracellular Matrix Regulates Glia-Neuron Crosstalk after Injury.” Tajerian will investigate how the extracellular

matrix regulates brain plasticity in the context of chronic pain.

Her laboratory research is complemented by public outreach efforts exemplified by her initiative to write a book on chronic pain, its study and treatment, as well as its cultural and societal implications. She is a CUNY Faculty Fellowship Publication Program fellow where the design and execution of her writing project will be facilitated within a writing group in the spring 2021 semester.



Mika Vesanen

MIKA VESANEN heads the newly established Post-Baccalaureate Medical Career Preparation Certificate Program created for individuals who wish to change careers or pursue additional studies to

become health professionals. The courses provide a pathway for those with non-health related bachelor’s degrees to enter the medical field. Because previous academic training can be very varied, the program provides individualized advising and tutoring services coupled with rigorous academics, training for the appropriate standardized tests, and assistance in applying to competitive health professional schools. The program is designed to be completed in two years of full-time study. For more details, check out the website at https://www.qc.cuny.edu/Academics/certificates/Medical_Career_Preparation/Pages/Default.aspx.



John Waldman

JOHN WALDMAN received a grant of approximately \$55,000 from the Hudson River Foundation for “Calibrating eDNA Signals for Restoration of Alewife Runs Under Highly Controlled Field Conditions.” The work

will contribute to population and conservation studies on local alewife. Waldman presented his work, done in collaboration with S.C.Chin and L. Alter, at the Hudson River Foundation Ames Seminar. The talk was entitled, “Environmental DNA Assessment of Biodiversity, Abundance & Phenology of Hudson Estuary Fishes.” In celebration of World Fish Migration Day 2020, Waldman spoke on “The Historical Decline if Freshwater-Sea Migratory Fishes” for the Rivers Full of Fish Webinar of the World Fish Migration Foundation.



Daniel Weinstein

DANIEL WEINSTEIN was appointed Dean of the School of Mathematics and Natural Sciences of Queens College. His colleagues in the Biology Department are very happy to have him in this role and are

confident that he will be an outstanding advocate for the needs of the Division. At the same time, the department is sad to see him step out of his many departmental roles, including teaching the first semester of our introductory biology for majors courses, Bio 105. Weinstein still maintains an active research presence and mentors several research students in his laboratory.



Zahra Zakeri

ZAHRA ZAKERI continued in her roles as director and principal investigator of the MARC (Maximizing Access to Research Careers) program at Queens College and as president of the

International Society for Cell Death. The latter had planned a meeting in South Africa that ultimately was cancelled because of the pandemic. Several of the MARC students graduated and moved into high-ranking doctoral programs, such as Johns Hopkins and the University of Washington. During the summer of 2020, since the MARC students could not undertake summer internships at other schools as they would normally have done, she organized and directed an online program for the students. It was received very well and she earned high praise. Zakeri also served as an advisor to a team of virologists from several institutions in New York to develop a rapid test for Covid-19. The team was ultimately awarded funds from the National Science Foundation.

Zakeri is a participant on a newly awarded five-year NIH grant for \$1,646,075 entitled, Bridges to the Baccalaureate Research Training Program at LaGuardia Community College. Her work on two other continuing training program grants continues. The NIH MARC Undergraduate Student Training in Academic Research at Queens College is based at Queens College and supervised by Zakeri. The other is in collaboration with the Queensborough Community College Bridges to Baccalaureate Program.

Faculty in the News 2020

JOHN WALDMAN and his former doctoral student **George Jackman, PhD** were highlighted in a *New York Times* Op-Ed article, “It’s Fish vs. Dams, and the Dams Are Winning” <https://www.nytimes.com/2020/01/20/nyregion/its-fish-vs-dams-and-the-dams-are-winning.html?action=click&module=News&pgty=Homepage>. Waldman is the author of “Running Silver: Restoring Atlantic Rivers and Their Great Fish Migrations.” In the article, he is quoted to say, “Small dams are everywhere, and many of them just persist through inertia. Until recently, no one had the wherewithal or energy to take these things down.” Well, Waldman and Jackman, who now works at Hudson Riverkeeper, have taken them on.

There are reportedly about 2,000 dams in the Hudson River watershed between New York City and Albany, NY. They were originally constructed to supply energy to the multitude of small factories that dotted the Hudson’s tributary streams. These factories are long-gone and more reliable energy sources are available to residents. Today, the dams serve little purpose, but they block migrations of important fish species and harm river ecology.



John Waldman, showing Kinneytown Dam in the background

As part of this ongoing campaign to eliminate obstructions to the free movement of fish in our rivers, **John Waldman** has become a

grass roots activist to target particularly grievous sites. The Naugatuck River Revival Group, which was established to highlight the failures of the Kinneytown Dam, is described by Waldman in a recent opinion piece: <https://www.ctpost.com/opinion/article/Opinion-Let-the-Naugatuck-River-run-silver-again-15775749.php>. A fish ladder had been installed alongside this Connecticut Dam in 1998 and rebuilt in 2014, but Waldman and other conservationists clearly demonstrated that this Band-Aid is simply not working. The river once hosted tens of thousands of spawning shad and river herring annually. In recent years, just zero to a few fish passed Kinneytown Dam. The dam blocks the free flow of fish up the Naugatuck River, keeping them from 35 miles of spawning grounds

in which six other dams have been breached or bypassed, while generating an insignificant amount of electricity.



Senator Richard Blumenthal and John Waldman at the Naugatuck River Revival Group event.

Their efforts recently received the support of Connecticut Senator Richard Blumenthal who attended a press conference at the dam and promises “to mobilize the entire Connecticut [federal] delegation” to make the repair of this river happen (https://www.wfsb.com/news/senator-environmentalists-push-for-improvement-of-kinneytown-dam/article_8d10c63e-492c-11eb-8fa2-9f08f7b66bc2.html?block_id=994091). The video on this website provides an excellent overview of the situation. The Naugatuck River Revival Group would prefer that the dam be entirely removed. Let’s see.

QUEENS COLLEGE SCIENCE DONATES TO COVID RELIEF EFFORT



College COVID-19 relief supplies

In spring of 2020, as the first wave of COVID-19 overwhelmed New York City hospitals and a critical need for personal protective equipment (PPE) developed among the city’s first responders, the college science departments stepped up to the challenge. They donated a treasure trove of supplies to the New York City Office of Emergency Management: N-95 masks, 30 unopened cases of disposable nitrile gloves, disposable lab coats, and bottles of 70% isopropyl alcohol used in hand sanitizers. This event was covered by WINS news and other media: the Queens Borough President’s webpage (<https://bit.ly/2QUoqiG>) and the *Queens Chronicle* (<https://bit.ly/3rDZDvX>).

Daniel Weinstein, dean of Mathematics and Natural Sciences, expressed gratitude to everyone involved with this effort. The biology donors included

PoKay Ma and **John Dennehy**. **Mika Vesanen** and **Travis David** consolidated biology supplies in anticipation of eventual need. The need became achingly evident as the first wave tore at the city.

Biology Faculty Scholarship 2020

URL links are provided articles available online or published only online.

(^Ddoctoral student, ^Mmasters student, ^Uundergraduate student, ^{2BA}second BA student, ^Ppostdoctoral student)

BOOK CHAPTERS, REVIEW ARTICLES:

Greller, A.M., 2020. Memories of Rich [Kelly]. *Long Island Botanical Society Newsletter* **30**(1):4.

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An, Z., A. Ballabio, L. Bennett, B. Boya, F. Ceconi, W.C. Chiang, P. Codogno, M. I. Colombo, A. M. Cuervo, J. Debnath, V. Deretic, I. Dikic, K. Dionne, X. Dong, Z. Elazar, L. Galluzzi, F. Gentile, D. E. Griffin, M. Hansen, J. M. Hardwick, C. He, S. Y. Huang, J. Hurley, W. T. Jackson, C. Jozefiak, R. N. Kitsis, D. J. Klionsky, G. Kroemer, A. J. Meijer, **A. Meléndez**, G. Melino, N. Mizushima, L.O. Murphy, R. Nixon, A. Orvedahl, S. Patingre, M. Piacentini, F. Reggiori, T. Ross, D. C. Rubinsztein, K. Ryan, J. Sadoshima, S. L. Schreiber, F. Scott, S. Sebti, M. Shiloh, S. Shoji, A. Simonsen, H. Smith, K. M. Sumpter, C. B. Thompson, A. Thorburn, M. Thumm, S. Tooze, M. I. Vaccaro, H. W. Virgin, F. Wang, E. White, R. J. Xavier, T. Yoshimori, J. Yuan, Z. Yue, Q. Zhong, 2020. Beth Levine in memoriam. *Autophagy* **16**: 1559-1583. <http://doi.org/10.1080/15548627.2020.1787721>

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^POwen, M. A. and **D. C. Lahti**, 2020. Rapid evolution by sexual

selection in an invasive mammal. *Evolution* **74**:740-748. <https://doi.org/10.1111/evo.13934>

^MGomez de la Torre Clavel, M. G., M. Youngblood^D, and **D. Lahti**, 2020. Relationship between personality and cognitive traits in domestic rabbits (*Oryctolagus cuniculus*). *bioRxiv* <https://doi.org/10.1101/2020.10.12.336024>

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^DMadaan, U., L. Faure, A. Chowdhury, S. Ahmed, E.J. Ciccarelli^D, T.L. Gumienny, and **C. Savage-Dunn**, 2020. Feedback regulation of BMP signaling by *Caenorhabditis elegans* cuticle collagens. *Molecular Biology Cell* **31**:825-832. *authors contributed equally

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^UJabeen, S., J. Landazuri, S. Nagvenkar, B. Czuj, A. Maghsoudi, M. Javdan, M. Entezari, R. A. Lockshin, and **Z. Zakeri**, 2020. TLR4 sex dimorphism correlates with sex dimorphic phagocytosis in primary macrophages *Ital J Gender-Specific Med* **6**(3):100-106. <http://doi:10.1723/3432.34214>

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**Graduation Award
Honorees and Degree
Recipients 2019–2020**

BIOLOGY GRADUATION HONOREES

Donald E. Lancefield Award – Mordechai Caplan, Shmuel Kassirer, Sam Roth Laura A. and Arthur L. Colwin Prize – Nanami Kubota

Charles Darwin Prize – Israel Weiss Muriel and Philip Feigelson Award – Donna Episcopio

The criteria for the department’s graduation prizes and awards are presented here so that you can fully appreciate the excellence recognized by these awards.

- the Donald E. Lancefield Award for excellence in biology, to be awarded to the biology major with the highest grade-point average;
- the Darwin Prize for the biology major with the second highest grade point average who has demonstrated an interest in research;
- the Laura H. and Arthur L. Colwin Prize for excellence in undergraduate research, to be awarded to a biology major who is not a pre-professional student;
- the Muriel & Philip Feigelson Award

to a graduating senior majoring in biology who has done the best undergraduate research and has also demonstrated outstanding academic achievement.

BACHELOR'S DEGREE RECIPIENTS

*HH – with High Honors in Biology;
H – with Honors in Biology;
HMNS – Honors in Math & Natural Sciences Program member;
MHC – Macaulay Honors College, CUNY graduate;
Presidential Scholar (3.9 GPA),
Provost Scholar (3.75 GPA),
Dean's List Scholar (3.5 GPA for two consecutive semesters);
ΦBK – Phi Beta Kappa, the national honor society.

**College-wide awards detailed in "Student Highlights."

Samia Afrin
Alia Ahmed – H
Katherine Alegre
Kelvin Arhire Thomas
Gregory Baroutsos – HH
Sadieann Bassaragh
Samira Bassirou Hamadou
Heather Beadle
Eden Benlulu – H
Dominika Bielak – H
Tiffiney Bissoon
Natalie Buchan
Marc Calidonio – H, Dean's list
Marvin Campos – H
Mordechai Caplan – HH, ΦBK,
Presidential Scholar, Lancefield Award
Taryn Castillo
Inhye Cho
Anna Choo
Richa Choudhary
Wen-Chi Chuang – H
Michael Corsillo – H
Corey Darnell
Samuel Desire
German Diagama
Brittani Dileo
Husam Din
Andrew Edwards
Donna Episcopio – HH, MHC, ΦBK,
Presidential Scholar, Feigelson Award
Bilal Farooq
Tianhui Gao – H
Emmanuel Garcia – H, Dean's List
Scholar
Nadia Ghulam – H

Jasmine Gildon
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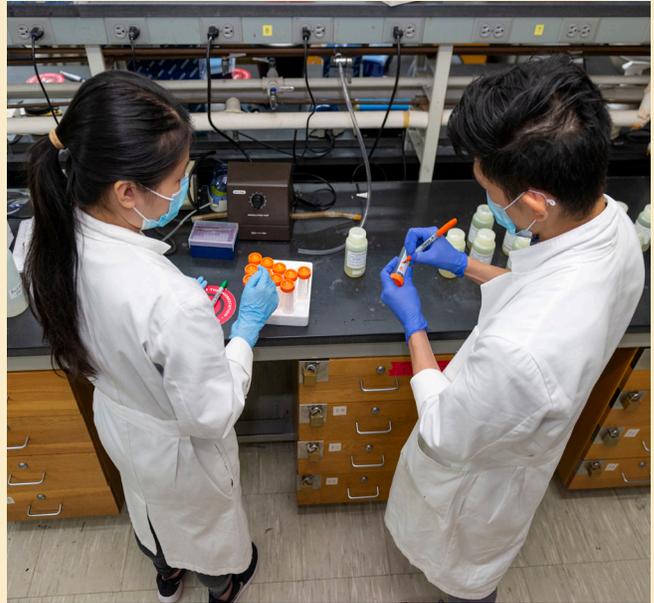
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In fiscal year 2020, 42 alumni donated \$7,288.00. This past year, there were many worthy charitable causes to consider. Your gift has a particularly special meaning for us and is viewed as a vote of confidence in the Biology Department. Thank you and we hope everyone is doing well.

Very special thanks go to Julius G. Mendel '52 and Harris Taylor '61 for their very generous gifts. No matter the amount, your donations are greatly appreciated.

As in usual times, these funds support undergraduate student research, provide supplements to undergraduate student graduation awards (Lancefield Award, Darwin Prize, Colwin Prize, Feigelson Award), and support other student-centered special events. We hope to return to normal educational activities in the near future. In particular, we hope to be able to support student attendance at scientific conferences, an invaluable experience that has been an impossibility this year.

If you do not already contribute, please tell us what we can do to inspire you to do so. We are sincerely interested in your comments and suggestions (Corinne.Michels@qc.cuny.edu).



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