BIOLOGY CURRENTS

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Message from the Chair: John Dennehy

John Dennehy

As the chair of the Biology Department at Queens College, it is my pleasure to reach out to you and update you on the latest news and developments in our department as we returned to a fully in-person modality for the 2022–2023 academic year.

First and foremost, I hope this letter finds you well and thriving in your personal and professional lives. As you know, our department has a rich legacy of producing top-notch graduates who have made significant contributions to various fields. We are proud of your accomplishments and are always eager to hear about your successes. Please let us know what you have been up to.

Our department continues to evolve and grow, and we have had our share of ups and downs over the past year. Sadly, we said goodbye to one of our most cherished colleagues, CLT César Castillo, who suddenly passed away on March 1, 2023. Normally, events that take place in 2023 will be reported in the next edition of *Biology Currents*, but we felt we would be remiss in not informing biology alumni at this time. Thus, with heavy hearts, our thoughts and prayers are with César's family at this time.

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QUEENS COLLEGE | CUNY

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On a more positive note, our department received several large grants to update our infrastructure in the past year. Through the efforts of Representative Grace Meng, John Dennehy was awarded $1,850,000 in Congressional Community Project Funding to establish a Wastewater Epidemiology Training Laboratory (WETLAB) at Queens College. Cathy Savage-Dunn and colleagues were awarded an NSF Major Research Instrumentation award in the amount of $570,000. The two awards provide a much needed injection of funds to advance departmental research and student training through the purchase of cutting-edge microscopes and other scientific instruments after years of state and city imposed austerity.

Another measure of our success is the mention of faculty in the national media. John Waldman published several opinion-editorials including "Once an Open Sewer, New York Harbor Now Teems With Life. Thank the Clean Water Act." *The New York Times*, Op-Ed page. December 30; "Echoes of Oceans Past." *The New York Times*, Op-Ed page. September 27; "Let's Save America's Atlantic Salmon." *The Hill*. September 10; "Welcome Back Sharks—Really." *New York Daily News*, Op-Ed page. July 31.

The work of John Dennehy was also featured in the pages of *The New York Times,* in articles titled, "Tracking viruses can be tricky" and "In New York City Sewage, a Mysterious Coronavirus Signal." We are glad that our faculty are getting the widespread recognition that they so deserve.

As a valued member of our alumni community, we invite you to stay connected with us and be a part of our ongoing efforts to advance the field of biology. We would love to hear from you about your experiences and how your education in biology has helped shape your career and your life. Finally, I want to express my gratitude for your continued support of our department. Your contributions, both past and present, have helped us to maintain our position as a leading institution in the field of biology. We look forward to working with you and staying connected in the years to come.

In Memoriam: Chief CLT César Castillo dies suddenly

César Castillo enjoying a fossil hunt at Caumsett State Park in June 2018.

The Queens College community mourns the loss of César Castillo, a treasured member of the Biology faculty who passed away on March 1. A memorial event was held for him on campus March 8.

Castillo was four years old when he immigrated to New York from Colombia. His parents were Nelsy and Roland Echevarria. César's experience at Queens College was transformative, allowing him to recover part of the life he left behind.

"My love of natural history probably stems from early memories of being in my grandmother's backyard in Colombia," he would write in a post for QC's Facebook page during Hispanic Heritage Month 2020. "Coming to the US took me away from nature until I reached college. My mentors reintroduced me to nature, and I was transformed from someone who thought going to forests was for native-born citizens to someone who spends a lot of time in nature."

After earning a bachelor's degree and then a master's in paleobotany—fossil leaves—Castillo shared his talents with his alma mater, becoming a lab technician and an adjunct. His life revolved around QC in another way. Continuing to take courses for his own enrichment, he met his wife, graduate student Wendy Perez, in a class on wetlands. He would later tell her that he found her the most beautiful in the field, wearing waders. Because he didn't have a ring at the time, he proposed by giving her an orchid; they married in 2009. In a touching ritual, they posed for a photo every year in front of one of the campus's magnolia trees with their growing family—three children, now 11, 7, and 3.

Since Castillo's death, tributes have poured in from students and colleagues who describe him as a gentle, loving soul who created peace wherever he went. He was celebrated on campus and beyond as a naturalist, birder, and NYC Audubon director who enjoyed helping everyone—particularly people from underserved and diverse New York City communities—appreciate the world around them. Megan Marchica, a student with low vision, recalled that Castillo enabled her to see hummingbirds for the first time, feeding in a patch of jewelweed. Rose Chin-Hong (Biology) noted that in iNaturalist.org, Castillo holds the top position for the most observed bird species in both New York City and New York State; during the pandemic lockdown, he took up urban mothing.

César Castillo, on right holding the tripod, with David Lahti on an ornithology class field trip to Breezy Point in March 2016.

In a metaphor Castillo might have appreciated, his close colleague Professor Jon Sperling (Biology) called him a "keystone person" who greatly enriches the social environment he shares with others, the way the presence of a keystone species in small numbers enriches the biodiversity of its environment. "César Castillo was the 'real thing,'" Sperling concluded.

A GoFundMe site **https://www.gofundme.com/f/support-wendy-a-sudden-widow-and-mother-of-3** has been set up to help the bereaved Castillo family.

César Castillo, back to the camera, leading a 2016 ornithology class field trip to Forest Park.

Student Highlights of the 2021–2022 Academic Year

BIOLOGY DEPARTMENT GRADUATION HONOREES

We are pleased to report on the special honors earned by Biology Department students. The **List of Graduates** section lists those who received college honors for achieving excellent grade point averages. In this section, we highlight Biology Department and college-wide awards received at graduation and over the course of their college careers, college programs in which they participated, as well as the award-winning research 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 2021–2022 GRADUATION HONORS:

ELANA ALYASZADEH-COHEN received the Biology Department's Donald E. Lancefield Award.

AASTHA BUDHATHOKI received the Pearl Foster MD Scholarship Fund. This scholarship is awarded to a lower junior majoring in the biological sciences. Recipients must have an outstanding academic record and be involved in community activities, particularly issues related to women in science, women's studies or history, and/or studies related to marginalized communities. Aastha is doing a library masters thesis under the mentorship of John Waldman.

JAMES FREIRE received an award from the Dana Seidman/Magnus Hedenlund Endowed Scholarship Fund. This fund provides a tuition scholarship up to the amount of a New York State resident's tuition to an incoming high school senior with an average of 90 or above who demonstrates financial need and is enrolled as a full-time Queens College student. The scholarship can be granted to the same student annually so long as the student maintains a GPA of 3.7 or above and graduates within four years. James also received a Raymond L. & Susan Held Scholarship. He was a participant in the Queens College Freshman Honors Program.

ERIN GAL was one of the Biology Department's most honored graduates in 2022. She was the recipient of an Adele Gottschalk Memorial Scholarship Endowment Fund Scholarship for students pursuing the pre-med curriculum. The scholarship is awarded in recognition of a strong academic record and demonstrated exemplary character through volunteerism or assistance in the care and nurturing of others.

Erin received a number of prestigious college-wide awards. She was awarded a Dr. Peter Chabora Scholarship in 2020 in the fall of her junior year. Chabora Scholarships are awarded to student majoring in biology who have demonstrated financial need. Erin came to the U.S. from Korea as a young child without her parents and lived with her aunt until the age of 18 when she decided to live independentaly. Erin supported herself by working in a dental office in Flushing and also volunteered for the New Life Community Health Center Pediatric Dental Outreach at Elmhurst Hospital. COVID-19 closed the center but Erin continued her volunteer work remotely.

Erin also was awarded tuition scholarships from the following: the Raymond Taylor QC Scholarship, which was established in honor of former Provost Ray Taylor upon his retirement, and the Freda Stern Johnson Scholarship, which provides an annual scholarship for up $2,500 to students in their sophomore or junior year who demonstrate financial need. Erin was an Esther's Book Fund recipient.

CHAYA GORDON was the recipient of an Adele Gottschalk Memorial Scholarship Endowment Fund Scholarship for students pursuing the pre-med curriculum. The scholarship is awarded in recognition of a strong academic record to someone who demonstrated exemplary character through volunteerism or assistance in the care and nurturing of others.

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BIOLOGY DEPARTMENT GRADUATION HONOREES

Donald E. Lancefield Award:
Elana Alyaszadeh-Cohen

Laura A. and Arthur L. Colwin Prize:
Shyanon Rai

Charles Darwin Prize:
Choumeizi Liu, Syedo Tabassum

Muriel and Philip Feigelson Award:
Amirabbas Maghsoudi

Criteria of excellence recognized by the Biology Department 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 and Philip Feigelson Award, to a graduating senior majoring in biology who has done the best undergraduate research and has also demonstrated outstanding academic achievement

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Chaya's academic achievements were recognized by seven college endowment funds offering scholarships awards. The funds and a description of their purpose are as follows:

- the Raymond L. & Susan Held Scholarship, which is awarded to students who demonstrate financial need and have a minimum GPA of 3.0;
- the Beth Lieberman Pre-Med Scholarship Fund, which is awarded to students who are registered with the Health Professions Office and have maintained an excellent academic record in the sciences;
- the John S. & Yorka C. Linakis Scholarship, which is granted to worthy Queens College undergraduate students based on merit, financial need, and a keen interest in the betterment of their communities;
- the Mitarotonda Scholarship Endowment for the Sciences and Business that is awarded to a junior or senior majoring in science or business with a GPA of 3.0 or higher and is in financial need;
- the Ira Spar MD Scholarship Endowment Fund, an annual scholarship for up to two years awarded to a pre-med student registered with the Health Professions Advisory Services Office and who intends to pursue a career in medicine;
- the Joyce Warren Scholarship, which provides financial assistance to an economically needy undergraduate Queens College student with a demonstrated interest in issues related to women; and
- the Dana Seidman/Magnus Hedenlund Endowed Scholarship Fund that provides a tuition scholarship up to the amount of a New York State resident's tuition to an incoming high school senior with an average of 90 or above who demonstrates financial need and is enrolled as a full-time Queens College student. The Seidman/Hedenlund scholarship can be granted to the same student annually so long as the student maintains a GPA of 3.7 or above and graduates within four years.

When first arriving at Queens College, Chaya participated in the Freshman Honors Program. As can be seen from her many awards and scholarships, she continued to maintain an outstanding academic record throughout her Queens College career. Chaya is currently in her second semester of Medical School in MSIH Ben Gurion University in Israel. Her biology mentor, Sebastian Alvarado, reports that she is doing very well and is happy to be at Ben Gurion University.

CHOUMEIZI LIU is a recipient of the Biology Department's Charles Darwin Prize, sharing this award with Syedo Tabassum. Choumeizi was honored with the Herbert and June Bienstock Memorial Scholarship for a graduating student who has demonstrated a commitment to academic excellence as well as to fostering a campus of equal access and opportunity to all members of the Queens College community.

AMIRABBAS MAGHSOUDI won this year's Biology Department Muriel and Philip Feigelson Award. Amirabbas's research was done under the mentorships of Zahra Zakeri and Maral Tajerian. His research focused on the effects of extracellular matrix biomechanics on glial morphology and function. He is an author on one publication and on several presentations at local and national science conferences:

Sidra Jabeen, Joselyn Landazuri, Sonia Nagvenkar, Bart Czuj, Amirabbas Maghsoudi, Mohammad Javdan, Maria Entezari, Richard A. Lockshin, Zahra Zakeri. *TLR4 sex dimorphism correlates with sex dimorphic phagocytosis in primary macrophages. The Italian Journal of Gender-specific Medicine*. 2020. (https://www.gendermedjournal.it/archivio/3432/articoli/34214/)

Amirabbas spoke on his work in Maral Tajerian's laboratory on the "Role Of Extra Cellular Matrix In Brain Plasticity In Context Of Pain Chronification," at the 54th Annual Metropolitan Association of College and University Biologists (MACUB) Conference at Queensborough Community College. He was an author on several poster presentations on work done in the Zakeri laboratory: "Comparison of the response of primary murine macrophages and microglia upon exposure to pesticide" and "How different cells respond to zika virus infection," both at the 51st Annual MACUB Conference at Queensborough Community College, and "Comparison of the response of primary murine macrophages and microglia upon exposure to pesticide" and "How different cells respond to zika virus infection," both presented at the Annual Biomedical Research Conference for Minority Students (ABRCMS).

Amirabbas is completing his post-baccalaureate program at the NIH vaccine research center. He expects to complete this program in 2024.

SHYANON RAI received the Laura H. and Arthur L. Colwin Prize. Shyanon's research was done under the mentorship of John Dennehy. She worked on monitoring SARS-CoV-2 variants in New York City's wastewater as part of a COVID-19 pandemic response program led by the NYC Departments of Environmental Protection and Health and Mental Hygiene. Shyanon also participated in the Transfer Honors Program.

Shyanon is now a Research Associate at NYU Langone's Genome Technology Center.

MILVIA PAI VALENZUELA participated in the Transfer Honors Program.

SYEDO TABASSUM is a recipient of the Biology Department's Charles Darwin Prize, sharing this award with Choumeizi Liu.

GRADUATE DEGREES (2021–2022):

The department is pleased to report that participation in our master's degree programs is increasing. Two categories of Master of Arts degree are offered to biology students: a coursework MA degree and a research MA degree. The research MA requires fewer course requirements but requires the student to write and defend a thesis that is based on either a literature review of a specific topic or their laboratory research in a mentor's lab. An increasing number of students are choosing the laboratory research option.

MICHAEL J. ACQUAOTTA earned a research master's degree and did his thesis work in the John Dennehy laboratory. His thesis title is "Isolation and Characterization of *Klebsiella pneumoniae* Bacteriophages from Environmentally Collected Animal Feces."

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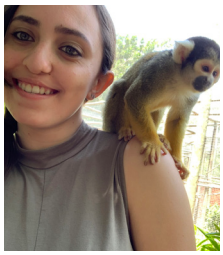
Michael is a science teacher at Business Technology Early College High School in Queens.

COSMIN S. BARBOS received a coursework master's degree under the guidance of Mika Vesanen.

QURRATULAIN BEGUM received a research master's degree working with her thesis mentor, Pokay Ma. The title of her master's thesis is "Alkaline Phosphatase Histochemistry and Calcein Incorporation in Regenerating Fish Caudal Fin."

Qurratulain is currently preparing herself to apply to medical school.

KEVIN C. BERNARD received a coursework master's degree under the supervision of Mika Vesanen. After graduating from Queens College, Kevin was appointed to the NYC Public Health Laboratory as director of molecular surveillance. He leads a team of scientists sequencing and tracking outbreaks of food-borne, water, and environmental pathogens. The group works closely with the CDC to track a number of pathogens in the wastewater including polio.


Angelinna Bradfield

ANGELINNA A. BRADFIELD earned a research master's degree and did her thesis work with David Lahti. The title of her master's thesis was, "Predictors of Mammalian diversity and Coyote and Free-ranging Cat Distribution in the New York Metropolitan Area."

She is first author of a peer-reviewed publication listed in the Faculty Scholarship section: Bradfield *et al*., 2022. Predictors of mammalian diversity in the New York metropolitan area. *Frontiers in Ecology & Evolution* 10:903211. doi:10.3389/fevo.2022.903211.

More publications are in the planning stages. This year, Angelina is applying to physician's assistant programs.

LIBIA A. GARCIA received a coursework master's degree under the supervision of Esther Muehlbauer.

CHRISTELLE G. NEMB received a coursework master's degree under the guidance of Mitchell Baker.

OTHER NOTABLE STUDENT ACTIVITIES OF 2021–2022:

AMANDA GOLDSTEIN (MA'21) was first author on a publication of her thesis: Goldstein, *et al*. 2022. "Avian diversity and land use along the Bronx River." *Urban Naturalist* 50.

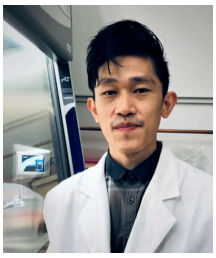
MALEHA MAHMUD's master's thesis was published: M. Mahmud *et al*., 2022. "A longitudinal assessment of Benthic macroinvertebrate diversity and water quality along the Bronx River." *Northeastern Naturalist* 29:415-440. DOI:10.1656/045.029.0403.

David Musheyev

DAVID MUSHEYEV ('21) was selected as a City University of New York Jonas E. Salk Scholar, which comes with an $8,000 scholarship for the pursuit of a degree in medicine or biomedical research. The Salk Scholars program was established at The City University of New York in 1955 in honor of Dr. Jonas E. Salk, who developed the first successful anti-polio vaccine. At that time, Salk, a City College graduate, turned down the mayor's offer of a ticker tape parade and asked instead that the funds be used to help support outstanding City University students seeking careers in medicine or medical research. A Salk Scholarship is one of the most prestigious awards bestowed upon a CUNY graduate.

David conducted research in the Dennehy Lab and was a co-author on a published article listed in the Faculty Scholarship section of this issue: Kannoly et al. 2022. A single-cell approach reveals intercellular heterogeneity in phage production capacity. *Microbiology Spectrum*. https://journals.asm.org/doi/epub/10.1128/spectrum.02663-21

David will attend SUNY Downstate Medical School in the fall.


Kaung Myat

KAUNG MYAT "ZACH" SAN (BA '17, MA '19) was admitted to Des Moines University College of Medicine. Zach conducted research in the Dennehy Lab and was a co-author on three published articles listed in the Faculty Scholarship section of this issue and another published in 2021.

- Trujillio et al. 2021. Protocol for safe, affordable, and reproducible isolation and quantitation of SARS-CoV-2 RNA from wastewater. *PLOS ONE* https://doi.org/10.1371/journal.pone.0257454
- Smyth et al., 2022. Tracking cryptic SARS-CoV-2 lineages detected in NYC wastewater. *Nature Communications*
- Gregory, et al. 2022. Genetic diversity and evolutionary convergence of cryptic SARS-CoV-2 lineages detected via wastewater sequencing. *PLoS Pathogens*.

GABRIELLA OKEN ('21) was admitted to the University College Dublin School of Veterinary Medicine in Ireland. Gabby conducted research in the Dennehy Lab and was a co-author on: Kannoly et al. 2022. A single-cell approach reveals intercellular heterogeneity in phage production capacity. *Microbiology Spectrum*: https://journals.asm.org/doi/epub/10.1128/spectrum.02663-21

MASON YOUNGBLOOD (PhD '21) published another chapter of his doctoral thesis research: Youngblood, M. P. and D. C. Lahti, 2022. Content bias in the cultural evolution of house finch song. *Animal Behaviour* 185:37-48. Mason is currently a postdoctoral fellow at the Max Planck Institute.

Professor Zahra Zakeri retires

Zahra Zakeri

Zahra Zakeri received her PhD from St. John's University and continued as a post-doctoral fellow and associate research scientist at Columbia University College of Physicians and Surgeons. She taught at the Robert Wood Johnson Medical School before moving to Queens College, from which she retired as professor of biology and director of the Maximizing Access to Research Careers (MARC).

MARC aims to direct talented disadvantaged students to succeed in biomedical sciences. While at QC, Zakeri reviewed and selected MARC-related proposals for the National Institutes of Health (NIH). She soon started a campaign to get an award for QC, a big challenge since at the time Queens was not considered to be a minority-serving institution. But Zakeri persisted. Finally, in 2004, Queens was awarded its first MARC award. Under this program, over 100 students successfully earned their degrees and moved on to outstanding careers. The grant renewed five times, running for 18 years until the program goals were redefined, eliminating Queens College from consideration, which ironically, coincided with Zakeri's retirement.

From the start of her career and continuing until her retirement, students flocked to Zakeri's lab. She directly mentored over 150 students, including five post-doctoral fellows, 12 doctoral students, 15 masters students, and more than 80 undergraduates. Her research has touched on cell death, stress and heat shock genes, ceramide and sphingomyelin, autophagy and phagocytosis, cell death in development and aging, cyclin-dependent kinases, the role of apoptosis in teratogenicity, viral manipulation in cell death, and the role of genetic sex on sensitivity to cell death. She co-edited several books, including two volumes of *Methods in Enzymology*. She has published over 125 scientific papers (including two in 2022), with a few more on the way.

She served on numerous grant review panels in the U.S., Ireland, Italy, Belgium, Israel, South Africa, Canada and Iran; on several editorial boards; and as a reviewer for many journals. She was a co-founder of the first Gordon Conference on Cell Death (2010) and of the International Cell Death Society, of which she is the current president. She has organized meetings nationally and in ten countries. She is also the organizer of Scientists Without Borders for Education, providing educational services to underdeveloped countries. She has organized and spearheaded discussions and meetings for Women in Science and has always been an advocate for support of women and young scientists.

At her farewell MARC meeting, several individuals expressed their view of her in writing or in person, and friends from many countries sent their best wishes.

To mention a few:

"The welcome, warmth, and charm you exuded had a way of disarming even the most reserved attendees and enticing them into our family of 'death' researchers. Additionally, there are many generations of students…"—Vishva Dixit (Vice President for Research, Genentech)

"Your contributions to the cell-death field have been invaluable as a researcher, as a meeting organizer, and as a cheerleader for the field. Your friendship has been special."—H. Robert Horvitz (Nobel Laureate, 2002)

"What a fortunate young assistant professor I was to attract you and your talents to my lab! You were then, and have continued to be, a productive and creative scientist. You made seminal contributions to my lab's research, but importantly, you continued this pattern upon establishing your own research. Notably, you have truly led the field of cell death in new and sustainable directions."—Debra Wolgemuth, Professor, Columbia University School of Medicine

Faculty Portrait: John J. Dennehy

By Uldis Roze

The coronavirus pandemic burst upon the world in 2019, with the emergence of a new virus (now called SARS-CoV-2) in Wuhan, China, where it killed the doctor who first raised the alarm. With air travel, the virus rapidly spread across the continents, arriving in the US in early 2020 and growing to pandemic proportions. The world's pharmaceutical companies quickly developed and tested potential vaccines to fight the disease. FDA emergency approval for a few came by the end of the year. One of the main difficulties encountered in quelling the spread of this virus is the high rate of mutation in RNA viruses like SARS-CoV-2. Any methodology that enhanced our ability to track the spread of new variants would be a welcome weapon.

John Dennehy at the QC Biology Department joined the battle. His laboratory was well-suited for the task. The laboratory had been studying bacteriophage–bacteria interactions: the coevolution between bacterial hosts and their viruses, viral ecology and host selection, and the emergence of new virus variants. The pandemic shut down most activities involving close human contact, but Dennehy's lab soldiered on.

The coronavirus mutated to produce more virulent strains as shown by sequencing of variants isolated in clinics. But the process was slow, expensive, and sampled a small fraction of patients.

Dennehy saw his chance to contribute. He reasoned that COVID patients shed their viruses in two ways: from the nasopharynx by sneezing, coughing, and simple breathing, and from the gut. The viral load in the stool is flushed down the toilet and carried to the waste treatment plant, where it is treated and ultimately released into the ocean. Sampling the wastewater discharge would sample the viral load of every person in the sewershed. New viral variants would be picked up weeks before they showed up in clinical testing. Dennehy began wastewater sampling in June 2020.

The effort did not go unnoticed. On Aug.17, 2022, *The New York Times*

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published a story about the process: "Wastewater Disease Tracking: A Photographic Journey From the Sewer to the Lab."

Dennehy also co-authored a scientific paper on his findings in the Feb. 3, 2022 issue of Nature Communications: https://www.nature.com/articles/s41467-022-28246-3.

Wastewater samples were collected at biweekly intervals from all 14 New York City wastewater treatment plants. As expected, the data showed the presence of the classic SARS-CoV-2 variants of concern: Omicron, BA1, BA2, but also novel virus variants not picked up in clinical testing. The novel variants were geographically restricted—they did not show up in all 14 wastewater effluents. And as the pandemic waned and the viral load in the wastewater decreased, the fraction of unknown lineages increased proportionately.

Dennehy and his colleagues hypothesized that the unknown variants may have come from animals such as rats or from immunocompromised patients with persistent COVID-19 infections. Subsequently, in a surprising finding at the University of Wisconsin, one cryptic variant was traced back to a business with 30 employees, thus ruling out animals as a likely source. Since the initial discovery, data showing that immunocompromised patients with persistent COVID-19 infections were indeed the source of highly mutated SARS-CoV-2 variants was published. These patients' immune systems were too weak to fully clear the virus, but were sufficient to drive virus evolution. Thus highly vaccine-resistant and monoclonal antibody-resistant variants were generated. It is believed that the Alpha and Omicron variants of concern originated from persistent infections of immunocompromised patients.

Dennehy earned his PhD at Clark University, spent a postdoctoral fellowship at Yale, and joined QC in 2007, rising to full professor in 2018. While the coronavirus pandemic brought him research opportunity, it also brought personal pain. Dennehy is deaf and "hears" people by reading lips. When face masks arrived, the voices around him grew silent. Now with the success of the vaccines and the waning of COVID, the masks are coming off, but John appreciates the ability to have Zoom meetings with live captioning.

Dennehy does not think the COVID story is over. He cautions that viruses have very high mutation rates, because their genomes are small, the generation times short, the populations large, and their nucleic acid replication processes often lack proofreading. The best defense will probably require development of broad-range antivirals and continued scientific watchfulness. Dennehy continues to work with NYC Health + Hospitals Corporation, which runs NYC's public hospitals, to monitor SARS-CoV-2 as well as other pathogens such as Mpox, influenza (including avian influenza), and polio.

On an October 2022 visit to Dennehy's lab, Congresswoman Grace Meng presented him with a $1,850,000 facsimile check in federal funding for the Dennehy Wastewater Epidemiology Training Laboratory (WETLAB). John Dennehy stands between President Wu on his right and Grace Meng on the left, surrounded by members of his lab and Dean of Science and Mathematics Weinstein on far right.

Graduation Award Honorees and Degree Recipients 2021–2022

BACHELOR'S DEGREE RECIPIENTS (SUMMER 2021—SUMMER 2022)

HH – with High Honors in Biology
H – with Honors in Biology
HMNS – Honors in Math and Natural Sciences Program member
MHC – Macaulay Honors College
College honors: *Summa Cum Laude* (3.9 GPA), *Magna Cum Laude* (3.75 GPA), *Cum Laude* (3.5 GPA)
ΦBK – Phi Beta Kappa, the national honor society

Idris Abedin
Priya Ahmed
Hiam Alahry
Ifraz Ali – H, *Cum Laude*
Antonio Alvarado
Chelsea Alvarado
Elana Alyaszadeh-Cohen – HH, ΦBK, *Summa Cum Laude*
Mohammad Ayaz – H
Huma Ayaz
Youssef Azzam
Akram Bahabishi
Parbinder Bains
Michael Baker
Stephanie Balkaran
Jeana Barenboim – HH, ΦBK, *Cum Laude*
Richard Batista – H, *Cum Laude*
Shah Begum – H
Adila Bhatti – H, *Cum Laude*
Abbiegayle Black
Safiya Black
Annamaria Brijmohan
Rebecca Bruckenstein
Aastha Budhathoki
Hassan Butt
Marta Candia Franco – H, *Cum Laude*
Theresa Cardoz
Adila Cekic
Risa Chang
Gege Chen
Chin Yik Cheong
Christopher Chow – H, *Magna Cum Laude*
Ramisa Chowdhury
Fu Yan Chua – H, *Cum Laude*
Joseph Costanzo
Kevin Daniliuk – HH, *Cum Laude*
Thomas Defelice
Andres Diaz – H
Ariana Dominguez-Hernandez
Ruben Durandis
David Elyasi – HH, *Magna Cum Laude*
Melani Elyasi – HH, *Magna Cum Laude*
Giuliana Estrella Perez
Alex Figura – HH, *Cum Laude*
James Freire – H
Aadam Gafur – HH
Erin Gal – HH, ΦBK, *Summa Cum Laude*
Andy Gao – *Cum Laude*
Shadi Ghannoum
Chaya Gordon – H, *Cum Laude*
Dave Grand-Pierre – H, *Cum Laude*
Charles Grice
Matthew Hackett
Ruth Han
Cristal Hernandez
Nancy Hernandez
Timmy Huo
Laissa Innocent
Catherine Jacob
Thanny Rosenika Jacquet
Leslie Jarrett
Quangao Jin
You Lim Kang
Nour Karonboch
Marwa Karra
Navneet Kaur – *Cum Laude*
Mark Khan
Marie Kharlamenko
Malka Kichikova – H, *Cum Laude*
David Kim – H
Daniella Kohler – H, *Cum Laude*
Dale Kowlessar – H
Christie Laferriere
Mohammed Lal
Reana Lamptey
Kimberly Levy – H, *Cum Laude*
Choumeizi Liu – HH, ΦBK, *Summa Cum Laude*
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Catherine Martinez
Rhema Matcha – H, *Cum Laude*
Karina Medina
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Chelsea O'Neill – H
Yerin Park – H, *Cum Laude*
Prema Patiram
Mellisa Pedreros
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Milvia Pai Valenzuela – HH, *Magna Cum Laude*
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Liz Rojas – H, *Cum Laude*
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Fariha Tasmin – H
Duvasini Tulsi
Kevin Wang
Zachary Wing – H (Biology and Mathematics), *Cum Laude*
Chaeyoung Yuu – H, *Cum Laude*
Jasmine Zic

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Cosmin S. Barbos
Qurratulain Begum
Kevin C. Bernard
Angelinna A. Bradfield
Libia A. Garcia
Christelle G. Nemb

Biology Faculty Scholarship 2022

([D]doctoral student, [M]masters student, [U]undergraduate student, [PD]post-doctoral student)

BOOKS:

Moretto, L., **J. L. Coleman**, C. M. Davy, M. B. Fenton, C. Korine, and K. J. Patriquin (eds.) 2022. *Urban Bats: Biology, Ecology, and Human Dimensions*. Cham, Switzerland: Springer. Pp. 190. ISBN-13: 978-3031131721

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Biology Alumni Fund Donations FY 2022

In fiscal year 2022, 25 of our alumni donated $20,075. An additional $1,000 was donated by the Queens College Auxiliary Enterprise Association, a not-for-profit grouping of college-based enterprises such as the food services, bookstore, and parking decals that function for the benefit of the college students, faculty, and staff. Each year, a portion of their profits are donated to funds held by the Queens College Foundation. This year, the Biology Department received their donation.

The past few years have been very difficult for everyone. Your gift has a special meaning for us. There are so many worthy charitable causes where you can contribute; we are pleased that you have made this vote of confidence to the Biology Department. Thank you, and we hope everyone is doing well. No matter the amount, your donations are greatly appreciated.

Very special thanks go to Elissa B. Koff (Class of ’60) for her extremely generous gifts. Professor Koff, please contact us as we would like to thank you personally. We are sincerely interested in hearing from you and would like to update our readers about your current activities (**Corinne.Michels@qc.cuny.edu**).

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. In particular, we hope to be able to support student attendance at scientific conferences, an invaluable experience that has been an impossibility this year.

Donors can contribute to the **Biology Alumni Fund** as well as to the **Biology Alumni Endowment Fund**. The Endowment Fund was created by the Biology Department as a relatively stable funding source for the department’s student educational enrichment goals. Contributions to the Endowment Fund earn interest that is available to fund student enrichment as described above. The rate varies, but it is currently 4.5%.

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