AMERICAN MUSEUM ☉ NATURAL HISTORY

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September 2022

AMERICAN MUSEUM OF NATURAL HISTORY'S RICHARD GILDER GRADUATE SCHOOL CONFERS PH.D. AND MASTER OF ARTS IN TEACHING DEGREES

GRADUATES INCLUDE 13 NEW EARTH SCIENCE TEACHERS AND FOUR DOCTORAL GRADUATES IN COMPARATIVE BIOLOGY

MUSEUM GRANTS HONORARY DEGREES TO PHILANTHROPIST AND BUSINESS LEADER THEODORE A. MATHAS, LEADING EPIDEMIOLOGIST DONALD ROSWELL HOPKINS, AND PIONEERING MINERALOGIST ROBERT MILLER HAZEN

On Wednesday, September 14, the American Museum of Natural History held its ninth commencement under the iconic blue whale in the Milstein Hall of Ocean Life, conferring Ph.D. in comparative biology and Master of Arts in Teaching (MAT) Earth science degrees.

The Museum's Richard Gilder Graduate School houses two graduate programs, the Ph.D. program in comparative biology and the Master of Arts in Teaching Earth science residency program. In 2008, the first cohort of students enrolled in the comparative biology program, the first and only freestanding Ph.D. degree-granting program to be offered at any museum in the Western Hemisphere. The Museum's MAT program began in 2011 as the first freestanding museum-based master's degree program to prepare science teachers in the United States.

"In these volatile, uncertain times there can perhaps be no higher calling than to pursue science and education as our new graduates do — to pursue science's next frontiers, to teach young people to be curious and full of wonder about the world around us, to push back against misinformation, and, ultimately, to offer hope through reason, truth, learning, and discovery," said Museum President Ellen V. Futter. "The

Gilder Graduate School is uniquely suited to our time when so many of our most pressing challenges—climate change, emerging disease, species and habitat loss—sit at the intersection of science and society. We proudly send our young scientists and science teachers out into a world that needs their expertise, skills, creativity, and energy more than ever."

This year's commencement celebrated four doctoral graduates in comparative biology. They are among **40 Richard Gilder Graduate School doctoral graduates to date, who are employed in science, academic, education, and museum careers**, including at prestigious natural history museums such as the Smithsonian National Museum of Natural History, the French National Museum of Natural History, and the Swedish Museum of Natural History; the National Park Service; numerous universities and colleges such as the City University of New York and the New Jersey Institute of Technology; and the Audubon Society.

In addition, the commencement recognized 13 MAT graduates, all of whom have already begun their teaching careers in high-needs public schools. Since the MAT program began, it has prepared 152 Earth science teachers, reaching approximately 68,000 students in high-needs schools in New York City and across the country. This year, RGGS MAT graduates make up approximately 50 percent of the certified Earth science teachers in New York City.

Theodore A. Mathas, New York Life chairman of the board and retired chief executive officer and Museum Trustee, was honored with the Doctor of Humane Letters *Honoris Causa* degree for his exemplary service and contributions to science advocacy, education, and society as a philanthropist and business leader.

"The American Museum of Natural History's commitment to supporting talented, passionate individuals dedicated to studying the world and universe around us, preserving the past, and helping to evolve our knowledge and understanding is critical to our advancement of society and humanity not just for today, but for future generations. It's humbling to receive this honor from such an iconic and venerable institution," said Mathas.

Donald Roswell Hopkins, special advisor for Guinea worm eradication and former vice president for health at The Carter Center, whose influential work as an epidemiologist contributed to the eradication of smallpox and the near-eradication of Guinea worm disease, received the degree Doctor of Science *Honoris Causa* in light of his expertise and leadership in parasitology, tropical disease epidemiology, and global public health and his work against pervasive health scourges in some of the most disadvantaged places on the planet.

"I've dedicated my life's work to improving global public health, including working on the 2015 *Countdown to Zero: Defeating Disease*, a powerful exhibition produced by The Carter Center and the Museum to educate visitors of all ages about disease eradication. The impact of institutions like the Museum that are training the next generation of scientists and working to increase scientific and public health literacy is hard to overstate. I extend my thanks to the Richard Gilder Graduate School at the Museum for this honor," said Hopkins.

Robert Miller Hazen, senior staff scientist at Carnegie Institution's Earth & Planets Laboratory and Clarence Robinson professor of Earth sciences, *Emeritus,* at George Mason University, was honored with the Doctor of Humane Science *Honoris Causa* degree for his work as a pioneering mineralogist who revolutionized the study and classification of minerals and has strived to foster a more holistic, integrated, and powerful understanding of Earth and life on our planet. His novel approach has shaped the emerging fields of mineral ecology and mineral evolution, which are represented in exhibits in the Museum's new Allison and Roberto Mignone Halls of Gems and Minerals.

"Museums change people's lives. I know because the American Museum of Natural History changed mine. As a 10-year-old boy growing up in northern New Jersey, the AMNH amazed, thrilled, and inspired me with a love of the natural world that shaped my career. To return to this magnificent institution at this point in my journey, to see the way it still inspires millions of people—young and old—is a dream come true," said Hazen.

The Richard Gilder Graduate School draws on the Museum's world-renowned collections, distinguished faculty, and tradition of globe-spanning expeditions for its innovative Ph.D. program in comparative biology, which covers the origins, history, and range of life on Earth. Under the leadership of Senior Vice President and Provost of Science Cheryl Hayashi and Dean John J. Flynn, the Museum's graduate school community also includes postdoctoral scholars, undergraduate summer researchers, and graduate students in longstanding collaborative Ph.D. programs with partner universities that include the City University of New York, Columbia University, Cornell University, New York University, and Stony Brook University.

This year's doctoral graduates carried out a range of significant research. **Richard Benjamin Sulser** focused his studies on the evolution of the mammal sensory system and how it responds to ecological transitions. Among living mammals, the enigmatic family of hedgehog-like African mammals known as tenrecs contains an exceptional range of sensory specializations. His research examined the neuroanatomy and genomics underpinning this disparity using a holistic approach.

Maggs X focused on understanding how changes to the genome influence complex traits in vertebrates, working to determine how genomic changes over evolutionary time influence reproductive modes in pit vipers. Although reptiles are widely known as egg-layers, many have live birth. Maggs X's research employed whole-genome sequencing, gene family analyses, and modern statistical models to determine how suites of genes that are associated with female reproductive modes evolved across the snake phylogeny.

Johannes Sebastian Neumann examined Placozoa—among the simplest animals on Earth—reconstructing their relationships to each other and to other animal groups, providing the first complete classification for any multicellular animal phylum, and investigating their and genetic and reproductive responses to stresses of starvation or injury. For his research, Neumann collected specimens through fieldwork in aquatic and coastal environments on five continents.

James Gaspare Napoli studied uncertainty and the understanding of variation in the dinosaur fossil record. Non-avian dinosaurs dominated land ecosystems for more than 160 million years, achieving an extraordinary diversity of species, ecologies, and shapes, and sizes. Interpretation of dinosaur fossils is deceptively difficult, though, due to their rarity and variation within and across species. In addition to naming and describing new dinosaur species in detail, Napoli developed a novel approach to address these points of uncertainty, offering a different avenue for interpreting variation among fossil specimens and yielding exciting insights into dinosaur evolution.

Shaped by the Museum's longstanding practice of teacher professional development as well as by its educator and scientific faculty, the 15-month MAT Earth science residency program is a full-time, fully funded fellowship focused on the preparation of teachers of Earth science to students in Grades 7 through 12. The program offers courses in both pedagogy and the physical and paleontological sciences as well as immersive classroom experience in residencies in high-needs schools at the program's partner schools in New York: Bronx Early College Academy for Teaching and Learning; Midwood High School in Brooklyn; Hunters Point Community Middle School in Queens; South Bronx Preparatory; and Roosevelt High School in Yonkers. The MAT program was authorized as a degree-granting program by the New York State Department of Education as part of an effort to address a critical shortage of qualified science teachers in New York State and is accredited by the Council for the Accreditation of Educator Preparation (CAEP), the only museum-based educator preparation program to receive CAEP accreditation. In 2019, the Museum received a five-year grant from the Teacher Quality Partnership (TQP) federal initiative to expand the MAT program to enroll additional candidates each year, with the goal of preparing more highly-qualified and diverse cohorts of Earth science teachers, the second consecutive TQP grant awarded to the program. In that same year, the National Science Foundation awarded the Museum a six-year grant for the preparation and ongoing professional support of the program's 8th and 9th cohorts.

Under the leadership of Lisa Gugenheim, director of the Museum, the MAT program is co-directed by Linda Curtis-Bey, senior director of education and director of the Gottesman Center for Science Teaching and Learning, and Rosamond Kinzler, senior director of science education and director of the Museum's National Center for Science Literacy, Education, and Technology, in partnership with Museum educator faculty and scientists in the Divisions of Physical Sciences and Paleontology and Richard Gilder Graduate School administration.

Graduating from the Museum's MAT program are **Thomas Centeno, Kirsten Breanna Farmer, Gavin Guild, Eleanor Everest Johnson, Lenee Mason, Dawn G. McCullough, Camryn McGrath, Nicole Denise Muñoz, Troy Jay-Alexander Parish, Hannah Park, Cristina Marie Russo, Xue Weng,** and **Celina Wong.**

A commitment to public education and academic training has been an essential part of the Museum's mission for more than a century, and the Museum continues to offer a broad range of learning opportunities including camps and workshops, public programs, and courses for adults and education professionals. In winter 2023, the Museum will open a new facility, the Richard Gilder Center for Science, Education, and Innovation, which will include the most comprehensive addition and modernization of educational space in decades. These purpose-built and converted classrooms are designed to meet the specific needs of formal education, as well as the needs of family and adult learners. These new spaces include the Josh and Judy Weston Middle School Learning Zone, the High School Learning Zone, and the College and Career Readiness Zone, with adjacent renovated spaces in the existing Museum complex creating the Michael Vlock Family Learning Zone and a Teacher Learning Zone for educators. These classrooms will allow the Museum to serve students and teachers in new ways that align with national educational standards and offer high-quality science, technology, engineering, and math (STEM) learning relevant to today's students and tomorrow's workforce.

American Museum of Natural History (amnh.org)

The American Museum of Natural History, founded in 1869, is one of the world's preeminent scientific, educational, and cultural institutions. The Museum encompasses more than 40 permanent exhibition halls including in the Rose Center for Earth and Space and the Hayden Planetarium, as well as galleries for temporary exhibitions. The Museum's scientists draw on a world-class permanent collection of more than 34 million specimens and artifacts, some of which are billions of years old, and on one of the largest natural history libraries in the world. The Museum's website, digital videos, and apps for mobile devices bring its collections, exhibitions, and educational programs to millions around the world. Visit amnh.org for more information.

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