GRADUATION RESUMES UNDER THE ICONIC BLUE WHALE

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

**GRADUATES INCLUDE NEW EARTH SCIENCE TEACHERS FOR HIGH-NEEDS SCHOOLS AND
DOCTORAL GRADUATES IN COMPARATIVE BIOLOGY**

**MUSEUM GRANTS HONORARY DEGREE TO VISIONARY ASTROPHYSICIST
AND SIMONS FOUNDATION PRESIDENT DAVID N. SPERGEL**

On Thursday, October 14, the American Museum of Natural History held its eighth 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 residency degrees. The annual ceremony returns to the Museum after the 2020 ceremony was postponed due to the COVID-19 pandemic.

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. This marks the 13th year since 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.

The commencement celebrated four doctoral graduates in comparative biology, and to date, the Richard Gilder Graduate School has graduated **36 doctoral graduates,**

who are employed in science, academic, education, and museum careers, including at the Smithsonian National Museum of Natural History, Royal Ontario Museum, National Park Service, California Academy of Sciences, City University of New York, and the Audubon Society. The Museum's MAT program recognized 30 graduates, all of whom are currently teaching. Since the MAT program began, **it has prepared 139 Earth Science teachers who are now teaching more than 14,000 students in high-needs schools and cumulatively, more than 55,000 students in high-needs schools have benefitted from MAT graduate teachers.**

Throughout the COVID-19 pandemic, the Richard Gilder Graduate School continued to prepare and support degree candidates and alumni during this challenging time. Students in the comparative biology Ph.D. program continued their coursework and research, tapping into the Museum's collections of more than 34 million specimens and artifacts — a resource that proved invaluable by providing critically important samples when travel restrictions curtailed global fieldwork. MAT program faculty expanded the modeling and instruction of online teaching strategies to respond to the rapid migration to remote education in schools and used a variety of technologies to create virtual field trips for participants. In 2020, 14 new MAT graduates began their teaching careers in high-needs schools, most in remote-learning settings due to the pandemic.

In recognition of his innovative research and extraordinary contributions to science, education and society, the Museum also recognized **David N. Spergel,** an eminent astrophysicist whose work has deepened understanding of the age, shape, and composition of the universe and who now serves as the president of the Simons Foundation, with a Doctor of Science *Honoris Causa* degree.

"We graduate our scientists and science teachers at a unique and unprecedented moment for science and education into a world that needs them urgently," said Ellen V. Futter, President of the American Museum of Natural History. "Though we are emerging from the pandemic, we continue to see distrust of science and the distortion and misuse of science for political and non-scientific ends. This Museum, its work and

mission, and the Richard Gilder Graduate School stand as essential antidotes for these conditions."

Prior to his current role as president of the Simons Foundation and as director emeritus at its Flatiron Institute, David N. Spergel held a faculty appointment at Princeton University for more than 30 years, where he chaired the department of astrophysics. He also served as a member of the NASA Advisory Council and as chair of the National Academy of Sciences' Space Studies Board, sharing his expertise with Congress and other policymakers. He has earned numerous honors including the 2018 Breakthrough Prize in Fundamental Physics, NASA's Exceptional Service Medal, and a MacArthur Fellowship. Spergel is a Legacy Fellow of the American Astronomical Society, Fellow of the American Academy of Arts and Sciences and the American Physical Society, an honorary member of the National Society of Black Physicists, and a member of the National Academy of Sciences.

"David Spergel is not only an accomplished scientist, he meaningfully cares about the plight of other scientists and their institutions — a rare combination of brilliance and leadership that sets him apart from all others in my field," said Neil deGrasse Tyson, the Frederick P. Rose Director of the Hayden Planetarium.

"David Spergel's contributions to modern cosmology and advocacy for science have extended far and wide, including here at the Museum, where he has advised on the foundation of the Museum's Department of Astrophysics, exhibits in the Rose Center for Earth and Space, and on the Hayden Planetarium Space Show *Dark Universe*," said Mordecai-Mark Mac Low, curator-in-charge of the Department of Astrophysics at the American Museum of Natural History. "For his many contributions to the field, we are extremely grateful for his extraordinary colleagueship and his continued support as we recognize him today with the degree of Doctor of Science *Honoris Causa*."

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. **Alexandra Buczek** focused her studies on the response of Southern Californian coastal marine mollusk communities to climate change approximately 3 million years ago, during which the Earth experienced a major warming analogous to modern climate change. Using only samples that she collected in the field, Buczek investigated whether precise numerical ages could be assigned to the geological units, compared the utility of two alternative paleo-temperature reconstruction methods, and determined the environmental factors that drove the spatial distribution of marine mollusks across three marine basins during this interval of substantial climate change, providing insights into potential responses of modern ecosystems to future climate warming. Buczek also engaged a diverse group of urban high school students in the Museum's Lang Science Program. **Melissa Ingala** examined how symbiotic gut microbes — the microbiome — facilitated the ecological radiation of New World bats, particularly with respect to their diets. Using samples she collected on three expeditions to Belize, she uncovered evidence that bats may rely on their gut bacteria to fulfill critical nutritional gaps in their diets. Exemplifying the unique fieldwork opportunities of the Museum's Ph.D. program, Ingala also organized and led a collaborative expedition to the Tahuayo River near Iquitos, Perú to survey a diverse community of Amazonian bats. **Kaiya Provost** studied population genomics of North American warm desert birds, incorporating a wide variety of techniques in her research, including genomics, geometric morphometrics, bioinformatics, and bioacoustics, in addition to conducting behavioral surveys and specimen collection during field work throughout Arizona, Texas, and New Mexico. Provost also honed her skills as an educator as the Scientist in

Residence for 5th grade girls at the Spence School. **Lukas Musher** researched how avian biodiversity arose and accumulated in the Neotropics, combining phylogenomics, biogeography, population genetics, and statistical modeling to better understand the origins and assembly of bird communities. His research included field work to the Southwestern United States as well as to the Amazon – the most diverse terrestrial ecosystem and biome on the planet – where he collected many new specimens and documented bird diversity along the Roosevelt River in Brazil.

Shaped by the Museum's longstanding practice of teacher professional development as well as by its educator and scientific faculty, the 15-month MAT degree 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 at high-needs schools, including 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 Earth science teachers, the second consecutive TQP grant awarded to the program. In the 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, who were recognized at today's ceremony.

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.

Graduates from the Museum's MAT program included the following 15 individuals from the 8th cohort, who completed the program in August 2020: Ethan Carotti, Jose Garcia-Villar, Lauren Humphreys, Madison Huscher, Florence Laplaca, Jaiwantie Manni, Nicolle Martinez, Kellie O'Grady, Trishna Ramsamooj, Sonya Riccio, Marlo Romero, Anny Sainvil, Olivia Santangelo, Mackenzie Ulrop and Erick Wright. Those graduating from the 9th cohort, who finished the program in 2021 included: Ian Burns, Shaolin Censullo, Brian Coakley, Isabelle Cristescu, Nicholas Franzen, Anna Maria Jack, Kate La Spina, Anjelle Martinez, Rocio Martinez, Daniel Mollitor, Madison Pancake, Andy Peterson, Julie Rozen, Noah Salwen, and Justin Schneider.

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. In addition to graduate degree programs and other university-level training programs, the Museum's offerings extend from early childhood through adulthood in the form of camps and workshops, public programs, and courses for adults and education professionals. Since the start of the pandemic, the Museum also has offered a rich array of COVID-19 public education programming, efforts that are continuing as the experience of the pandemic and its impact evolves.

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 the Allison and Roberto Mignone Halls of Gems Minerals which opened in 2021 — and those 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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