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**WORLDS BEYOND EARTH, A NEW HAYDEN PLANETARIUM SPACE SHOW,
OPENS JANUARY 21 AT THE AMERICAN MUSEUM OF NATURAL HISTORY**

**NARRATED BY ACADEMY AWARD WINNER LUPITA NYONG'O, NEW SHOW FEATURES
A STUNNING EXPLORATION OF WORLDS THAT SHARE OUR SOLAR SYSTEM**

Featuring immersive visualizations of distant worlds, groundbreaking space missions, and breathtaking scenes depicting the evolution of our solar system, the American Museum of Natural History's new Hayden Planetarium Space Show, [*Worlds Beyond Earth*](#), will open January 21, 2020, using a new planetarium projection system that is the most advanced in the world, and is part of the Museum's 150th anniversary celebration. *Worlds Beyond Earth*, narrated by Academy Award winner **Lupita Nyong'o**, takes viewers on an exhilarating journey that reveals the surprisingly dynamic nature of the worlds that orbit our Sun and the unique conditions that make life on our planet possible.

"In the past 50 years, humankind's ability to travel through and study our solar system has increased exponentially with the advent of robotic spacecraft, and we have learned much about our neighboring planets – how they were formed and what they are like today," said Ellen V. Futter, President of the American Museum of Natural History. "As with our previous, enormously popular Space Shows, *Worlds Beyond Earth* is a feat of science visualization, built on real data and research, and now dazzlingly showcased through the Hayden Planetarium's new cutting-edge projection system. We can think of no better way to celebrate the thrilling state of space science today as well as the Museum's 150th anniversary of bringing the world and the universe to our visitors."

While humans have yet to walk on another world beyond the Moon, *Worlds Beyond Earth* celebrates the extraordinary Age of Exploration carried out by our closest proxies, robotic explorers, over the past 50 years. Created by an award-winning team that includes Museum

scientists, educators, and science visualization experts, *Worlds Beyond Earth* is an immersive theater experience based on authentic data from NASA, European Space Agency (ESA), and Japan Aerospace Exploration (JAXA) missions, telescopes, supercomputer simulations, and research conducted at institutions around the globe. Viewers will be taken on an adventure across the solar system, from our Moon and planetary neighbors Mars and Venus to beyond the asteroid belt, where worlds of ice and gas like Saturn and Jupiter host moons revealing active weather, erupting volcanoes, and buried oceans.

“Our ability to render these distant worlds is nothing short of astonishing, thanks to past and current space missions and the data they provide,” said **Carter Emmart**, the Museum’s director of astrovisualization and the director of *Worlds Beyond Earth*. “We’re not making anything up here. The height, color, and shapes we see come from actual measurements. In the Space Show, you see these beautiful objects as they actually are, to the best of our abilities.”

This is the first Hayden Planetarium Space Show that will “land” audience members on other worlds in our solar neighborhood, reconstructing actual events at specific locations, including a landing on the gray, cratered surface of the Moon, which viewers will reach by following an Apollo launch out of Cape Canaveral and the subsequent landing of the Lunar Module “Falcon,” carrying the first Lunar Roving Vehicle; and the liquid methane lakes of Saturn’s moon Titan, an almost Earthlike but extremely cold world 1.4 billion kilometers away, illuminated by ESA’s Huygens probe, launched from NASA’s Cassini spacecraft. Visualizations based on 13 years of data from NASA’s Cassini spacecraft will show viewers Saturn’s impressive, swirling rings as never before: bubbling with moonlets – house-sized baby moons – that form through a process that scientists think may parallel planet formation in the solar system. In addition, audiences will encounter one of Jupiter’s many moons, Io, which is the most volcanically active object in the solar system despite being covered by ice; Europa, another Jupiter moon with more liquid water beneath its icy crust than all of the oceans on Earth; Comet 67P, a frozen object traveling between the inner and outer solar system that the ESA’s Rosetta spacecraft chased for 10 years; and the dry and dusty landscape of Mars, based on high-resolution global maps from NASA’s Mars Reconnaissance Orbiter, Mars Global Surveyor, and ESA’s Mars Express.

“I don’t think many people realize just how much we, as the human race, have seen of our solar system,” said *Worlds Beyond Earth* curator **Denton Ebel**, a curator in the Museum’s Department of Earth and Planetary Sciences and chair of the Division of Physical Sciences. “But

we are out there, via these incredibly complex and successful spacecraft, and what we're learning about our unique place in it is surprising and also a bit sobering."

For example, as *Worlds Beyond Earth* audiences will see, NASA's Magellan mission to Earth's "twin" planet, Venus, revealed a world that once may have had conditions very similar to our planet's but today has a surface hot enough to melt lead because of its long-term buildup of greenhouse gases. Sending spacecraft to explore Venus deepened scientists' understanding of global warming and illuminated that pumping carbon dioxide into our own atmosphere leads to rising temperatures and threatens civilization on Earth. In contrast, our other solar neighbor, Mars, is freezing cold. Exploration reveals that Mars' once-plentiful water supply and active volcanoes created conditions for life but that they didn't last long, as demonstrated in a dramatic simulation of Mars' surface evolution. The Red Planet's core cooled quickly, causing its magnetic field to decay and allowing most of its atmosphere to be stripped away. What is left is a dry, frozen desert—a "failed Earth."

Unlike Venus and Mars, Earth is surrounded by a strong magnetic field—powered by its hot, churning outer core, which is visualized in *Worlds Beyond Earth*—that forms a shield that deflects solar wind and protects our atmosphere. Our planet pumps out heat, feeding volcanoes at the surface and helping to sustain this atmosphere with the perfect blend of molecules for life.

Worlds Beyond Earth is the first Museum Space Show to take full advantage of the world's most advanced planetarium projection system, installed last year in the Hayden Planetarium. The first-of-its-kind high dynamic range (HDR) laser system displays the widest color gamut of any planetarium in the world, allowing visitors to experience as never before both the darkness of outer space and the most colorful worlds in our solar system (*see release on Hayden Planetarium upgrades*).

Worlds Beyond Earth is part of the Museum's 150th anniversary celebration, which officially began in March 2019 and includes a series of events, programs, and exhibitions inspired by the Museum's legacy of scientific exploration and science education, including the role of the historic [Hayden Planetarium](#) in bringing the latest space science to the public. First built in 1935 and named for philanthropist Charles Hayden, the world-famous facility has transported generations of New Yorkers to the edges of the observable universe, revealing mysterious cosmic phenomena and nurturing their curiosity about the magnitude and workings of our universe. The new Space Show is dedicated to the memory of Charles Hayden and opens

during the 150th anniversary of the year of his birth (*see release on history of the Planetarium*).

“We are proud to be an ongoing supporter of the Hayden Planetarium at the American Museum of Natural History. *Worlds Beyond Earth* will continue the Museum’s long legacy of presenting the latest space science to NYC students and the general public.”

Worlds Beyond Earth is sponsored by Bank of America.

“Bank of America is pleased to sponsor the exciting new space show, *Worlds Beyond Earth*,” said Anne Walker, NYC President, Bank of America. “As one of the largest corporate supporters of arts and culture programming world-wide, we believe in the power of the arts to help communities thrive, educate, inspire, enrich societies, and create greater cultural understanding.”

Worlds Beyond Earth is curated by **Denton Ebel**, curator in the Museum’s Department of Earth and Planetary Sciences and chair of the Division of Physical Sciences, who specializes in the study of meteorites and cosmochemistry, and directed by **Carter Emmart**, who, in addition to his work as the Museum’s director of astrovisualization, was one of the original team members of the NASA-funded [Digital Universe](#) and [OpenSpace](#) projects, which continue to redefine how planetarium theaters present science to the public through immersive data visualization.

Worlds Beyond Earth is produced by **Vivian Trakinski**, who directs the Museum’s science visualization program, and documentary filmmaker **Gavin Guerra**. **Rosamond Kinzler**, senior director of science education, co-director of the Museum’s [Master of Arts in Teaching](#) program, and the principal investigator of the OpenSpace project, is the executive producer.

The script for *Worlds Beyond Earth* is written by **Natalie Starkey**, a geologist who is an author and science communicator. The score is written by **Robert Miller**, a New York City composer who also wrote the music for four previous Museum Space Shows, and was primarily recorded in Abbey Road Studios in London. It includes a classical guitar segment recorded in New York by musician and former New York Yankees player Bernie Williams.

Worlds Beyond Earth is the Hayden Planetarium’s sixth Space Show since the opening in 2000 of the Rose Center for Earth and Space, which premiered the first Space Show, *Passport to the Universe*, narrated by Tom Hanks, that same year. Previous Space Shows have included *The Search for Life: Are We Alone?* (2002), narrated by Harrison Ford; *Cosmic Collisions* (2006), narrated by Robert Redford; *Journey to the Stars* (2009), narrated by Whoopi Goldberg; and *Dark Universe* (2013), narrated by **Neil deGrasse Tyson**, Frederick P. Rose Director of the

Hayden Planetarium.

Worlds Beyond Earth was created by the American Museum of Natural History, the Frederick Phineas and Sandra Priest Rose Center for Earth and Space, and the Hayden Planetarium.

Worlds Beyond Earth is dedicated to the memory of Charles Hayden in celebration of the 150th anniversary of his birth and made possible by the generous support of the Charles Hayden Foundation.

Proudly sponsored by Bank of America.

Generously sponsored in loving memory of Wallace Gilroy.

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ABOUT THE AMERICAN MUSEUM OF NATURAL HISTORY (AMNH)

The American Museum of Natural History, founded in 1869 and currently celebrating its 150th anniversary, is one of the world's preeminent scientific, educational, and cultural institutions. The Museum encompasses 45 permanent exhibition halls, including those in the Rose Center for Earth and Space and the Hayden Planetarium, as well as galleries for temporary exhibitions. It is home to New York State's official memorial to Theodore Roosevelt, a tribute to Roosevelt's enduring legacy of environmental conservation. The Museum's five active research divisions and three cross-disciplinary centers support approximately 200 scientists, whose work draws on a world-class permanent collection of more than 34 million specimens and artifacts, as well as on specialized collections for frozen tissue and genomic and astrophysical data and on one of the largest natural history libraries in the world. Through its Richard Gilder Graduate School, it is the only American museum authorized to grant the Ph.D. degree and also to grant the Master of Arts in Teaching degree. Annual visitation has grown to approximately 5 million, and the Museum's exhibitions and Space Shows are seen by millions more in venues on six continents. The Museum's website, mobile apps, and massive open online courses (MOOCs) extend its scientific research and collections, exhibitions, and educational programs to additional audiences around the globe. Visit amnh.org for more information.

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