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**THE WORLD'S LARGEST DINOSAURS
ON VIEW AT THE AMERICAN MUSEUM OF NATURAL HISTORY
FROM APRIL 16, 2011 THROUGH JANUARY 2, 2012**

**AN INNOVATIVE EXHIBITION ABOUT THE SUPER-SIZED SAUROPODS,
THE MOST COLOSSAL ANIMALS TO WALK THE EARTH**

The World's Largest Dinosaurs, a major new exhibition on view at the **American Museum of Natural History** from **April 16, 2011 through January 2, 2012**, explores the amazing biology of a group of uniquely super-sized dinosaurs: the long-necked and long-tailed sauropods. The exhibition draws on cutting-edge paleo-biological research that looks in part to living organisms to make inferences about how these giants – some of which grew to be longer than 150 feet, or the length of four standard city buses – were able to thrive, as a group, for approximately 140 million years. Through innovative exhibits – including the exhibition centerpiece, a life-sized, detailed model of a 60-foot-long *Mamenchisaurus* – *The World's Largest Dinosaurs* takes visitors beyond the bones and into the bodies of these titans, shedding light on how heart rate, respiration, metabolism, and reproduction are linked to size.

"The World's Largest Dinosaurs gives center stage to some of the most fascinating and stupendously large dinosaurs that ever walked the Earth, in all their biological complexity and significance," said Ellen V. Futter, President of the American Museum of Natural History. "By highlighting the dynamic new field of dinosaur biology and the Museum's own current research, the exhibition adds a rich dimension to the Museum's fourth floor dinosaur halls, which inspire and amaze visitors of all ages and, like this new exhibition, provide an extraordinary gateway to learning."

"The Museum has the world's largest vertebrate fossil collection and has for many years been known as a global center for leading paleontological research," said Michael Novacek, senior vice president and provost for science at the Museum. "This exhibition builds on that legacy, presenting an entirely new scientific approach to dinosaurs that treats them as living creatures with all of the biological complexity of modern species."

Distinguished by their colossal size, sauropods included animals of diverse shape, and ornamentation, such as the gigantic *Apatosaurus*, formerly known as *Brontosaurus*, a mount of which

has been on display in the Museum since 1905. Focusing on the biology and behavior of these diverse creatures, *World's Largest Dinosaurs* builds on a growing body of research that examines dinosaurs as living animals, primarily through comparisons with modern dinosaur relatives.

The exhibition is curated by Mark Norell, chair of the Museum's Division of Paleontology, who has done groundbreaking work in the field of dinosaur biology, and features the work of exhibition guest co-curator Martin Sander from the University of Bonn in Germany. Sander has assembled a multi-disciplinary research team of experts in materials science, animal nutrition, sports medicine, biomechanics, and paleontology to address the intriguing question of what sauropods in particular were like as living animals and how they became so large.

In their research, both Norell and Sander look to the closest modern relatives of dinosaurs, such as birds and crocodiles, to make inferences about sauropod biology, and the exhibition includes an array of interactive exhibits and hands-on activities that offer visitors of all ages engaging opportunities to compare sauropods with living animals. For instance, visitors can compare sauropod teeth with those of modern plant-eaters and carnivores or use a hand pump to discover how much pressure would have been needed to distribute blood through a sauropod's long neck to its head.

The exhibition also includes specimens from the Museum's world-renowned fossil collection, including sauropod vertebrae, skin impressions, a gigantic femur and a variety of other ancient specimens. Inspired by Howe Quarry in Wyoming, a rich fossil site excavated by Museum paleontologists, a hands-on dig pit at the end of the exhibition introduces visitors to how dinosaurs are discovered and excavated in the field.

"This exhibition represents a new era of dinosaur research that leverages recent advances in technology and the expertise of multiple scientific disciplines to understand how the largest animals to ever roam the earth actually lived," says lead curator Mark Norell, chair of the Division of Paleontology at the Museum. "It demonstrates how our understanding of these enormous creatures continually evolves and changes in response to new science."

"The question of sauropod biology, particularly their gigantic size and incredible longevity as a group has interested me for some time," said Martin Sander, guest co-curator from the University of Bonn, Germany. "This exhibition addresses this question through a multi-disciplinary research process that reconstructs the mysteries of sauropod life in vivid detail."

Exhibition Sections

The World's Largest Dinosaurs is divided into multiple content sections:

- **Introduction.** When visitors enter the exhibition space, they will immediately encounter the enormous head of an *Argentinosaurus*, considered the world's largest sauropod. Discovered in Argentina, this dinosaur probably weighed up to 90 tons and measured up to 140 feet long.
- **Size.** This section explores the biological effects of size in animals both huge and tiny and living and extinct. To provide perspective, a 15-foot-tall replica of a *Supersaurus* hind leg is displayed among models, specimens and bones of living animals such as a hummingbird, dwarf gecko, African elephant and human.
- **Meet *Mamenchisaurus*.** Standing 11 feet tall at the shoulders and measuring 60 feet long – approximately the size of a tractor-trailer – the centerpiece of this exhibition is a life-sized, fleshed-out model of an 18-year-old female *Mamenchisaurus*. Though not the largest sauropod, *Mamenchisaurus* is known for its remarkable 30-foot-long neck, which accounts for fully half of its body size. Textured skin on one side of the model gives visitors a sense of this enormous animal's appearance; on the other side the animal appears to be dissected, with key organs, including the heart and lung, isolated and modeled at life size. A video projected on the animal's midsection enables visitors to see how a *Mamenchisaurus*'s respiratory, circulatory, and digestive systems contributed to its enormous size.
- **Eat.** What did a sauropod eat? How could sauropods possibly get enough food to survive? This section addresses how sauropods developed into hugely efficient eating machines by exploring their "fermentation tank" digestive systems, their herbivorous diet, incisor-like teeth, and the mechanics of ingesting by swallowing vegetation whole.
- **React.** Sauropods had small brains in their relatively small heads. An *Apatosaurus* brain weighed at most 4 ounces compared to the 48-ounce human brain. This section addresses brain size and debunks the "booster brain" myth, which hypothesized that some sauropods possessed a second "brain" in their tail bone. On display is half of a *Diplodocus* braincase, which provided scientists with important clues about the large-scale brain structure of this extinct dinosaur.
- **Reach.** With their crane-like necks, sauropods were able to reach food that other plant eaters could not. This section addresses the biomechanics and adaptive advantages of a long but surprisingly light-weight neck. The intricate structure of sauropod vertebrae is illustrated by a huge fossil neck bone; also explored is the effectiveness of long necks as cooling systems.
- **How Big.** Over the course of 140 million years, sauropods evolved into a range of shapes and sizes with varying colors and ornamentation. Through fossil evidence and the study of living animals, scientists have been able to determine the approximate sizes and weights of various species of sauropods. A 60-by-16-foot mural on one wall of the exhibition depicts this group's

diversity. Also on display is the 155 million-year old, 6-foot-tall femur of an adult *Camarasaurus*, a dinosaur that scientists have determined weighed approximately 22 tons.

- **Babies.** Emerging from an egg smaller than a soccer ball, hatchling sauropods grew to an enormous size in a short amount of time. While hatchlings generally weighed less than 11 pounds at birth, within three decades, mature adult sauropods could weigh 10,000 times more, or as much as 55 tons. No other known land animal, bird, or reptile grew at such an exponentially rapid rate. Replicas of eggs from living and extinct animals – an elephant bird, the sauropod *Ampelosaurus*, the theropod *Oviraptor*, an osprey, and a ruby-throated hummingbird – are available for visitors to compare and analyze.
- **Skin.** For scientists today, fossilized skin impressions are the only record of what a sauropod's skin may have looked like. From these impressions, we know that sauropod skin was almost certainly dry and warm, and because dinosaurs had no sweat glands in their skin, they did not perspire. They were covered with small, bumpy and knobby scales that protected the dinosaur's body and prevented evaporation of water from inside. No sauropods had hair or feathers. On display is an osteoderm, or bony skin growth, of a titanosaur, part of a sauropod group that reached the largest sizes and lived between 65 and 71 million years ago.
- **Beat.** Human hearts pump 6.5 quarts of blood throughout the body, whereas a *Mamenchisaurus* heart pumped 630 quarts of blood. Although no fossilized dinosaur hearts have been discovered, scientists have been able to determine the size and structure of a sauropod heart by studying their closest living relatives – ostriches and crocodilians. A life-sized heart model is on display, and visitors can use a pump connected to a computer interactive to calculate the correct speed and pressure required to circulate blood throughout a sauropod's large body.
- **Breathe.** A resting human inhales one pint of air per breath, while a *Mamenchisaurus* took in about 174 pints. On display is a life-sized replica of the enormous and complex breathing system that made that volume possible. To understand sauropod respiratory systems, scientists looked to the breathing and anatomy of birds and crocodilians. These comparisons indicated that the highly efficient lungs of sauropods received oxygen-rich air during inhalation as well as exhalation. This continuous flow enabled a sauropod to spend less energy on breathing.
- **Fuel.** With a diet that may have included horsetails, ginkgos, conifers and ferns, a *Mamenchisaurus* needed 100,000 calories per day to survive. In contrast, an adult human needs just 2,200 calories per day. A 5½-foot cube of foliage on display represents how much plant matter – approximately 1,000 pounds – a *Mamenchisaurus* ate in a single day. An hour's worth of

food is encased in a smaller plexiglass column, while an interactive invites visitors to “feed” a hungry sauropod.

- **Who was that dinosaur?** Sauropod tracks, which can be found on nearly every continent, have provided some of the best information about the animals’ daily life. An interactive display – similar to a zoetrope – allows visitors to observe two adult and two juvenile *Mamenchisaurus* as they travel in a small group.
- **Explore.** Put on goggles and start digging: a sample dig pit, inspired by Howe Quarry in Wyoming – a famous excavation site where over 4,000 sauropod fossils were found by Museum paleontologists – allows visitors to unearth and examine “fossils”. Measuring 11 by 15-feet, the fully-interactive dig pit features sauropod femurs, fibulas, and more for children and adult visitors of all ages to find.
- **Search.** There is still more to understand about sauropods and more specimens to be found. A wire outline of a vertebra hints at the dimensions of what may have been the largest sauropod to ever walk the Earth, *Amphicoelias*. In 1878, well-known fossil hunter E.D. Cope published detailed drawings and measurements of the specimen, but the fossil itself has since been lost.

Exhibition Organization

The World's Largest Dinosaurs is curated by Mark Norell, chair of the Division of Paleontology at the American Museum of Natural History, and guest co-curated by Martin Sander of the University of Bonn, Germany. The exhibition is organized by the American Museum of Natural History, New York (www.amnh.org) in collaboration with Coolture Marketing, Bogotá, Colombia. The exhibition is designed and produced by the American Museum of Natural History’s award-winning Exhibition Department under the direction of David Harvey, senior vice president for Exhibition.

Exhibition Sponsorship

The World's Largest Dinosaurs is proudly supported by Bank of America.

Additional support is generously provided by Marshall P. and Rachael C. Levine and Drs. Harlan B. and Natasha Levine.

Special Programming

A series of lectures for adults and educational programming for children are being offered in conjunction with *The World's Largest Dinosaurs* and include **Sundays Under the Whale: Living**

Large in the Milstein Hall of Ocean Life on Sunday, May 15, where attendees will get the chance to discover what scientists know about some of the largest creatures on the Earth—both living and extinct. (*For more information, please see the accompanying release on Public Programs.*)

The Sauropod Shop

Accompanying the exhibition is a special gift shop on the fourth floor that offers visitors a wide array of items and gifts inspired by *The World's Largest Dinosaurs*. Visitors to **The Sauropod Shop** will find unique toys, entertaining DVDs, and engaging books, including “Barnum Brown: The Man Who Discovered Tyrannosaurus rex” (University of California Press, 2010) by Lowell Dingus and **Mark Norell** and “Biology of the Sauropod Dinosaurs: Understanding the Life of Giants” (Indiana University Press, 2011), edited by Nicole Klein, Kristian Remes, Carole T. Gee, and **P. Martin Sander**. (*For more information on retail items, please see the accompanying release on **The Sauropod Shop**.*)

The World's Largest Dinosaurs Online

Visitors can learn about *The World's Largest Dinosaurs*, watch special behind-the-scenes videos, purchase tickets to the exhibition, and more by visiting the “On Exhibit” section of the Museum’s website, amnh.org. Visitors can also get frequent exhibition updates and commentary by following the exhibition’s *Mamenchisaurus* on Twitter at twitter.com/giant_dino.

American Museum of Natural History (amnh.org)

The American Museum of Natural History is one of the world’s preeminent scientific, educational, and cultural institutions. Since its founding in 1869, the Museum has advanced its global mission to explore and interpret human cultures and the natural world through a wide-reaching program of scientific research, education, and exhibitions. The Museum accomplishes this ambitious goal through its extensive facilities and resources. The institution houses 46 permanent exhibition halls, state-of-the-art research laboratories, one of the largest natural history libraries in the Western Hemisphere, and a permanent collection of more than 32 million specimens and cultural artifacts. The spectacular Frederick Phineas and Sandra Priest Rose Center for Earth and Space, which opened in February 2000, features the rebuilt Hayden Planetarium and striking exhibits about the nature of the universe and our planet. With a scientific staff of more than 200, the Museum supports research divisions in anthropology, paleontology, invertebrate and vertebrate zoology, and the physical sciences. With the launch of the Richard Gilder Graduate School at the Museum in 2006, the American Museum of Natural History became the first American museum

with the authority to grant the Ph.D. degree. The Museum welcomed approximately 5 million on-site visitors from around the world last year and has produced exhibitions and Space Shows that can currently be seen in venues on five continents, reaching an audience of millions more. In addition, the Museum's website, amnh.org, and growing collection of apps for mobile devices extend its collections, exhibitions, and educational programs to millions beyond the Museum's walls.

Collaborators

Coolture Marketing, Bogotá, Colombia

Coolture Marketing is one of the first cultural marketing companies in Latin America, dedicated to promote world class exhibitions and stimulate education, culture and entertainment with a high sense of Social Responsibility.

Coolture Marketing's first two projects in Colombia, *Da Vinci The Genius and Bodies: Fascinating and Real*, were seen by almost a million visitors, 300.000 of them were students from public and private schools around the country. Most of the children for public schools (100.000), came from the poorest neighbors of the cities and thank to alliances with local governments, they can enjoy our events for free.

Thanks to a union with the American Museum of Natural History of New York, we are bringing to the developing countries, two of the most exciting and successful exhibitions of all time, *Einstein and Darwin*. With these extraordinary projects, we are impacting with our "Itinerary Culture" a whole new type of cultural consumer, the ones that never had this chance before. Coolture Marketing's responsibility is to keep expanding culture all around Latin America and contribute to enhance student educational quality, and show breathtaking exhibitions that conjugate education and entertainment for all.

Visit Coolture Marketing at www.coolturemarketing.com

At the American Museum of Natural History

The Museum offers a broad array of programs for adults, children, families, students, educators, and scientists. These range from special exhibitions to symposia, lecture series, workshops, and film festivals. Highlights include *Brain: The Inside Story* (November 20, 2010–August 14, 2011), which gives visitors a new perspective and insight into the human brain using imaginative art, vivid brain scan imaging, and thrilling interactive exhibits; *Frogs: A Chorus of Colors* (May 28, 2011–January 8, 2012), a live animals exhibition exploring the richly diverse world of frogs; *Body and Spirit: Tibetan Medical Paintings*, an exhibition of hand-painted Tibetan medical

paintings from the Museum's collection (January 25–July 17, 2011); the Hayden Planetarium Space Show, *Journey to the Stars*, narrated by Whoopi Goldberg; *The Butterfly Conservatory: Tropical Butterflies Alive in Winter* (October 16, 2010–May 30, 2011), an annual exhibition featuring up to 500 live, free-flying tropical butterflies from the Americas, Africa, and Asia; *Highway of An Empire: The Great Inca Road* (October 17, 2009–September 2011), an exhibition of more than 35 striking photographs featuring roads and trails built by the Inca six centuries ago; *Picturing Science: Museum Scientists and Imaging Technologies* (June 25, 2011 – June 24, 2012), an exhibition of incredible, large-format photographs captured by the high-tech imaging devices used by Museum scientists in their research; *Vital Variety: A Visual Celebration of Invertebrate Biodiversity* (ongoing), an exhibition of 23 large-format color photographs highlighting the immense diversity of invertebrates; Space Show Double Feature (select Friday and Saturday evenings), shown in the Hayden Planetarium, with back-to-back screenings of the Museum's first two Space Shows: *Passport to the Universe* (narrated by Tom Hanks), which launches visitors on a thrilling trip through space and time, and *The Search for Life: Are We Alone?* (narrated by Harrison Ford), which explores whether life exists beyond Earth; a year-round calendar of engaging and educational **public programs** that feature dynamic encounters with living cultures and authentic science; and **One Step Beyond**, the popular monthly party series where guests can dance in the Museum's Dorothy and Lewis B. Cullman Hall of the Universe to sets by the biggest names in techno, electronica, hip-hop, and indie rock.

Hours

The Museum is open daily, 10 am–5:45 pm. The Museum is closed on Thanksgiving and Christmas.

Space Show Hours

Journey to the Stars is shown every half hour Monday–Friday, 10:30 am–4:30 pm (first show on Wednesday begins at 11 am), and Saturday and Sunday, 10:30 am–5 pm.

Admission

Suggested general admission, which supports the Museum's scientific and educational endeavors and includes 46 Museum halls and the Rose Center for Earth and Space, is \$16 (adults) suggested, \$12 (students/seniors) suggested, \$9 (children) suggested. All prices are subject to change.

The Museum offers discounted combination ticket prices that include suggested general admission plus special exhibitions, IMAX films, and Space Shows.

- Museum Supersaver includes all special exhibitions, IMAX film, and Space Show: \$32 (adults), \$24.50 (students/seniors), \$20 (children)

- Museum Plus One includes one special exhibition, IMAX film, or Space Show: \$24 (adults), \$18 (students/seniors), \$14 (children)

Visitors who wish to pay less than the suggested Museum admission and also purchase a ticket to attend a special exhibition, IMAX film, or Space Show may do so on-site at the Museum. To the amount they wish to pay for general admission, they should add \$20 (adults), \$16.50 (students/seniors), or \$11 (children) for a Space Show, special exhibition, or IMAX film.

Public Information

For additional information, the public may call 212-769-5100 or visit the Museum's website at amnh.org.

Now you can prepare for your Museum visit by downloading the new **American Museum of Natural History Explorer App**, a groundbreaking enhanced navigation tool available for free from the App Store on iPhone and iPod touch or at www.iTunes.com/appstore/. The Explorer pinpoints your location within the Museum and offers turn-by-turn directions through the 46 permanent exhibition halls, and features customized tours, a fossil treasure hunt, and social media links for posting to Facebook and Twitter.

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