Time marches on, and so do we. In fact, we’re leading the way! This year, the American Museum of Natural History commemorates the 100th anniversary of the Rose Center for Earth and Space, which remains the most cutting-edge public facility devoted to the education about astrophysics and earth and planetary sciences in the world, with its state-of-the-art exhibits and Hayden Planetarium. But technology and science have changed a great deal since 2000, and so this year, the Rose Center is receiving a series of updates, including a spectacular new AstroBulletin and a new presentation of the Big Bang Theater. The Rose Center will be fully refreshed and ready for a spectacular 10th anniversary celebration on 10/10/10, when visitors will enjoy an extended day of events, programs, and celebrations.

And when you visit the Museum, you’ll be able to participate in a truly unprecedented use of technology in a museum with the AMNH Explorer, an interactive, personal navigation system which assists visitors in the most basic yet often vexing aspect of visiting our Museum—finding your way around! Using an iPhone or iPod touch, Explorer will give you step-by-step directions to everything from the Blue Whale to the nearest restroom and allow you to create personalized tours and access information on exhibits. Visitors can bring their own device or borrow a Museum iPod touch to take advantage of this pioneering technology, which is the first such application of its kind in any museum.

I hope you will join us as the Rose Center marks a moment in its history even as we continue to advance the frontiers of science and improve the public understanding of science and culture through our many programs, including Brain: The Inside Story, which opens this fall.

Ellen V. Futter
President

Finding our Voice
Cutting Edge
News
Inside Story
Magazine
Director of Membership
Chairman

American Museum of Natural History
10 West 77th Street, New York, NY 10024-5192

Editor: Eugenia V. Levenson.

Louise Adler, Director of Membership, American Museum of Natural History, at the above address.

Museum membership of $50 per year and higher includes a subscription to Rotunda.

For more details and a full schedule, visit amnh.org/mead.

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For more on AMNH Explorer, see page 18.
Storied Sparkler: The Wittelsbach-Graff Diamond

From its journey through the royal houses of Europe to a mysterious three-decade disappearance from the public eye, the Wittelsbach-Graff Diamond—an extraordinary 82.06-carat black diamond—now on display in the Museum’s Harry Frank Guggenheim Hall of Minerals this fall courtesy of Laurence Graff—has led a very colorful existence.

Mined in India, which also yielded the Hope Diamond, the Wittelsbach-Graff Diamond was once part of the dowry of the Spanish Infanta Margarita Téresa, the young princess famously depicted in Diego Velázquez’s masterpiece Las Meninas. The blue diamond then passed through subsequent marriages the Wittelsbachs of the House of Bavaria in the 18th century. A century later, in the aftermath of the first World War, it was confiscated from the displaced royal family, landing on the auction block in London in 1951. Recorded as unsold, the stone seemingly vanished, resurfacing three decades later when Belgian jeweler Joseph Romkommever received a request to re-cut a large stone and recognized it as the historic blue diamond. By the time it came up for auction again in 2008 and was purchased by Laurence Graff, the gem had sustained significant damage that required repair to return it to its status as a flawless, fancy deep blue diamond. The re-cutting did not alter the gem’s distinctive shape but did merit a new name, the Wittelsbach-Graff Diamond, to signal both its history and its 21st-century renaissance.

The Wittelsbach-Graff Diamond is in very rare company. Based on its distinctive composition—specifically the absence of nitrogen and the presence of boron, which gives the gem its distinctive color—it is classified as a Type Ib diamond. Such stones are believed to make up less than half of one percent of all diamonds found in nature. Type Ib diamonds also share another unusual characteristic: they are semiconductors. Other famous examples of this unique group of gems include the 128.57-carat Etoile in the French Museum of Natural History, which is in private hands, and the celebrated 45.52-carat Hope Diamond, which is on permanent display at the Smithsonian’s Natural History Museum in Washington, D.C.

For more about the Museum’s world-class gem collection, visit research.amnh.org/gems/collections.

Cold Storage: The Frozen Tissue Lab

As oil from the spill in the Gulf of Mexico drifted toward Florida’s coastline last May, officials at the Everglades National Park sprang into action, requesting specimen collection kits from the Museum’s Ambrose Monell Collection for Molecular and Microbial Research in anticipation of spill-related fatalities of such endangered species as the American crocodile (Crocodylus acutus), the West Indian manatee (Trichechus manatus), and a variety of turtles that inhabit the unique ecosystems of the Everglades.

Responding to such a request—in accord with an historic five-year agreement between the American Museum of Natural History and the National Park Service, which was signed last year and is one of the many ways in which the Monell Collection fulfills its central mission: collecting and preserving a record of biodiversity in stored DNA and making it accessible to researchers from the Museum and the world over—now in its 11th year, like the paceSetter Sackler Institute for Comparative Genomics of which it is a part, the Monell Collection currently holds about 70,000 specimens representing 6,711 species. Recent additions include spiny lobsters, land crabs, conch, and bonnetfish from the Caribbean; plum curculio weevils and its tadpole was only described in 2009. Its toad is very familiar to the people of southern Arizona; bats afflicted with white nose syndrome from caves in the northeastern United States; nautilus from Vannatu and New Caledonia; deer from New York and New Jersey; insects from New York City apartments; more than 6,000 butterflies and moths from Costa Rica; and more than 1,000 bird tissue as the transfer of the Museum’s Ornithology Department collection, one of the largest in the world, continues. Each specimen, whether blood, tissue, or other matter, is stowed in small bar-coded vials in stacked trays within vats cooled to temperatures below -160° Celsius (-256° Fahrenheit) by liquid nitrogen that maintains its super-chill for five weeks in the event of a power failure—a far cry from jars of formaldehyde, pins on corkboard, or wooden trays in a Victorian naturalist’s cabinet.

For more information, visit research.amnh.org/genomics/facilities/amcc.
Deep in a warren of windowless offices vibrating with fluorescent lights, computers, and high-powered imaging equipment, Ben (not his real name) lies down to be engulfed by the magnetic resonance machine. *Clank, clank, clank.* Ben silently recites a series of line drawings that flash before his eyes. *Saguaro, igloo, harp. Seahorse, dart, harmonica.* After several rounds, an auditory portion of the test starts and the strains of a Mozart sonata try to compete with the machine’s knocking. Ben would have preferred jazz.
Ben—a saxophonist who crops his brown hair short—has untreatable epilepsy and is being prepped for potential brain surgery. Every four seconds that he’s in the machine, the computers obtain 21 brain scans that will be compiled into an accurate map of functional areas that his surgeon needs to avoid, namely the areas activated by music and language.

Functional magnetic resonance imagery, or fMRI, has revolutionized neuroscience since it was developed two decades ago—drawing medicine and evolutionary science into a close collaboration. (The artwork that draws on fMRI technology is just one of many fascinating topics explored in the new exhibition Brain: The Inside Story, which opens on November 20.)

It was once thought that certain areas of the brain had specific functions, based on the work of Parisian physician Paul Broca who, over 100 years ago, noticed the link between a patient’s localized brain damage and language impairment. Now fMRI, which allows researchers to see brain activity in living soft tissue, has moved research away from guesswork. When a person speaks, or thinks of speaking, oxygenated blood floods the brain’s language centers to fuel neural activity. This localized change in the relative amounts of oxygen in the blood creates variations in magnetic field strength that are detected by the fMRI machine and can be translated into a visual representation of brain activity.

“Each community of neurons in the brain has a specific function that is unique,” says Joy Hirsch, director of the Program for Imaging and Cognitive Science at Columbia University, where Ben’s brain was scanned. Hirsch, who is consulting on Brain: The Inside Story, has been incorporating fMRI into her research for over 15 years and has found, among other things, that second languages learned after the age of 12 are less accessible to the brain’s language centers. Above all, fMRI has shown that the brain is a dynamic, evolving organ constantly changing to suit our needs. Functional MRI studies have demonstrated that music lights up three areas of the brain that are connected by highways to the first to help us understand context or meaning of speech; the motor function that is unique. We call this functional specificity,” says Hirsch. “We are looking at the neural correlates of behavior to guide the development of new treatments for many neurological, developmental, and psychiatric disorders.”

While all animals, and even bacteria, communicate, what makes us unique today, and the leap to modern symbolic consciousness was achieved...in a creature that was adapted to make that leap rather than biological evolution. For example, no new “speech area” is developed to make speech possible; humans already had all the hardware in place.

Another piece of hardware that needed to be in place for humans to develop into speakers was a gene called FOXP2, one of the numerous genes that regulate speech. The FOXP2 gene in humans differs from that in chimpanzees, with which Homo sapiens share 98 to 99% of their genetic material, and people who have a nonfunctioning form of this gene lack the fine motor control necessary for speech. Studies from the Max-Planck Institute for Evolutionary Anthropology show that the modern human form of FOXP2 “dates” to about 150,000 years ago. In experiments, mice—a species that has FOXP2 like that in chimpanzees—are given human FOXP2 gene and can sing, chirp, and ultrasonic whistles along with changes to their brain circuitry. It may be that FOXP2 improves motor control needed for speech.

Back in Hirsch’s lab, cross-sections of Ben’s brain flash on a computer in shades of gray. The left side lights up when he identifies a drawing, the right when he hears music. But music is not confined to Broca’s area on the right: as recent fMRI studies have shown, there is overlap in how music and language are processed. While many think of speaking, or thinking of speaking, as a series of sounds and silences, others have found that FOXP2 improves motor control needed for speech. FOXP2 improves motor control needed for speech.

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Nearly all animals have brains. Most communicate with each other. Still others use tools. And many build homes after a fashion. But only humans compose symphonies, write plays, paint masterpieces—not to mention design the concert halls, theaters, and museums in which to showcase them. It is, in fact, this ability to conceptualize, to plan ahead, convey ideas with symbols, that most sets us apart from other animals.

Who better to turn to than creative visual artists—for whom manipulating symbols is a way of life—to illustrate the complicated workings of the human brain in the Museum’s new exhibition Brain: The Inside Story, which opens November 20. Early in the planning stage, the Exhibition Department tapped two artists, Daniel Canogar of Madrid and Devorah Sperber of Manhattan and Woodstock, N.Y., to represent various brain functions in tangible works of art.

“Artists’ works appeal directly—and powerfully—to our senses,” says David Harvey, senior vice president for Exhibition.

Sperber’s installation, for example, harnesses the mechanics of human sight and something scientists call “neurobiological priming”—the tendency of the brain to recognize certain images through repetition. At first, viewers see a large panel, 68 inches by 47 inches, composed of colorful spools of thread strung on aluminum-ball chains, each spool acting like a chip of tile in an attractive, if amorphous, mosaic. Then, seen through a clear acrylic ball set on a pedestal 6 feet in front of the “canvas,” the abstract image is reduced in size and reversed, just as the brain inverts the upside-down images captured by the retina, and it becomes instantly recognizable as a familiar work of fine art.

“At that point there’s a real jolt when your brain has to make an adjustment from what you thought was there to what is there, and the word associated with that jolt is ‘Wow!’” Sperber explains by phone from her studio in Woodstock.

“The idea is to directly engage the viewer so they are having an experience of their own brain in action.”

Canogar has found an uncanny way to evoke the human brain’s 100 billion or so neurons—specialized cells that allow us to think, feel, and move—that connect through long, spidery arms and communicate with each other through electrochemical signals at speeds up to 250 miles an hour. On entering the exhibition, visitors will walk through a massive work in which recycled electrical cables, illuminated by racing beads of lights, mimic electrochemical activity in the brain. Further on, a similar Canogar sculpture will explore how the neurons themselves develop.

Both artists have been deeply influenced by modern technology. In Sperber’s case, she was struck by the translation of images into pixels, or small bits of color akin to her spools of thread, for easy transport across the internet. Canogar says he started out photographing junk yards and dumps and was drawn to what he calls e-waste—discarded circuit boards, computer screens, and cables made obsolete by newer technologies. This e-waste had, for him, a poignant resonance with the neural circuitry of the human brain—as well as the larger “brain” of a networked society—recalling all the dreams, hopes, and disappointments it has channelled.

“In a world of excessive consumption,” Canogar writes in an email, “it is important for me to try to rescue these materials, give them a new life, and above all, try to release the memories contained within, the energy that once circulated through them.”

This fall, visit amnh.org to watch a video of Daniel Canogar collecting materials at a New Jersey dump-site and installing the finished piece in the major new exhibition Brain: The Inside Story.
As Dr. Anthony Ritaccio enters the operating room, the procedure is already in progress: two neurosurgeons have retracted a portion of the patient's scalp and removed a section of skull about the size of a playing card. “We're getting close,” says Ritaccio, leaning over the exposed, visibly pulsing brain. In minutes, the team will carefully slip a sheet of 64 electrodes onto the tissue, draw the attached wires out of the incision, and connect them to an experimental computer system. It's the first step of an attempt to use computers to directly read the intentions of the human brain—in a way, to read minds.

Science Bulletins, the Museum's multimedia program covering current science, sent cameras into the operating room in May to record this unique attempt at building what's called a brain-computer interface, or BCI. (The footage will appear in a two-minute film in the new exhibition Brain: The Inside Story.) To find this project, a collaboration between physicians at Albany Medical Center and scientists from Albany's Wadsworth Center at the New York State Department of Health, Science Bulletins producer Sandya Visvanathan interviewed several experts in the field. Like all BCI projects, the Albany project is built on the idea that brains and computers have fundamental similarities.

“The brain itself is an electrical organ,” says Ritaccio, a neurologist at Albany Medical Center. “Brain cells communicate through electricity.” Each brain cell, or neuron, transmits electrical pulses to other neurons, like wires in a computer chip. This transmission generates complex patterns across the neuronal network that change from second to second. For decades, it seemed logical that scientists could tap these electrical signals to communicate directly with the brain. But initial attempts encountered a major problem.

“In the 1930s...electrodes [were] glued to the outside of the scalp,” says Ritaccio. “But brain electrical activity is very weak and has to sift through many layers,” including scalp, bone, and the meningeal membranes. “By the time this weak electrical activity bubbles up to the surface, much of it has been lost,” says Ritaccio. Scientists realized they must get closer to the neurons, but implanting electrodes deep inside a human brain would be too risky. A new approach that read electrical activity directly from the brain surface, called electrocorticography or ECoG, finally emerged in the 1990s.

“ECoG recordings have been used in humans to locate the source of seizures in people with epilepsy or brain tumors,” explains Dr. Gerwin Schalk, a collaborator from the Wadsworth Center. The BCI team—which is composed of electrical engineers, computer scientists, clinicians and other experts—is developing the technology to use ECoG arrays in a new way: to decode the activity patterns the brain generates to execute specific tasks such as speaking or gesturing.

When Science Bulletins videorecorded a surgery in May, an epileptic patient, John (not his real name) was receiving the ECoG-based system already has far greater resolution and speed than fMRI or EEG, common indirect measures of brain activity. But as Schalk explains, this experiment is just the beginning. “At the most basic level, we can differentiate [some] behaviors simply by judging where activity changes in the brain,” he says. “For example, moving my hand will produce activity changes in [one area], whereas speaking different types of words will produce changes in different areas.” Now the Albany team is going a step further: using these activity patterns to identify specific words a person is thinking.

As John thought of a word, the ECoG-based system recorded the activity. The computer then employed a complex algorithm to analyze the pattern to guess the word. In some cases, the system can even tell apart words as similar as “set” and “sat.” The number of words this BCI recognizes now is limited, but there's no doubt where the technology is headed. “If we can tell from the brain what words a person wants to communicate to their loved ones, that will be a boon for people who are disabled and otherwise cannot communicate.”

“The brain produces different types of activity for different types of behavior,” Dr. Schalk explained as he connected the wires from John’s electrode array into a computer. The computer processed the electrical activity sensed by each of the array’s 64 electrodes, and plotted that information onto a map of John’s brain. The activity emerged on the monitor as a pattern of red dots: the bigger the dot, the more active the area. As cameras rolled, the pattern continually changed, allowing the film crew to watch John’s brain in action.

“If we can tell from the brain what words a person wants to communicate to their loved ones, that will be a boon for people who are disabled and otherwise cannot communicate.”

— Dr. Gerwin Schalk

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— Dr. Gerwin Schalk
Dr. Nebula’s Laboratory: Planetary Vacation Saturday, October 2 2:30 p.m. Members’ tickets are $8 for children, $10 adults. Learn about the planets and moons of our solar system.

Meet the Scientist Saturday, October 2 Free with Museum Admission Visitors ages 7 and up can meet a scientist in the Education Room. Call 212-515-7005 for details.

Birding the Barrier Beaches Saturday, October 2 9 a.m.–4 p.m. $90 (includes transportation by private coach) Bring your lunch; recommended for children ages 7 and up. Members only. Come by binoculars to spot a variety of birds.

Members: Only Highlights Tour Sunday, October 3 11:30 A.M. $90 (includes transportation by private coach) Join a Museum docent for an insider’s introduction to all the Museum has to offer.

Exhibitions and Attractions Admission is by timed entry only. Brain: The Inside Story Opens Saturday, November 20 Free for Members Step into the amazing, changing brain! This exhibition explores how the brain—a product of millions of years of evolution—produces and processes thoughts, senses, and feelings.

The Butterfly Conservatory: Tropical Butterflies Alive in Winter! Opens Saturday, October 16 Free with Museum admission The Butterfly Conservatory features one of the most striking tales of Antarctic exploration: the race to reach the South Pole in 1911–1912.

The Rose Center for Earth and Space Tour Tuesday, October 12 6:30–9 p.m. $55 Members’ tickets are $12 adults, $5 kids. Recommended for members ages 10 and up. Guided Peter Dunne leads a tour of the Rose Center for Earth and Space.

Ten Years of Space Shows Tuesday, October 12 6:30–9 p.m. $35 Curator Melanie L. J. Silaysos offers a rare peek into the collections of the Department of Ichthyology.

Behind the Scenes in Ichthyology Tuesday, October 12 6:30–9 p.m. $35 Curator Melanie L. J. Silaysos offers a rare peek into the collections of the Department of Ichthyology.

Meet the Scientist Saturday, October 2 Free with Museum Admission Visitors ages 7 and up can meet a scientist in the Education Room. Call 212-515-7005 for details.

Science Talks and Tables Presentations and specimen exhibits by Museum scientists.

Native American Sky Stories Storytelling, music, and dance from Grammy Award winner Joanne Shenandoah and historian Doug George-Newton

AstroCappella Songs about the universe from The Chromatics

Space Panorama The Apollo 11 moon landing recreated by Andrew Dawson

One World, One Sky: Big Bird’s Adventure Sesame Street feature about the sun, moon, and stars

For more information, visit amnh.org.

Programs and Events October

Rose Center for Earth and Space Anniversary Celebration: 10.10.10 Sunday, October 10 Free with Museum admission An extended day of family-friendly programs and special presentations to commemorate the 10th anniversary of the Rose Center for Earth and Space, featuring:

Science Talks and Tables Presentations and specimen exhibits by Museum scientists

Native American Sky Stories Storytelling, music, and dance from Grammy Award winner Joanne Shenandoah and historian Doug George-Newton

AstroCappella Songs about the universe from The Chromatics

Space Panorama The Apollo 11 moon landing recreated by Andrew Dawson

One World, One Sky: Big Bird’s Adventure Sesame Street feature about the sun, moon, and stars

For more information, visit amnh.org.

Tickets Tickets are available by phone at 212-769-5100 Monday-Friday, or by visiting amnh.org. Please have your Membership number ready.

Please be aware that ticket sales are final for all Members’ programs. All programs go ahead rain or shine. Thursday, November 4, unless the program is cancelled by the Museum.

Race to the End of the Earth Through Sunday, January 2 Free for Members This exhibition recounts one of the most arduous expeditions in history: the 33-day race to reach the South Pole in 1911–12.

The Butterfly Conservatory: Tropical Butterflies Alive in Winter! Opens Saturday, October 16 Free with Museum admission The Butterfly Conservatory features one of the most striking tales of Antarctic exploration: the race to reach the South Pole in 1911–1912.

IMAX Movie Hubble: Journey to the Stars $12 adults, $5 children This film lets viewers blast off alongside the Atlantis STS-125 crew, witness challenging spacewalks, and experience Hubble’s striking images of the universe.

Hayden Planetarium Space Show JOURNEY TO THE STARS Members’ tickets are $12 adults, $5 children Journey to the Stars launches viewers through time and space to experience the life and death of the stars in our night sky.

Ten Years of Digital Imaging: 15 Years of Digital Imaging: The Butterfly Conservatory: Tropical Butterflies Alive in Winter! Opens Saturday, October 16 Free with Museum admission The Butterfly Conservatory features one of the most striking tales of Antarctic exploration: the race to reach the South Pole in 1911–1912.

Wittelsbach–Graff Diamond On display starting Thursday, October 28 Free with Museum admission The Wittelsbach–Graff Diamond is one of the most famous diamonds in history, a product of millions of years of evolution—produces and processes thoughts, senses, and feelings.

An extended day of family-friendly programs and special presentations to commemorate the 10th anniversary of the Rose Center for Earth and Space, featuring:

Science Talks and Tables Presentations and specimen exhibits by Museum scientists

Native American Sky Stories Storytelling, music, and dance from Grammy Award winner Joanne Shenandoah and historian Doug George-Newton

AstroCappella Songs about the universe from The Chromatics

Space Panorama The Apollo 11 moon landing recreated by Andrew Dawson

One World, One Sky: Big Bird’s Adventure Sesame Street feature about the sun, moon, and stars

For more information, visit amnh.org.

Tickets Tickets are available by phone at 212-769-5100 Monday-Friday, or by visiting amnh.org. Please have your Membership number ready.

Please be aware that ticket sales are final for all Members’ programs. All programs go ahead rain or shine. Thursday, November 4, unless the program is cancelled by the Museum.

Race to the End of the Earth Through Sunday, January 2 Free for Members This exhibition recounts one of the most arduous expeditions in history: the 33-day race to reach the South Pole in 1911–12.

The Butterfly Conservatory: Tropical Butterflies Alive in Winter! Opens Saturday, October 16 Free with Museum admission The Butterfly Conservatory features one of the most striking tales of Antarctic exploration: the race to reach the South Pole in 1911–1912.

IMAX Movie Hubble: Journey to the Stars $12 adults, $5 children This film lets viewers blast off alongside the Atlantis STS-125 crew, witness challenging spacewalks, and experience Hubble’s striking images of the universe.

Hayden Planetarium Space Show JOURNEY TO THE STARS Members’ tickets are $12 adults, $5 children Journey to the Stars launches viewers through time and space to experience the life and death of the stars in our night sky.

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Franklin and Wagner Free Institutes in Philadelphia Saturday, November 6 8:30–7 pm $150 Members only Tour the Wagner Free Institute and visit the Franklin Institute to see Cleopatra: The Search for the Last Queen of Egypt.

Wild, Wild World: Animals in Winter Saturday, November 6 11 am–noon, 1–2 pm Members’ tickets are $18; $10, ages 0–12; $5 for children, $10 for adults Join TV host Jarod Miller.

Adventures in the Global Kitchen: Wild Mushroom Harvest Tuesday, November 9 6:30–8 pm $15 Learn about tasty, locally available mushrooms.

Geology and History of Yankee Stadium Saturday, November 13 10 am–noon, 1–2 pm $50 Members only Join geologist Sidney Horenstein to explore this Bronx neighborhood.

Twinkling Stars: Mythic Creatures in the Sky Tuesday, November 16 4:30–6 pm Free (registration required) Get a sneak peek at the new exhibition and enjoy a wine reception from 6 to 8 pm. RSVP to the Membership Office at 212-769-5866 before November 3.

Behind the Scenes in Invertebrate Paleontology Wednesday, December 8 6:30 pm, 7–9:30 pm $35 Curator Neil Landman will lead a tour and discuss extinct invertebrates and evidence of an asteroid impact at the end of the Cretaceous Period.

Organic Ornaments Saturday, December 4 3–4:40 pm Free Members only (registration required) Tour guide Judith Cubbon will discuss the myths surrounding pearls, coral, amber, and other organic beauties.

Winter Wildlife Weekend Saturday, February 5–Sunday, February 6 $350 per person, double occupancy $400 single occupancy Ornithologist Paul Sweet leads this birding and wildlife expedition to Long Island’s Montauk Point, a spot renowned for winter birding.

Additional support has been provided by the British Consulate-General New York and the National Science Foundation under Grant No. ANT 0636639. Additional support for Race to the End of the Earth is provided by the American Museum of Natural History, New York (www.amnh.org), in collaboration with Musée de Confluence, Lyon, France, and Royal BC Museum, Victoria, British Columbia, Canada. Generous support for Race to the End of the Earth has been provided by the Clara H. Bovard Exhibition Fund, Marshall P. Levine, and Drs. Marlin B. and Natasha Levine.

Journey to the Stars was developed by the American Museum of Natural History, New York (www.amnh.org), in collaboration with the California Academy of Sciences, San Francisco; GOTO, Inc., Tokyo, Japan; Pappalà • Museo del Niño, Mexico City; Mexico; and Smithsonian National Air and Space Museum, Washington, D.C. Journey to the Stars was created by the American Museum of Natural History, with major support and partnership of NASA, Science Mission Directorate, Astrophysics Division. Made possible through the generous sponsorship of Lockheed Martin Corporation. And proudly sponsored by Accenture. Supercomputing resources provided by the Texas Advanced Computing Center (TACC) at the University of Texas at Austin, through the TeraGrid, a project of the National Science Foundation.
Imagine reading daily dispatches from Charles Darwin as he made his way around the Galápagos Islands on the H.M.S. Beagle. In something akin to that, scientists have begun blogging from the field in an exciting collaboration between The New York Times and the American Museum of Natural History and other scientific institutions.

So far, three Museum researchers have contributed to “Scientist At Work: Notes from the Field”—available on The New York Times’s website—including Christopher Raxworthy, curator in the Department of Herpetology, who inaugurated the feature in April by filing daily accounts and photos as he made his way to the summit of Mount Marojejy in Madagascar in search of chameleons, frogs, and lizards.

Eleanor Sterling, director of the Museum’s Center for Biodiversity and Conservation, reported from the rainforests of Vietnam, where she was part of a team surveying one of the last remaining populations of the gray-shanked douc langurs in the wild. She blogged for a second time from the Palmyra Atoll National Wildlife Refuge in the Pacific, where endangered sea turtles can be observed in a unique environment relatively free from human influence.

Ichthyologist Melanie Stiassny filed dispatches from the Upper Congo River as she explored evolutionary links between species there and the extraordinary biodiversity she has previously catalogued in the Lower Congo. Stay tuned for more blogs ahead!

Join Christopher Raxworthy in the field when he leads an AMNH Expedition to Madagascar this winter. Visit amnhexpeditions.org to learn more about this exciting trip.

Find Your Way With New AMNH Explorer App

Call it a personal GPS—the state-of-the-art wayfinding system called the American Museum of Natural History Explorer, which launched this summer as a downloadable app for use on the iPhone or iPod touch. Operating on wireless access points throughout the Museum, the Explorer is designed to sense where you are and then give you turn-by-turn directions by the quickest route possible to destinations throughout the Museum’s more than 500,000 square feet of public space.

As a side benefit, the new system allows all visitors free wireless access to the internet. The Explorer also offers an interactive fossil treasure hunt, the capacity to create customized tours of your own, and pre-set tours of Museum highlights, the dinosaur halls, the Rose Center for Earth and Space, and items featured in the film Night at the Museum. The Explorer also contains general Museum information and text explaining 140 different exhibits, which in turn can be bookmarked to receive an email with a link to additional information from the Museum website. Finally, Explorer can be used to share your Museum experience with others through email, Facebook, or Twitter.

Bloomberg is the founding sponsor of the AMNH Exploration System.

You can download Explorer for free to your iPhone or iPod touch from amnh.org/apps or borrow one of more than 300 devices preloaded with the app from the Museum at no charge.

What was polar exploration like 100 years ago? A new interactive “scrapbook” on the Museum’s website offers kids some clues. Ross MacPhee, curator of the Race to the End of the Earth exhibition, describes the legendary race to the South Pole with a selection of vintage photographs and snippets from historic letters. MacPhee, a polar explorer himself who has always been inspired by the heroic tales of the first Antarctic explorers, introduces kids to the British and Norwegian teams and the decisions their leaders faced: Camp on land or on ice shelf? Use dogs or horses? Wear fur or wool?—as they competed to be the first to reach the South Pole.

The expeditions unfold in compelling historic photographs. The British journey comes to life in snapshots of ponies afloat the ship Terra Nova, team members studying at base camp, and cooks making a stew called “hoosh.” Photographs of the Norwegian explorers include images of the mustached crew of the Norwegian Fram, an “underground village” dug in the ice, and men sewing reindeer skins into sleeping bags. The trek itself, a race against time and weather, is recorded through photos of experiments with motorized sleds, the tremendous effort of “man-hauling,” and the tent pitched at the Pole itself—as well as the haggard faces of the British, who arrived there second. The race to the South Pole is a great adventure story, and Ology’s scrapbook tells it wonderfully.

Complete with maps that show the explorers’ routes, a chart that compares the teams’ strategies, and detailed captions, the scrapbook is rounded out by modern-day photos. Through these contemporary images, it’s easy to see that these expeditions paved the way for the thousands of researchers, like MacPhee, who travel to the “Continent of Science” today to search for answers under conditions unlike those at any other place on Earth.

Visit amnh.org/ology/index.php#features/racetothepole and don’t forget to catch Race to the End of the Earth, open through January 2, 2011 and free for Members.

Ology: A Polar Scrapbook for Kids

More Fun For Kids: Two Books On the Brain

Curious kids can look forward to not one but two books from Museum Curator Rob DeSalle this fall.

DeSalle, who is the curator of the new exhibition Brain: The Inside Story, has tackled the subject before. In 2003 he co-wrote the children’s book Bones, Brains, and DNA: The Human Genome and Human Evolution with Ian Tattersall, now curator emeritus in the Division of Anthropology.

This year’s offerings include two different takes. The first, Your 21st Century Brain: Amazing Science Games to Play With Your Mind, co-written with Michael A. DiSpezio, is packed with puzzles and activities.

The second, Brain: A 21st Century Look at a 400 Million Year Old Organ, follows two Museum mice—Wallace and Darwin—on a scientific tour of the brain. It’s also co-authored and illustrated by Patricia Wynne, a scientist in the Museum’s Department of Mammalogy, who also provided the drawings for Bones, Brains, and DNA.

Books On the Brain

The Louis Calder Foundation has provided an endowed grant to the Museum’s Education Department. The initial development of Ology was made possible by a generous grant from The Louis Calder Foundation.

Bones, Brains, and DNA

The Human Genome and Human Evolution

Your 21st Century Brain: Amazing Science Games to Play With Your Mind

Credits

Major support for Ology has been provided by The Louis Calder Foundation. The initial development of Ology was made possible by a generous grant from The Louis Calder Foundation.
Have You Shared Your Story Yet?

This summer, the Museum asked Members, friends, and visitors to send in their favorite memories of their adventures here—and hundreds responded. Here is a sampling of their stories:

My second child fell in love with the Museum as a toddler and is now heading off to the University of Pennsylvania to study geology and evolutionary biology.

**Gabrielle Crotton-on-Hudson, NY**

I recall visiting the Hayden Planetarium, leaning back in my seat, and seeing a giant sloth…we’re still Members.

**Winifred Brooklyn, NY**

One of my earliest memories is going to see “Bluey,” the name I gave to the Blue Whale in the Milstein Hall… I now bring my son, aged 2, to share the same wonderful experiences I had.

**Dawn New York, NY**

For me, the adventure never ends. For my son, who wants to be a paleontologist when he grows up, it’s a glimpse into the future.

**Rosemary Elbourne, Ontario**

My favorite room is the hall of minerals and gems. There is nothing more serene than the low lighting, carpeted stairs, and hundreds of amazing specimens.

**Lindsey New York, NY**

I once briefly lost sight of my daughter in the dinosaur hall. I found her standing in front of the triceratops, delivering a lecture on dinosaurs to passers-by!

**Juliett Stamford, CT**

My son learned to walk, at 8 months, in the hall of human evolution. At 12 months, he informed tourists that they were looking at one of amazing specimens.

**Mary Ann Flushing, NY**

Tell us about your adventures at the American Museum of Natural History by visiting amnh.org/shareyourstory.

Reminders for Members

- **November 19-21**: Get a head start on holiday shopping! Visit the shops at amnhshop.com during Double Discount Days for Museum Members and receive 20% off.
- **November 22**: The Origami Tree kicks off the holidays at the Museum.
- **December 10-12**: Visit the shops at amnhshop.com during Double Discount Days for Museum Members and receive 20% off.
- **December 13**: Register for the Museum Entrance Rotunda / Fall 2010 / AMNH.org

A Gift for All Seasons

Give the benefits of Membership to friends and family! From complimentary general admission and exclusive sneak-previews of major exhibitions to discounts on Space Show tickets and in restaurants and shops—not to mention a year’s subscription to the all-new Rotunda magazine—a membership is a wonderful way to discover all the Museum has to offer.

For more information on all levels of Membership, email the Membership Department at members@amnh.org or call 212-769-5506.

Museum Welcomes Two New Board Members

They’re the Museum’s top stewards: members of the Board of Trustees, which as a whole is responsible for overseeing the Museum’s management, from the collections and programs to its financial health and physical facilities, so that all the pieces that make this institution work are used effectively to support its mission. This spring, the Museum welcomed two new members to the Board.

Virginia Heard Randt, who holds a degree in finance magna cum laude from New York University, has worked for the National Magazine Company Limited in the United Kingdom, the Los Angeles Herald Examiner, and at All Hearst Magazines. She has a deep interest in education and is particularly impressed by the important role the Museum plays in conveying vital and timely information about science and human culture to the public through its exhibitions.

“The Museum’s educational programs and exhibitions provide an invaluable service by making complex scientific and cultural issues accessible to the public,” says Randt. “I’m excited to support that vital mission as a Trustee.”

Randt is also a member of the board of directors at the Hearst Corporation and served as a director of Hearst–Argyle Television until 2005. She and her husband, Dana, divide their time between Los Angeles and New York.

Theodore Mathas, who also joins the Board, is the chairman, president, and chief executive officer of New York Life Insurance Company, the nation’s largest mutual life insurer. He chairs the board of the New York Life Foundation, which is a strong supporter of organizations involved with education, mentoring, and youth development. Mindful of the challenges facing our country, he recognizes and values the Museum’s efforts to improve science education both in New York City and throughout our country.

Bronx Student Snaps Up Award

This summer, Erik Zeidler, a recent graduate of New York’s Bronx High School of Science, was among 15 students to receive a 2010 Young Naturalist Award. His project, Investigating the Ecology of Chelydra serpentina, the Common Snapping Turtle, in a Highly Urban Setting, was of such caliber that Christopher Raxworthy, associate curator in the Museum’s Department of Herpetology, said of Erik’s essay, “With a little extra work, this could be published in a scientific journal.”

Erik, who entered the renowned herpetology program at the University of Kansas this fall, has always been fascinated by reptiles. Intrigued by snapping turtles, he wondered “how such a large and magnificent reptile manages to survive right here in New York City?”

To learn more about the Young Naturalist Awards, visit amnh.org/yna.
Save the Date!
Upcoming Events at the Museum

December

12/7 Junior Council Members and guests are invited to view the special exhibition Brain: The Inside Story and attend a discussion and cocktail reception. For more information about the Junior Council, please call 212-769-5256 or visit amnh.org/join/junior_.council.

12/12 The annual Holiday Party for Members will be held in the Milstein Hall of Ocean Life with an afternoon of activities and entertainment. Free and open to Family and higher-level Members.

February

The annual Members’ Open House is a wonderful chance to explore the Museum, see the latest exhibitions, and learn about the benefits of membership. Free for Members at the Contributor level and above.

March

The annual Star Party for Members includes a cocktail reception in the Rose Center for Earth and Space, star-gazing on the Arthur Ross Terrace, activities for children, Space Show screening, and more. Free for Members at the Supporter level and above.

April

4/12 Join us for the 21st Annual Environmental Lecture and Luncheon.

4/15 Members will have the first chance to see the exciting new exhibition The World’s Largest Dinosaurs at this exclusive preview. Free for Members.

4/16 The World’s Largest Dinosaurs opens to the public.
General Information

HOURS
Museum: Open daily, 10 am–5:45 pm; closed on Thanksgiving and Christmas.

ENTRANCES
During Museum hours, Members may enter at Central Park West at 79th Street (second floor), the Rose Center/B1st Street, and through the subway (lower level).

RESTAURANTS
Museum Food Court, Café on One, Starlight Café, and Café on 4 offer Members a 15% discount. Hours are subject to change.

MUSEUM SHOPS
The Museum Shop, DinoStore, The Shop for Earth & Space, Cosmic Shop, Brain Shop, Antarctic Shop and Online Shop (amnhshop.com) offer Members a 10% discount.

PHONE NUMBERS
Central Reservations 212-769-5200
Membership Office 212-769-5606
Museum Information 212-769-5100
Development 212-769-5151

TRANSPORTATION AND PARKING
Subway: B (weekdays) or C to B1st Street; 1 to 79th Street, walk east to Museum
Bus: M7, M10, M11, or M104 to 79th Street; M79 to Central Park West
Parking Garage: Open daily, 8 am–11 pm; enter from West 81st Street. Members receive a discounted rate of $10 if entering after 4 pm. To receive this rate, you must show your membership card or event ticket when exiting the garage.

Brain: The Inside Story opens November 20. This cover illustration was designed to echo visitors’ initial experience of the new exhibition: an immersion in Daniel Canogar’s art installation, which evokes the human brain’s billions of neurons. It was created by Hinterland for Rotunda using a “neurons” font designed by Joyce Li Yan Lee.