

CATALYST

DENVER MUSEUM OF NATURE & SCIENCE MAGAZINE

SUMMER 2019

INSIDE ///

LEONARDO DA VINCI:
500 YEARS OF GENIUS

OUR SENSES:
CREATING YOUR REALITY

APOLLO 11: FIRST STEPS EDITION



A TODD DOUGLAS MILLER FILM

APOLLO 11

FIRST STEPS EDITION



FEATURING NEVER BEFORE SEEN 70MM FOOTAGE

MACGILLIVRAY FREEMAN FILMS & CNN FILMS PRESENT A STATEMENT PICTURES PRODUCTION A TODD DOUGLAS MILLER FILM "APOLLO 11: FIRST STEPS EDITION" EXECUTIVE PRODUCERS AMY ENTELL, COURTNEY SEXTON & JOSH BRAUN
DIRECTOR OF PHOTOGRAPHY ERIC MILANO LARGE FORMAT BY BRIAN EIMER DIRECTOR OF FILM WILLIAM JUNKIN COX II PRODUCED BY TODD DOUGLAS MILLER, THOMAS BAXLEY PETERSEN & EVAN KRAUSS MUSIC BY MATT MORTON EDITED BY TODD DOUGLAS MILLER

PRESENTED BY



ABOVE & BEYOND

CNN FILMS

MACGILLIVRAY
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statementpictures

EXCLUSIVE EDITION FOR SCIENCE CENTERS AND MUSEUMS

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DEAR MEMBERS,

When I was growing up back in West Virginia, outer space was the new frontier, and I couldn't get enough of it. My dad ran a television and appliance store in our small town. I remember taking a TV from his shop to school so that everyone could watch John Glenn be the first American to orbit Earth. I built model rockets out of matchsticks and other materials. My imagination soared as I wondered what it would feel like to be in space.

My story isn't unique. For hundreds of thousands of years, humans have looked up at the sky and thought, what's out there? This summer, we celebrate one of humankind's greatest accomplishments—the 50th anniversary of the first moonwalk, an especially appropriate time to share some exciting news with you about the future of space at your Museum.

The *Space Odyssey* exhibition will be transformed into an all-new experience, opening in 2020.

Space Odyssey is a favorite among members, so we are especially excited about creating a new *Space Odyssey* as captivating as space itself, seamlessly integrating science, nature, art, and technology to foster a deeper and enduring understanding of our home planet and the universe. The new experience will be for all ages, including the space explorers—or even space dwellers—of the future.

The "Space Odyssey Reimagined" initiative is part of our *Everyone, Everywhere* strategic plan. I invite you to turn to pages 6 and 7 to read about the Museum's commitment to connecting more people to nature and science in ways that are meaningful to them.

In order to make way for the new *Space Odyssey*, the gallery will need to close for several months, but we will offer other ways for you to continue to engage in space science. We can't wait to tell you more about the project and schedule, so watch for updates in *Catalyst* and e-communications, and at dmns.org/e2.

I eventually became a pilot and aeronautical engineer, but I never made it out into space, so I am especially thrilled that in the new *Space Odyssey* we will all get to absorb the sights, sounds, and surprises of our universe. We look forward to embarking on this adventure with you!



George Sparks, President and CEO
president@dmns.org



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FIND IT @ DMNS.ORG

- Print-at-home tickets for surcharged exhibitions, Planetarium and IMAX shows, lectures, and programs
- Reservations for members events
- Visiting tips and curated plans
- Membership renewals and purchases
- How to Donate

Join Our Community:



Photos by Rick Wicker

ON THE COVER

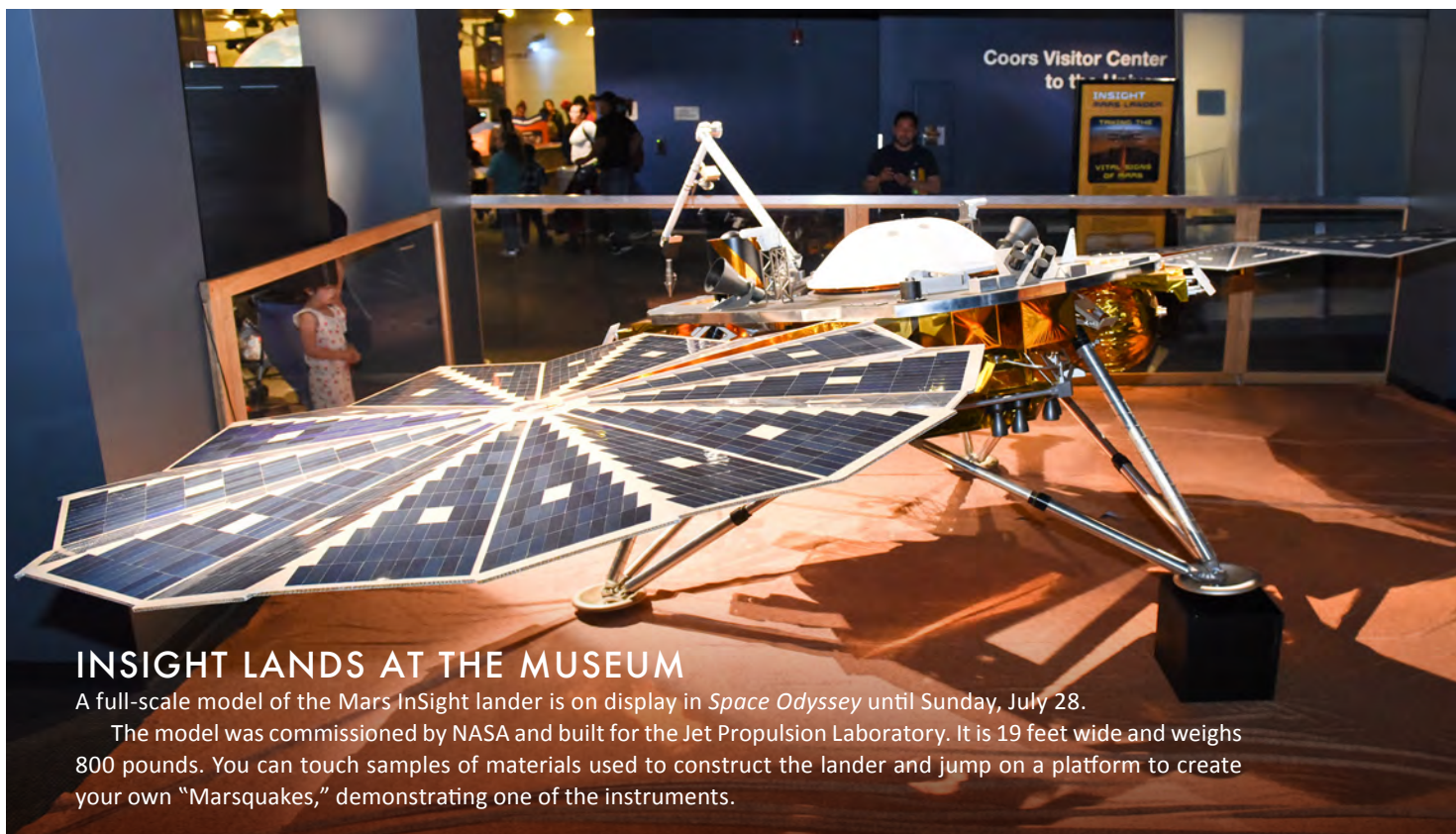
From the anthropology collections

Soft cradle (AC.7598)

Lakota

ca. 1930

Applique beadwork, blue trade cloth skirt, ribbon accent



INSIGHT LANDS AT THE MUSEUM

A full-scale model of the Mars InSight lander is on display in *Space Odyssey* until Sunday, July 28.

The model was commissioned by NASA and built for the Jet Propulsion Laboratory. It is 19 feet wide and weighs 800 pounds. You can touch samples of materials used to construct the lander and jump on a platform to create your own “Marsquakes,” demonstrating one of the instruments.

InSight, NASA’s latest mission, landed on Mars last November. InSight means “Interior Exploration Using Seismic Investigations, Geodesy, and Heat Transport” because the robot is designed to fill gaps in our knowledge about the planet’s interior structure. It is equipped with an ultrasensitive seismometer, a temperature sensor that burrows beneath the surface, and a radio connection with Earth that provides information about the Martian core by tracking the spacecraft’s location as the planet rotates.

The Museum is the first stop on InSight’s tour across the country. Learn more about the mission at mars.nasa.gov/insight.

NEW PLAY AREA BLASTS OFF AT COLORADO MILLS

The Museum’s newest offsite experience, *Mars Outpost* play area, opens at Colorado Mills on Saturday, June 22.

Building on the success of *Dinosaur Gulch* at Cherry Creek Shopping Center, the Museum collaborated with Playtime, LLC, to design the indoor, space-themed play area, in coordination with Colorado Mills, a Simon shopping center located in west metro Denver.

With planets orbiting overhead, *Mars Outpost* features a Mars-scape, where kids can climb through a rocket-turned-habitat that “landed” on the Red Planet, use a telescope to view the planets above, plan what to pack for life on Mars, explore interactive screens that encourage wonder about our universe and the scientific process, and more.

“We are thrilled to partner with Colorado Mills to develop *Mars Outpost*,” said Tina Martinez, director of museum programs at the Museum. “The Museum is committed to providing meaningful experiences for our community, both at our main location in central Denver as well as other places across the state, where people live, learn, work and play.”

Mars Outpost is located in the Children’s Zone at Colorado Mills and is well-suited for children under 10 years old, with special opportunities for the littlest astronauts in the toddler section of the play space. Admission is free.

Mars Outpost is presented with generous support from the Sexton Family Foundation.





GET A TASTE OF SCIENCE

Here's an unusual activity to enjoy with your summer guests—participate in real science in the Genetics of Taste Lab!

This year's annual taste study, Genes and Grains, is designed to more fully understand why some people think whole wheat tastes bad. Researchers hypothesize that it has something to do with DNA. Because flavor is a key factor in consumer acceptance of whole grain products, an understanding of why some people think the taste is off-putting might lead to ways to make whole wheat taste better and sneak it into foods people already enjoy. The findings could have a huge impact on both individual and societal health.

Once again, you are the science! This is especially fun to do together with family and friends. Participants must be at least 8 years old, with a legal guardian if age 8–17. The 30-minute experience is administered by a volunteer community scientist and includes informed consent, sampling a series of whole wheat wafers, a buccal swab for cell (DNA) collection, and a few questions. The study closes on Friday, August 2. To schedule an appointment, please send an email to genetics@dmns.org.

FUN FACT

The Campion crystallized gold collection in Coors Gems and Minerals Hall has been on continuous display for more than 110 years, longer than any other objects in the Museum!

Mining played an important role in the story of Colorado. John F. Campion, Museum founder and first board president, owned several hard rock mines in the Leadville area. He offered his gold collection to help start the Museum, which was incorporated in 1900 and opened to the public in 1908.

The gold was originally embedded in soft rock, but Campion had the rock dissolved with acid, leaving the glittering crystallized gold. Stop by the gold and silver room in Gems and Minerals to see some pieces of history.



WELCOME THROUGH THE WEST DOORS

We're opening the doors on the west side of the Museum this summer!

Nearby Nature is a key initiative in the *Everyone, Everywhere* strategic plan. Because the Museum and City Park grew up alongside each other, we're looking for ways to take a dose of science from the Museum, stir in the Park's natural attributes, and finish with brain-engaging discovery.

One of the first ways we're creating a more seamless experience is by opening the west doors, 9 a.m. to 5 p.m., from May 25 to September 2. We are looking forward to greeting members and guests through this new access point at a mobile admissions desk. As usual, please bring your member card or ecard with you when you visit the Museum, no matter where you enter the building.

Nearby Nature is also moving forward with an exciting new partnership between the Museum and Denver Parks and Recreation to redevelop a small playground near the Museum in City Park into a nature play space, as part of the City Park Master Plan Update. The goal is to inspire curiosity and a love of the outdoor environment, planting the idea that protecting and caring for it is something we can all do together.

Community conversations about nature, science, and play are helping to shape the development of the nature play space, and we invite you to get involved.

- Visit dmns.org/natureplay for the most up-to-date information and opportunities to engage.
- Email natureplay@dmns.org to receive updates and event invitations.
- Show us your nature play inspirations by tagging @DenverMuseumNS and using #natureplay in your Instagram posts, or send your photos to natureplay@dmns.org. (Please include photo credits.)

Learn about the *Everyone, Everywhere* strategic plan on pages 6 and 7 and at dmns.org/e2.



EXPLORE THE MUSEUM THROUGH LEONARDO'S EYES

BY DR. STEVE NASH

After you immerse yourself in the exhibition *Leonardo da Vinci: 500 Years of Genius*—where you will explore his world through his machine inventions, multimedia experiences, and historical enactors—take a look around the Museum and imagine how it would look to this man-before-his-time.

Leonardo died on May 2, 1519. Obviously, it's impossible to fully fathom how much just about everything has changed since then. If Leonardo were alive now, some advances would astound him, but he might also recognize today's world as what he always imagined.

As our Museum's curatorial advisor for the *Leonardo da Vinci* exhibition, I spent a lot of time studying his life and times. As an archaeologist, my questions often involve time travel: What would it be like to live in Pompeii? To travel along the Silk Road? To see a hostile Viking ship approaching your village?

As satisfying as it is to learn about Renaissance Italy, I felt I was missing something obvious. And then it hit me. With Leonardo, my question was backward. Rather than wanting to travel back in time, I began wondering what Leonardo would think if he visited the Museum in 2019. Here's how you can also explore this question.



VR ARCADE: Leonardo would be fascinated by modern virtual and augmented reality. He spent much of his career studying optics and developing focal point perspective to make his art look more realistic. Leonardo capitalized on this when he painted *Mona Lisa*, as you'll see when you explore the temporary exhibition. If you look directly at her lips, she seems somewhat reserved. But glance at her cheek or her eyes, and your outer retina picks up the shadows that extend upward from her mouth, and suddenly she's smiling at you. Biographer Walter Isaacson called this "interactive smile" the first example of virtual or augmented reality.

In the VR Arcade on Level 1, Leonardo would be amazed by how computers surpass optical illusions, creating interactive realities. I am certain he would play Glider Island. Leonardo was fascinated by flight, but his designs were never built for use, so he would have a chance to experience something like the thrill of soaring through the sky.



EXPEDITION HEALTH: Leonardo would also beeline to *Expedition Health* to see “The Hikers.” These plastinated humans, produced in Germany by the creators of the *Body Worlds* exhibitions, have caused a sensation around the globe because of the astounding way in which you can learn how the body works.

Leonardo dissected more than 30 corpses—at night, by candlelight, in a crypt. The results of his illegal and secretive slicing were highly accurate and detailed drawings of human anatomy, also explored in the temporary exhibition. Today he would marvel at these technologically advanced plastic bodies and how they are publicly displayed for all to see.



OUR SENSES: CREATING YOUR REALITY: One of the world’s most observant men would certainly find this exhibition enticing. Leonardo probably would not be surprised to learn there’s so much more to how we perceive the world than simply through sight, hearing, taste, touch, and smell. Hopefully he would bring his friends because the exhibits in *Our Senses* are especially impactful when you share the experience and compare notes on your perceptions.



Grab your friends and family this summer and enjoy the Museum through the great visionary’s eyes!



Dr. Steve Nash is curator of archaeology and chair of the Anthropology Department. This article is adapted from one that first appeared on sapiens.org.



MEMBERS TIPS

- *Leonardo da Vinci: 500 Years of Genius* is open daily until Sunday, August 25. Timed tickets are required for all members and guests. Get tickets and more information at dmns.org/davinci. Audio guides, in English and Spanish, may be purchased onsite.
- *Our Senses: Creating Your Reality* is open daily until Sunday, August 4. It is free for members. Learn more at dmns.org/senses.
- *VR Arcade* is open daily on Level 1. A special ticket is required and may be purchased onsite only. Learn more at dmns.org/vrarcade.
- Weekday late afternoons and weekend early mornings tend to be less busy in our temporary exhibitions. Parking can be challenging during popular times, so please consider this when you plan your visit and entry time for *Leonardo da Vinci*.

Leonardo da Vinci: 500 Years of Genius has been created by Grande Exhibitions and Pascal Cotte.



Presented in Denver by

**STURM FAMILY
FOUNDATION**

Our Senses is organized by the American Museum of Natural History, New York (amnh.org)



EVERYONE, EVERYWHERE

NURTURING THE SPIRIT OF ENDURING CURIOSITY THAT LIVES IN US ALL

In recent years, we have enjoyed listening to you and the rest of the community and exploring what role people want the Museum to play in their lives. Our community is inspiring us every day as we plan for the future. These conversations have shaped our strategic plan, *Everyone, Everywhere*, featuring seven initiatives designed to accomplish extraordinary things, inside and outside the Museum's walls.

Future First



Future First

Since 2014, the Museum has made the biggest move of its life as 4.3 million artifacts and specimens have been relocated to the Avenir Collections Center. This opened up a lot of room in the heart of the Museum. The Future First project is focused on transforming 22,000 square feet on the first floor into an all-encompassing, mind-blowing experience that explores nature, science, and the world in completely unexpected ways.

THE LATEST: The Future First team is currently developing a concept based on extensive community input. They are also consulting other industry professionals who create compelling and popular experiences across the world. The team plans to present their "Big Idea" to the Trustees this fall.

Space Odyssey Reimagined



Space Odyssey Reimagined

Coming in 2020, an all-new *Space Odyssey* will catapult you into a space where you can touch, see, hear, and, yes, even smell what it's like to be "out there." Practice your coding skills, make your own crater, envision your future using a virtual reality environment, and blend science fiction with science reality to explore what's possible. It's your very own space lullaby filled with music, lights, and layers of open-ended investigation, mind-bending detective work, daily design challenges, and space surprises around every turn.

THE LATEST: The concept has been approved by the Board of Trustees, and the project is in the construction planning phase. The team is working on the schedule and temporary closure date for the current *Space Odyssey*. More information to come this summer!

Nearby Nature



Nearby Nature

The Museum and City Park grew up right alongside each other, both brought to life by our city's founders more than 100 years ago. One is a place to cultivate the science of nature; the other a place to actually experience nature. Bringing these two treasures together will give Museum guests and park visitors a whole new sense of discovery ... inside and out.

Inspired by Coloradans' passion for nature—and driven by their adventure-filled spirit—the Museum looks forward to partnering with Denver Parks and Recreation to tap into the natural world around us. City Park is a thriving ecosystem all on its own, packed with flora, fauna, and some of those fabulous creepy, crawly things.

THE LATEST: Read more on p. 3.

ExciteEd!



ExciteEd!

Isn't it way better to learn when you're having fun, without having to stray too far from your own natural habitat?

The ExciteEd: At Your Place experiences launched in 2018 were built upon the Museum's rich partnerships with schools. Classrooms are transformed into wonderlands of discovery, with resources delivered right to the teacher's doorstep, through a fully-guided Curiosity Kit or a Museum educator presenting a Wonder Workshop. Young learners are testing their limits, engaging in critical thinking, and solving mysteries together.

THE LATEST: The new At Your Place experiences have already reached 46,000 students! Curiosity Kits sold out during the 2018–19 school year, and the new Wonder Workshop about body systems was introduced earlier this year. Learn more at dmns.org/atyourplace.

Museum on Wheels



Museum on Wheels

Our address may say Denver, but our heart lives in every town across Colorado. So we're grabbing the keys and taking nature and science on the road. Inspired by our community's invitation to connect with them in places where they gather, two vehicles will make their way into schools, parks, neighborhoods, fairs, and festivals.

Imagine an expandable RV and a smaller trailer—each roaming the state to provide more than 250,000 Coloradans with location-centric, customized adventures designed to banish the blahs and wake up the wow. Putting the Museum on wheels means we can reach more people in more places that are meaningful to them.

THE LATEST: The trailer is in fabrication and will launch in fall 2019. Later in 2020, an RV will begin traveling primarily to schools and take a rural tour around Colorado each year.

In the Community



In the Community

Learning something revolutionary can happen when and where you least expect it. Building on the success of community engagement at the Magic Mountain archaeological site and *Dinosaur Gulch* play area at Cherry Creek Shopping Center, we're designing experiences in locations throughout the state that spark conversations and explorations about dinosaurs, space, discovery, nature, and science.

We look forward to nurturing partnerships with libraries, schools, and the National Western Center in new ways. We might even develop science camps, unveil science vending machines, or conjure up a few pop-up events in parks. We're still brainstorming, so watch out, anything could happen ... and it probably will.

THE LATEST: Our next adventure is *Mars Outpost*, a custom, space-themed, early childhood play area at Colorado Mills, opening in June. Read more on p. 2.

Institute for Science & Policy



Institute for Science & Policy

Introducing the Institute for Science & Policy. The Institute will provide tools, data, processes, and a safe environment for deliberate, thought-provoking, and change-making conversation about policy issues involving science. It's intended to be a catalyzing force by creating a forum for policy makers, scientists, and present and future influencers to gather and discuss how civil dialogue and scientific thinking can positively impact policy making and problem solving.

THE LATEST: Convenings and a symposium to diagnose complex public policy issues and identify the factors involved in building agreement will be held in 2019. Learn more at dmns.org/institute.

TOGETHER

Let's continue to make science accessible, understandable, fun, and meaningful, so we can all contribute to a strong and vibrant future for Colorado.

DISCOVER MORE

Learn more about *Everyone, Everywhere* at dmns.org/e2.

Take a walking tour guiding you through the strategic plan during the Annual Members Open House on Wednesday, July 10. See the back cover for details.



NATIVE BEES DESERVE SOME BUZZ

BY DR. GABRIELA CHAVARRIA

For every third bite of food you take, thank a pollinator!

Earth is home to an amazing diversity of plants. Approximately 390,000 species provide essential food and shelter, without which we and most other animals would quickly die. Nearly all flowering plants require a pollinator—such as bees, butterflies, moths, bats, birds, and many others—to help produce fruits and seeds.

We enjoy cacao (which gives us chocolate), pumpkins, cranberries, figs, and over 300,000 other fruits and vegetables thanks to the work of the pollinators. Cross-pollination is a fundamental ecological process, critical to the success of 30 percent of the world's crops and 90 percent of all wild plants. In fact, 30 percent is probably too low because bees also pollinate alfalfa and other forage crops for beef and dairy cattle.

Only 15 percent of crops pollinated by bees are pollinated by honey bees (*Apis mellifera*), which were introduced in North America by early colonists from Europe who needed the right pollinator for their crops and honey production. The rest are pollinated by other bee species native to North America. Unfortunately, many native bee species are declining due to habitat destruction, pesticide use, invasive diseases, and other problems.

Bees are a group of specialized insects that evolved from wasps. Unlike wasps that provide their larvae with other insects as food, bees use pollen as a protein-rich food for their young. All adult female bees possess specially modified structures on their legs and bodies to trap and carry these pollen grains.

Most people are surprised to learn that there are 25,000 described bee species. Bees are so diverse and wide-ranging that you can find them in almost every climate and ecosystem. Some live in very cold areas and others at elevations above 14,500 feet. Most bees, like most humans, love warm weather, so the greatest species diversity is found in temperate areas, such as the semiarid deserts, scrublands, and dry steppes.

Honey bees belong only to *Apis mellifera* (from Latin meaning “bee” and “honey-bearing”) and were domesticated to produce a lot of honey. Many native bees produce honey but only for their own consumption and their brood. The honey bee is the only bee that stings, dying when its barbed stinger stays inside its “victim.” Most native bees do not have a functional stinger, except for the bumble bee. It very rarely stings, but when it does, the bumble bee can sting multiple times because its stinger is smooth and it doesn't die.

In Colorado alone, we have 920 described bee species! This doesn't include the non-native honey bee, which is broadly popular in metro Denver. Many native bees are solitary and struggling to survive. They need native plants and their habitat has been shrinking with urban sprawl and modern development.

The natives also need fewer honey bees around. Our solitary heroes simply can't compete with large swarms of honey bees. Making matters worse, honey bees also cannot pollinate Colorado's native plants. Data shows that one strong active honey bee hive during a three-month period takes away the pollen needs of 100,000 solitary bees. Plants have evolved to attract specific pollinators. The flower still provides pollen and nectar to whomever comes to visit, but they need the perfect bee to make sure the pollen gets transferred to the right place. We need to protect our native bees so they can pollinate our native plants and help preserve our rich biodiversity in Colorado.

My graduate advisor, Harvard biologist E. O. Wilson, flatly stated in 1996, “Humanity, for its own sake, must attend to the forgotten pollinators and their countless dependent plant species.” More than two decades later, and as bee populations continue to collapse, we can see how truly prescient he was.

DISCOVER MORE

Dr. Gabriela Chavarria is chief curator and vice president of research and collections. Growing up in Mexico City, she fell in love with bees at an early age and has devoted her career to the conservation of native pollinators, especially bumble bees.

June is Colorado Pollinator Month. Learn more about pollination and planting habitats for native bees at coloradopollinatormonth.com, xerces.org/pollinator-conservation, and pollinator.org/guides. Do you have some questions about bees? Send them to pollinators@dmns.org.

Pictured: The Museum's entomology collection contains more than 1,000 specimens of bees, mostly representing the United States but also Africa, Asia, and South America. The photo features all the major native bee families in Colorado. They widely range in size and color, including green! The smallest bee pictured is *Ceratina*, about 0.10 inches (0.25 cm), and the largest is a bumble bee, generally ranging in size from 0.47 inches to 0.59 inches (1.2 cm to 1.5 cm).



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LEONARDO DA VINCI

500 YEARS OF GENIUS

Presented in Denver by

STURM FAMILY
FOUNDATION



Left to right: Susan Sturm,
Donald Sturm, and Stephen Sturm;
not pictured: Emily Sturm

The Museum is very grateful to the Sturm Family Foundation for its generous presenting sponsorship of *Leonardo da Vinci: 500 Years of Genius* in Denver.

Established in 2000 by Donald and Susan Sturm, the Sturm Family Foundation supports nonprofits that provide valuable and impactful services and programs to their local communities. They were also the presenting sponsor of the *Dead Sea Scrolls* exhibition at the Museum in 2018.

The Foundation is co-managed by the couple's children, Stephen Sturm and Emily Sturm. Like their parents, Stephen and Emily do their own research when considering projects to support. In 2018, Emily traveled to the New Mexico Museum of Natural History and Science to see that venue's presentation of the exhibition.

"It's just part of our due diligence," said Emily. "We wanted to see the exhibition in another venue and learn from the Denver staff how the Museum team would present it for our local audience. We are pleased with the results here in our hometown Museum and how it is resonating with guests."

At the *Leonardo da Vinci* opening celebration on March 14, Donald and Susan both remarked on how meaningful it is to their family to help bring cultural opportunities to the Front Range community. "This man [Leonardo] came from very humble origins, yet achieved so much that we're still talking about him 500 years after his death," said Susan. "We think the exhibition will spark guests' curiosity and inspire them to see past whatever barriers they face to ways of expanding their own potential."

UPGRADE TODAY AND ENJOY EVEN MORE BENEFITS

Deepen your passion for nature and science by joining the Giving Club! In addition to supporting scientific research and education, upgrading your membership to the Curator level gives you access to special events and exclusive benefits throughout the year.

- Complimentary Flex Tickets (14) for yourself or friends and family to use for popular programs such as Science Lounge, select evening lectures, IMAX and Planetarium shows, or for free admission to *Leonardo da Vinci: 500 Years of Genius* and *The Science Behind Pixar*, opening this fall. Flex Tickets let you design your benefits based on your personal interests.
- Invitations to special events throughout the year, including the popular Behind-the-Scenes Night and IMAX Night, just for Giving Club members.
- First access to summer camp registration, even before general members!

As a Giving Club member, your gift supports ongoing scientific research, preserves rare artifacts, and fuels lifelong discovery in the millions of people served by Museum exhibitions and programs. Upgrade today by logging in to your online Museum account and start enjoying additional benefits right away. Find out more at dmns.org/givingclub or call 303.370.6306. Monthly installment plans are now available starting at just \$42 per month.

THANK YOU

Members, you helped make 2018 another memorable year! Please take a moment to read the 2018 Gratitude Report at dmns.org/annualreport. Our commitment to igniting a passion for nature and science in all Coloradans wouldn't be possible without you.

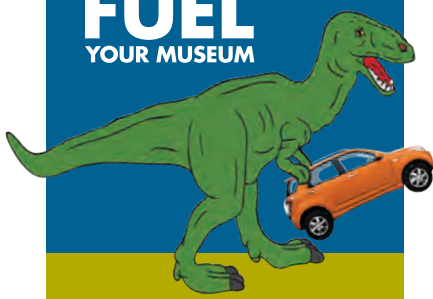
THE FUTURE IS NOW

Since its founding, vital community and individual support has allowed the Museum to grow into a thriving institution. By planning now for the future, you have the opportunity to ensure that the Museum's mission endures for generations to come. There are many options for creating a planned gift that will meet your needs while supporting the Museum. Find downloadable brochures and a free Estate Planning Kit or evaluate your current plan at dmns.planmylegacy.org.

FUEL YOUR MUSEUM

Support the artifacts, exhibitions, and experiences you love by donating your used car, boat, motorcycle, truck, or RV to the Museum. Find out more at dmns.org/give/vehicle-donation.

FUEL YOUR MUSEUM



MAKE A MATCH

Your employer may be one of 10,000 companies that match employee donations to nonprofits such as the Museum. Memberships qualify for matching too! Find out more at dmns.org/give/matching-gifts or see your employer's personnel office for more information.

2018 | 2 MILLION PEOPLE

HIGHLIGHTS

SERVED IN A YEAR - A RECORD!



1/3 of onsite guests visited for FREE

81,880

at SCFD Community Free Days & Nights



DENVER MUSEUM OF NATURE & SCIENCE

286,860 total school + youth group audience



97% of school audience SERVED FOR FREE OR AT REDUCED COST



9,545 TEACHERS at professional events



66,645 SCHOLARSHIPS for education programs

33 RESEARCH FIELD EXCURSIONS over 333 Days

26 TONS

of compost diverted from the landfill

DISTANCE LEARNING reached

25

states & Canada



THE SABER-TOOTHED CAT ATE \$10,100 IN COINS



2,100 EXPERIENCED MAGIC MOUNTAIN FIELD SITE



33,230 GUESTS = \$1 SNAP admission



1,805 VOLUNTEERS = 224,220 HOURS



5,440 AT CAMP-INS



VISITORS TO DEAD SEA SCROLLS FROM ALL 50 STATES



1,451 PARTICIPANTS IN SAVORY-SOUR TASTE STUDY

24

PEER-REVIEWED SCIENTIFIC PUBLICATIONS



8 LIVE

FLUORESCENT SCORPIONS in Creatures of Light



MILESTONE: 40K ARACHNIDS IN DATABASE



19,720 GUESTS BEHIND THE SCENES in the collections

34 TEEN SCIENCE SCHOLARS



64K MEMBER HOUSEHOLDS



TOOLING THROUGH HISTORY

Recently, our Museum photographer, Rick Wicker, helped the Earth Sciences Department with an inventory of all of the specimens in *Prehistoric Journey*. Wicker spends hour upon hour every year taking beautiful photos of hundreds of objects from the Museum collections. After working on the project and singling out every item in *Prehistoric Journey*, which object is his favorite? “The pebble tool,” he said. “To think that someone created and used that tool with their bare hands millions of years ago really blows my mind.”

The Oldowan pebble tool (A2013.1) is indeed one of the Museum’s most significant donations. The tool was made by our hominid ancestors around 1.75 million years ago. It was found in the 1960s by famed archaeologist and anthropologist Louis Leakey in the Olduvai Gorge, Tanzania.

The waterworn cobble is slightly larger than a tennis ball, sized to fit in a small human hand. The tool is made from brown quartzite. Along one side, at least nine large flakes were knocked off. The flaked edge creates a sharp but irregular cutting surface. It is apparent the flakes were knocked off in a patterned manner. First, a flake was struck off one side; the cobble was turned over and a flake was struck from the other side. This alternating method of detaching flakes is significant because it was purposeful.

The tool’s humble appearance belies its significance. Simple as it is, it represents one of the earliest attempts by our human ancestors to control their lives by making tools. These ancient hominid toolmakers, known today as *Homo habilis*, were beginning to develop some very humanlike characteristics. Brain size was increasing. The cranial vault was becoming rounded, losing the distinct ridge running along the top of the skull that gorillas still have today. The canine teeth were much reduced and teeth in general were becoming smaller. At Olduvai Gorge in Tanzania during the 1963 expedition, a fossil foot from the same time period as the tool was found by N. Mbuika. Most of the tarsal and metatarsal bones are present and they show great similarity to modern human foot bones. Even at this early date, hominids were walking upright on two feet.

The implications of this 1.75-million-year-old tool and the fossils found in the same strata are important to understanding human evolution. Enlarged brains and smaller teeth mean these bipedal hominids were depending more on their wits for survival rather than relying solely on the strength and killing power of their bodies. The simple pebble tool suggests these hominids could conceptualize a need, find the suitable raw material, and create a useful implement. It also means their hands could manipulate objects with a combination of dexterity and strength.

This particular artifact came to the Museum with a distinguished pedigree. Dr. Louis Leakey gave it to John E. Pfeiffer, a renowned archaeology and anthropology science writer during the mid-20th century. Pfeiffer interviewed the Leakeys at their Olduvai Gorge dig site. John’s son Dr. Tony Pfeiffer, who worked at this Museum in the 1990s, kindly donated the Oldowan pebble tool to honor his father and the Pfeiffer children. It has been displayed in *Prehistoric Journey* since the exhibition opened in 1995, adding to the fascinating story of what makes us human.

DISCOVER MORE

See the 1.75-million-year-old Oldowan pebble tool for yourself! It is located near the end of *Prehistoric Journey*, in a group of exhibits devoted to exploring the dawn of humankind.



This is adapted from an article by Dr. Robert B. Pickering originally published in the winter 1995 edition of *Museum Quarterly*.



MEMBERS APPRECIATION DAY SUNDAY, AUGUST 11

Enjoy these special discounts just for you!

- 20% off on select items* in the main Museum Shop
- 20% off in the T-Rex Cafe and Grab & Go
- 10% off gift memberships
- 50% off IMAX and Planetarium tickets

*Extra 10% discount does not apply to DVDs, CDs, and books. Special offers are valid in person only and must be used on August 11, 2019.

SPECIAL SAVINGS

Take a Lyft to the Museum and get \$3 off a ticket to *Leonardo da Vinci: 500 Years of Genius* when you present your Lyft app at the main ticketing desk. This offer is valid through June 30. As the Museum's rideshare partner, Lyft also offers \$5 off 3 rides for any new user with the code DMNSNEW. Parking can be challenging at the Museum during the summer. We encourage you to consider alternative modes of transportation. Other options include bike racks to stow your bicycles right outside the main entrance, and a Denver B-cycle station located at the Museum.

WE'RE HERE FOR YOU

- 303.370.6306 (daily, 9–5)
- members@dmns.org
- www.dmns.org/members
- Members Lane at Ticketing

GET THE MOST FROM YOUR MEMBERSHIP

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- Add another adult to your membership for just \$50. This is a great option for nannies and grandparents, and the add-on member enjoys many benefits! Not valid on Individual level memberships.
- Pack your membership card! Receive free admission at 360 science centers and museums outside a 90-mile radius of Denver and your residence through the ASTC Passport Program, astc.org/passport.
- Upgrade to the Family Plus level or higher and enjoy free admission to the Fort Collins Museum of Discovery.

THANK YOU FOR YOUR SUPPORT!

Your membership helps us provide outstanding science education programs, exhibitions, and research.



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MEMBERS-ONLY OPEN HOUSE

WEDNESDAY, JULY 17 • 6-9 P.M.

You are invited to an exclusive Open House **just for members** during a free evening for the whole family, including **fun space activities** to commemorate the 50th anniversary of the first moonwalk.

- Admire the skies through **telescopes** (weather permitting).
- See **Museum treasures**, including astronaut Kjell Lindgren's flight suit from his six-month mission on the International Space Station.
- Learn something new about our amazing universe from our **space scientists and educators**.
- Experience the wonders of the cosmos in **Gates Planetarium**.
- Explore a **model of the InSight lander**, currently actively exploring Mars.
- Take a **walking tour** guiding you through the initiatives from the *Everyone, Everywhere* strategic plan, including plans for an all-new Space Odyssey, opening in 2020!
- Meet **Mr. Bones**, the dinosaur puppeteer.
- Explore your **favorite exhibits** throughout the Museum. Please note that the IMAX Theater, *Leonardo da Vinci: 500 Years of Genius*, and *Our Senses: Creating Your Reality* will be closed this evening so you can particularly enjoy the Museum's own **unique experiences**.

This evening is free for all members and ADVANCE RESERVATIONS ARE REQUIRED.

RESERVATIONS OPEN ON MONDAY, JUNE 10.

- Please RSVP at 303.370.6306 (daily, 9-5) or dmns.org/memberevents.
Event entry will occur every 15 minutes beginning at 6 p.m. through 7:45 p.m. The event ends at 9 p.m.

A pre-purchased dinner is available, with reservations due by Wednesday, July 3.

- \$14 adult, senior, junior member; \$9 child member (ages 3-12)
- Enjoy dinner anytime between 6 and 8 p.m. Menu at dmns.org/memberevents.

A detailed mosaic of various flowers created from small, round beads. The background is a dense grid of white beads. The flowers are made from different colored beads: green, blue, yellow, red, pink, and light blue. The flowers are scattered across the image, with some fully visible and others partially cut off by the edges. The overall effect is a vibrant, textured floral pattern.

DISCOVER

ADULTS | CHILDREN | FAMILIES | TEENS

SUMMER 2019



JUNE 20: SCIENCE IS A DRAG

It's a bird! It's a plane! It's a drag queen?! Earn your bedazzled wings during a night dedicated to the physics of flight while looking fly. Find out what it takes to get airborne—a little drag, a little lift, a little weight, and a lot of thrust! With special appearances by Mile High KINGdom Drag Kings and Dixie Krystals. Presented in partnership with The Center on Colfax as part of Denver PrideFest.

JULY 18: MOON MAYHEM

Strap on your moon shoes and get ready to explore the lunar surface. Build a rocket and shoot for the moon. Get the history on lunar missions, then see the planetarium show *Imagine the Moon*.

AUGUST 15: BICYCLES

Gear up for a night of fun on two wheels. Cruise through the science of cycling, get some maintenance tips, and take a tricycle for a spin. Ride your bike to the Museum and get a prize.

BUY TICKETS AT [DMNS.ORG/SCIENCELOUNGE](https://dmns.org/science lounge)
\$13 MUSEUM MEMBER, \$15 NONMEMBER

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MAGAZINE

SUMMER 2019

EXHIBITIONS

Our Senses: Creating Your Reality

Through August 4 • Free for members

Play with color, patterns, sound, scents, and touch to discover there's so much more to your senses than just the famous five.

Leonardo da Vinci: 500 Years of Genius

Through August 25 • Special ticket required

Although Leonardo da Vinci died in 1519, his influence has endured and comes to life through his machine inventions, multimedia experiences, and a revealing look at the wonder of the *Mona Lisa*.

Extreme Sports: Beyond Human Limits

Opens September 13 • Free for members

Experience the thrill of extreme sports in interactive exhibits and immersive environments that go inside the minds and bodies of some of the world's greatest athletes.

The Science Behind Pixar

Opens October 11 • Special ticket required

Get hands-on with the science, technology, math, art, and engineering concepts used at Pixar every day.

PHIPPS IMAX THEATER • Now showing

Apollo 11: First Steps Edition 2D

Superpower Dogs 3D

Turtle Odyssey 3D • Opens August 22

Volcanoes 3D: The Fires of Creation • Closes August 21

Hollywood Favorites • Check dmns.org/imax

GATES PLANETARIUM • Now showing

Black Holes: The Other Side of Infinity

Destination Solar System

Imagine the Moon • New show!

One World, One Sky: Big Bird's Adventure

Space Tours Live

ADMISSION • Special ticket required for *Leonardo da Vinci*.


	MUSEUM	IMAX	PLANETARIUM
Adult member	FREE	\$7	\$5
Senior member (65+)	FREE	\$6	\$4
Junior member (3–18)	FREE	\$6	\$4

The Museum is open daily 9 a.m.–5 p.m., with extended hours at various times..


Dates, times, prices, and schedules subject to change. Find more ways to discover @ dmns.org.

On the cover: Detail from soft cradle, AC.7598, Lakota


JUNE

SUN	MON	TUE	WED	THU	FRI	SAT
Hollywood Films • Every Thu, Fri, & Sat <i>Discover more @ dmns.org</i>						1
Summer Camps						
SCFD Community Free Day 		Vitruvian Man course, p. 9	Get Inside Your Mind, p. 5			
2	3	4	5	6	7	8
Summer Camps						
			Indigenous Film, p. 5 Canoe trip, p. 11	Bird Walk, p. 10	Museum After Dark/After Dark Soiree	
9	10	11	12	13	14	15
Summer Camps						
Geography of People, p. 9 Butterflies in Mixed Media, p. 10				Science Lounge, inside cover	Summer solstice	
16	17	18	19	20	21	22
Summer Camps						
23		Volcanoes, p. 5	60 Minutes in Space, p. 6	Science Riot, p. 6		
30	24	25	26	27	28	29

JULY

SUN	MON	TUE	WED	THU	FRI	SAT
		SCFD Community Free Night (5–10 p.m.)  QUESTIONS WELCOME IF POSSIBLE				
	1	2	3	4	5	6
Summer Camps						
		Moon Rush, p. 6	Indigenous Film, p. 5 Sci-Fi Film Series, p. 6	To the Moon for families, p. 12		Canoe trip, p. 12
7	8	9	10	11	12	13
Summer Camps						
		Birding Without Borders, p. 7	Annual Members Open House Sci-Fi Film Series, p. 6	Science Lounge, inside cover Bird Walk, p. 10		
14	15	16	17	18	19	20
Summer Camps						
			Sci-Fi Film Series, p. 6	Viscerality, p. 7		
21	22	23	24	25	26	27
Summer Camps						
		Into the Deep, p. 8	60 Minutes in Space, p. 6 Sci-Fi Film Series, p. 6			
28	29	30	31			

AUGUST

SUN	MON	TUE	WED	THU	FRI	SAT
Summer Camps						
				1	2	3
Summer Camps						
Our Senses closes			Sci-Fi Film Series, p. 6 Canoe Trip, p. 12			
4	5	6	7	8	9	10
Members Appreciation Day		Digital Moon, p. 8	Indigenous Film, p. 5 Sci-Fi Film Series, p. 6	Science Lounge, inside cover		
11	12	13	14	15	16	17
		Art into Science, p. 8		Turtle Odyssey 3D opens in IMAX Bird Walk, p. 11		
18	19	20	21	22	23	24
Leonardo da Vinci closes	SCFD Community Free Day  C'EST ENSEMBLE QUE L'ON PROGRESSE		60 Minutes in Space, p. 6			
25	26	27	28	29	30	31

After HOURS

AT THE DENVER MUSEUM OF NATURE & SCIENCE

Get Inside Your Mind: Tour the Human Brain

Is it literally a spark that ignites human curiosity? The answer and more lie somewhere in the brain's complex architecture. Get a look inside your head during a tour of the brain, projected on our immersive planetarium dome, with Dr. Jonathan Fisher, assistant professor of physiology, New York Medical College. Fisher founded the Neurodome Project, which combines planetarium technology with high-resolution brain imaging techniques. From witnessing sparks of electrical activity in individual neurons to sailing down neural pathways that support consciousness, emotions, and complex thought, you will explore the fundamental mechanisms of brain function—and what it means to be human.

Wednesday, June 5 • 6 or 8 p.m. • Gates Planetarium • \$12 member, \$15 nonmember

Indigenous Film Series

The Museum is pleased to partner with the International Institute for Indigenous Resource Management and the Denver American Indian Commission to present Indigenous Film, a monthly series. Join us for a variety of films, from documentaries to feature films and youth film showcases. Then participate in a discussion with the Denver American Indian Commission and other special guests. Concessions available for purchase. More information at dmns.org.

Wednesdays, June 12, July 10, August 14 • 6:30 p.m. • Phipps Theater • Free

Volcanoes: Fires of Creation

Marvel at one of nature's most breathtaking shows as you explore molten worlds and exploding craters across the globe in the IMAX film *Volcanoes 3D: The Fires of Creation*. Go to the edge of an active volcano in Indonesia, descend to a lava lake in Vanuatu, and visit incredible mineral deposit fields in Ethiopia and the archaeological ghost town of Pompeii. After the film, John Sanderson, director of science with The Nature Conservancy Colorado (TNC), will discuss TNC's work in volcanic areas and Colorado's geological history. Coffee and dessert follows the presentation. Presented in partnership with The Nature Conservancy Colorado.

Tuesday, June 25 • 7 p.m. • Phipps IMAX Theater • \$12 Museum or TNC member, \$15 nonmember



60 Minutes in Space

Go “behind the stories” with space scientists Dr. Steve Lee and Dr. Ka Chun Yu using the best images and animation available to help understand new developments. No reservations required. Seating is limited to first come, first served.

Wednesdays, June 26, July 31, August 28 • 7 p.m. • Ricketson Auditorium • Free

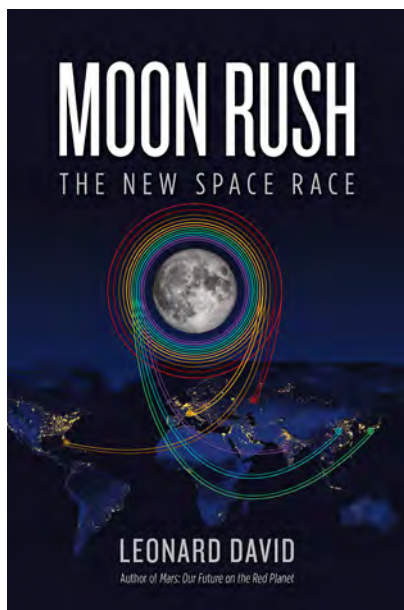
Science Riot

Cheer on local scientists turned comedians as they attempt standup for the first time and wax hilarious about the unique nuances of their work. This one-of-a-kind comedy night for science fans will get you laughing with (and at!) some of the biggest brains in town. Ages 18+.

Thursday, June 27 • 7:30 p.m. • Science Atrium • \$12 member, \$15 nonmember • Cash bar

Moon Rush: The New Space Race

The race to the moon is on again! In his new book *Moon Rush: The New Space Race*, veteran space journalist Leonard David explores our enduring fascination with the moon, from ancient myth to plans for a future “Moon Village.” David offers insider information about how the United States, its allies and competitors, and key private corporations, such as Moon Express and Jeff Bezos’s Blue Origin, plan to reach, inhabit, and even harvest the moon in the decades to come. Spurred on by the Google Lunar XPRIZE—\$20 million for the first to get to the moon and send back images—the 21st-century space race has become even more compelling. David’s reporting and accompanying maps, graphics, and photographs shed new light on our constant lunar companion, offering reasons to gaze up and see it as never before.



Tuesday, July 9 • 7 p.m. • Phipps Theater • \$12 member, \$15 nonmember

Sci-Fi Film Series

A summertime favorite is back! Various Museum scientists are joined by Vincent Piturro, professor of film and media studies at Metropolitan State University of Denver, to host screenings of famous sci-fi films and lead discussions to break down the science behind these alternative possibilities. Presented in partnership with the Denver Film Society.

Wednesdays, July 10–August 14 • 7 p.m. • \$12 Museum or DFS member, \$15 nonmember, \$8 student (per film) • Series pass: \$55 Museum or DFS member, \$70 nonmember

July 10 • *Contact* with space scientist Naomi Pequette • Phipps Theater

July 17 • *Donnie Darko* with space scientist Ka Chun Yu • Sie Film Center

July 24 • *Get Out* with Dr. Ella Maria Ray, Metropolitan State University • Ricketson Auditorium

July 31 • *Jurassic Park* with paleontologist Joe Sertich • Phipps Theater

August 7 • *Prospect* with space scientist Steve Lee • Phipps Theater

August 14 • *Eternal Sunshine of the Spotless Mind* with health scientist Nicole Garneau • Sie Film Center

Birding Without Borders

Named a “Travel Pioneer” by the BBC and the “Birdman of Razzmatazz” by *Newsweek*, Noah Strycker is a writer, photographer, and bird man. In 2015, Strycker set himself a lofty goal: to become the first person to see half the planet’s birds in one year. For 365 days, with a backpack, binoculars, and a series of one-way tickets, he traveled across 41 countries and all



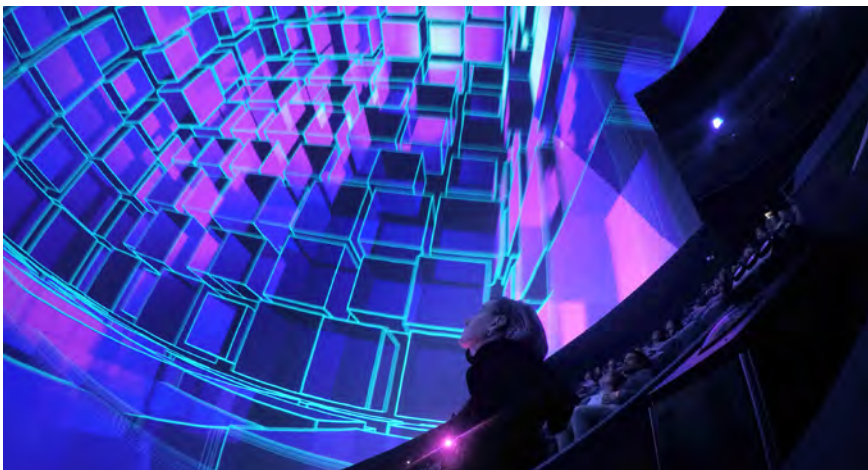
seven continents, eventually spotting 6,042 species—by far the biggest birding year on record. In his book *Birding Without Borders*, Strycker ventures deep into a world of blood-sucking leeches, chronic sleep deprivation, airline snafus, breakdowns, mudslides, floods, war zones, ecological devastation, conservation triumphs, common and iconic species, and scores of passionate bird lovers around the globe. He offers a hopeful message that although many birds face an uncertain future, more people than ever are working to protect them. Presented in partnership with Bird Conservancy of the Rockies with promotional support from Audubon Society of Greater Denver and Audubon Rockies.

Tuesday, July 16 • 7 p.m. • Ricketson Auditorium • \$12 Museum, BCOR, or Audubon member, \$15 nonmember
• Book sale & signing

Viscerality

Believe us, you’ve never experienced the dome of Gates Planetarium quite like this! *Viscerality* is a live immersive full-dome performance designed by the artist Synthestruct, aka Ginger Leigh. The audio and generative visuals are controlled by sensor-enabled gloves. Each scene explores different methods of interaction and control, so that each show is unique and the audio and visuals are created in real-time. Synthestruct is an interactive and audiovisual designer who creates experiences inspired by her passion for science and expanding our sensory perceptions. She works with sensors and data to tap into real and imaginary worlds. Presented in collaboration with the Praxis Initiative of the University of Denver’s Center for Innovation in the Liberal and Creative Arts (CILCA).

Thursday, July 25 • 7 p.m. • Gates Planetarium • \$12 member, \$15 nonmember, \$8 student • Cash bar



Into the Deep: Leonardo Underwater

Some of Leonardo da Vinci's most imaginative drawings depict how to travel underwater. He drew figures fitted with bloated masks or mouthpieces connected to air tubes. These proto-scuba divers offer the promise—or at least the potential—for gaining a new kind of access to water's depths. Dr. Leslie Geddes, assistant professor of art history at Tulane University, will discuss how these drawings reveal Leonardo's commitment to trying to figure out how to view the murky and mysterious underwater world firsthand. The devices are not merely whimsical inventions; they invite comparison with Leonardo's deepest concerns about the observable world.

Tuesday, July 30 • 7 p.m. • Ricketson Auditorium • \$8 member, \$10 nonmember



Digital Moon

Take a trip to the moon with space scientists Dr. Steve Lee and Dr. Ka Chun Yu to celebrate the 50th anniversary of the Apollo 11 mission. Using the full dome of Gates Planetarium, visit the sites where lunar landers have touched down. Look back through the history of lunar missions and look forward to moon missions to come.

Tuesday, August 13 • 7 p.m. • Gates Planetarium • \$8 member, \$10 nonmember

Art into Science, Science into Art

Leonardo da Vinci's eclectic interests inspired him to explore technological and scientific potentials that his contemporaries could not imagine. He constantly innovated as he designed imaginative machines and created highly original works of art. Dr. George R. Bent, Sidney Gause Childress Professor of the Arts at Washington and Lee University, examines one of Leonardo's most important scientific exercises—his detailed study of human anatomy—and connects this work to his truly advanced approach to representing the human form in his paintings. Leonardo's art, we will see, depended on his scientific discoveries, but his scientific contributions, we will also see, could not have been articulated without his total mastery of art.

Tuesday, August 20 • 7 p.m. • Phipps Theater • \$12 member, \$15 nonmember





The Great Space Escape for Adults Only

Strap on your space boots for a crash course in constellations and galactic hijinks with a pair of cosmically comical astronomers. It's part stand-up, part science, part history, and all parts fun. Cash bar opens 30 minutes before show time, so come early and grab a drink.

Thursday, September 5 • 6 or 8 p.m. • Gates Planetarium • \$15 member, \$18 nonmember • Ages 21+

COURSES

Leonardo and the Vitruvian Man

Become immersed in the world of Leonardo da Vinci in this two-part experience. First, Dr. Steve Nash, curator of archaeology, will share insights on the life and times of Leonardo, followed by after-hours access to the temporary exhibition *Leonardo da Vinci: 500 Years of Genius*. Part two is an experiential learning workshop at Anatomy in Clay Centers. Instructor Jon Zahourek—anatomist, artist, scientist, and inventor—will guide you through Vitruvius's rules of proportion for humans and architecture. Based on the notes of architect Vitruvius Pollio (80 BCE), Leonardo's drawing *The Vitruvian Man* became known as the "Canon of Proportions." Vitruvius's universal design principles embody his belief that the workings of the human body are the same as the workings of the universe. In the studio, you will have an opportunity to put your genius to work as you form anatomy in clay onto Zahourek's MANIKEN brand models of the human skeleton. Materials included.

Museum experience: Tuesday, June 4, 6:30–9 p.m. •

Studio experience: Saturday, June 8, 9 a.m.–3 p.m. •

\$225 member, \$250 nonmember



The Geography of People

Using the state-of-the-art Science on a Sphere visualization technology in *Space Odyssey* and the full-dome experience of Gates Planetarium, you will explore patterns of human settlements and the forces that influence the lives of peoples around our globe. With geologist Dr. Bob Reynolds, examine Earth's geological framework and how it influences our human habitat. Humans have spread across the entire globe and our population grows daily. Though we strain our resource base, innovation and education have the potential to mitigate many challenges, and wise planning can help future generations lead more secure lives.

Monday & Tuesday, June 17 & 18 • 6:30–8:30 p.m. • \$20 member, \$25 nonmember

Colorado Butterflies in Mixed Media

Butterflies are beautiful; almost everyone can agree on that. But have you ever looked really closely at a butterfly? Join Marjorie Leggitt, an award-winning illustrator, as she leads you through the steps to create a realistic, larger-than-life, mixed-media butterfly illustration. This all-levels art workshop starts with an overview of butterflies by Dr. Frank Krell, curator of entomology. Then, select a Colorado butterfly from the Museum's education collections for your project. Leggitt will describe the importance of close observation and teach simple math skills to help you measure and duplicate wing patterns. Learn how to mix and layer watercolor to build rich, luminous colors, and discover the secret to creating light and iridescence, and colored pencil tricks that build texture and details. Materials provided.

Mondays & Wednesdays, June 17–26 • 6–9 p.m. • \$225 member, \$250 nonmember



BIRD WALKS

Explore with expert bird guide Norm Lewis.

Bear Creek Canyon and More

In June, all of the locally nesting migrants are in place. Bear Creek flows from the foothills to the plains, with excellent mixed habitats and a wide variety of species, including American dipper, lesser goldfinch, blue-gray gnatcatcher, Virginia's warbler, and lazuli bunting. Then visit Genesee Mountain Park, a true gem of lower-elevation mountain birding, featuring Hammond's and dusky flycatchers, white-breasted and red-breasted nuthatch, and the gray-headed form of dark-eyed junco. Genesee is also known for the elusive Williamson's sapsucker.

Thursday, June 13 • 7 a.m.–5 p.m. • \$27 member, \$35 nonmember

Rocky Mountain Arsenal and Barr Lake State Park

The “dog days of summer” are often viewed as a slow time for birding, but not necessarily! The Rocky Mountain Arsenal is a fine locality in midsummer. Walk trails and check ponds and lakes for many species of ducks, a variety of grebes, herons and egrets, and American white pelicans. In the prairies, look for raptors, burrowing owl, western meadowlark and flycatchers, while the woodlands should produce woodpeckers, warblers, and vireos. If time permits, travel to Barr Lake State Park, which offers the possibility of shorebirds.

Thursday, July 18 • 7 a.m.–5 p.m. • \$27 member, \$35 nonmember

Morgan County

Of particular interest during the fall is shorebird migration, which takes place a little earlier than songbird migration. “Run the playas” (actually, perennial ponds) of Morgan County, known as fine places to find shorebirds in late summer. Look for a variety of sandpipers, plovers, dowitchers, phalaropes, and stilts, along with a few passerines and raptors. Then drive to Jackson State Park for wild turkey, sparrows and warblers, gulls, great horned owl, and perhaps even a ring-necked pheasant. Five of Colorado’s six swallow species are common here, as well as belted kingfishers and snowy and great egrets. There may be abundant shorebird habitat, depending upon agricultural water needs from the reservoir, which may be full or drawn down to expose extensive mudflats. In years in which this occurs, Jackson Lake can be the best shorebirding site in Colorado.



Thursday, August 22 • 6:30 a.m.–5 p.m. • \$27 member, \$35 nonmember

CANOE TRIPS

Paddle along scenic rivers while gaining new knowledge about geology, wildlife, astronomy, and dinosaurs. Reservations and information: 720.283.0553, CentennialCanoe.com

Archaeology and Western History on the Green River

Museum educator Jennifer Moss Logan shares stories of those who left their mark on the local landscape, from ancient native peoples to the colorful characters whose adventures brought them westward. For both the adventurer and historian at heart.

Wednesday–Sunday, June 12–16 • \$691 adult, \$661 child (6–12 years)



Dinosaurs by Canoe on the Colorado

Experience fascinating rock formations from the age of the dinosaurs, and paddle your way along the Colorado River with educator Samantha Sands as your time-travel guide. Camping along the river's banks and exploring Dominguez Canyon will leave you awed by the immensity of geologic time.

Saturday–Monday, July 13–15 • \$436 adult, \$406 child (6–12 years)

Geology and Archaeology by Canoe on the Upper Gunnison

With geologist Bob Reynolds as your guide, marvel at colorful sandstone walls hundreds of feet high and explore canyons and ancient rock art. Canoe down this epic stretch of river, hike and explore the Dominguez Canyon Wilderness Area with waterfalls and petroglyphs, and camp along the river's edge.

Wednesday–Sunday, August 7–11 • \$691 adult, \$661 child (6–12 years)

FAMILIES



To the Moon and Back

Come fly with us as we celebrate one of humankind's greatest achievements—landing on the moon! At this out-of-this-world event, enjoy dinner in the Museum, learn about our planet's only natural satellite with interactive activities, look at the moon through high-power telescopes (weather permitting), and enjoy moon-themed shows in Gates Planetarium. This will be one small evening out for families, and one giant leap for your moon know-how.

Thursday, July 11 • 6 p.m. • member: \$20 adult, \$15 junior/child • nonmember: \$25 adult, \$20 junior/child

Reservations and general information: 303.370.6000, daily, 9 a.m.–5 p.m., or dmns.org

Print-at-home tickets are available at dmns.org for exhibitions, IMAX and Planetarium shows, and lectures and programs, and there's no handling fee! Please always bring your membership card and photo ID when you visit the Museum.

You will receive a confirmation email for your program, field trip, course, or workshop with further information about your event.

Sales are final on all tickets unless the Museum cancels the event.

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SUMMER SHOPPING

MEMBERS RECEIVE A 10% DISCOUNT
EVERY DAY IN THE MAIN MUSEUM SHOP AND
THE LEONARDO DA VINCI SHOP ON LEVEL 3.



MEMBERS SAVE 10% EVERY DAY!



T-REX
CAFE

SALAD BAR, GRILL, KIDS MEALS — LEVEL 1
11 a.m.—2 p.m.

GRAB & GO SANDWICHES, SNACKS — LEVEL 1
9 a.m.—4 p.m.

COFFEE LAB — LEVEL 2
9 a.m.—3 p.m.

Proudly serving locally sourced Colorado products.

