

# newscience

NEWS FOR MEMBERS AND FRIENDS OF THE SAINT LOUIS SCIENCE CENTER

WINTER 2020 - 2021

An aerial photograph of the Saint Louis Science Center building, a large, white, circular structure with a flat roof. A large, bright red ribbon is tied around the middle of the building, forming a bow. The building is set against a backdrop of a cityscape and trees. The image is framed by a green diagonal line in the top-left and bottom-right corners.

Science at  
the center of  
everything.

## Connect with curiosity.

Dear Friends of the Saint Louis Science Center,

As we entered into this year, none of us could have guessed what it would bring. We saw the world shut down or slow down to try to minimize the spread of COVID-19. We witnessed food and supply shortages, as well as unimaginable loss. At the same time, we watched people become heroes, from the frontline workers risking their own health to help others to the everyday members of our community sharing messages of hope. Here at the Science Center, we worked to bring science content to our community while being closed for more than three months, and we studied and implemented best practices to welcome our members and guests back to hands-on learning in a safe environment.

In spite of this year's many challenges, our team has truly worked together to continue connecting the St. Louis region with STEAM. I'm proud of what they've accomplished, and while our world is still facing many challenges related to COVID-19, I'm hopeful and excited about the possibilities of this new year. Science is at the center of everything, and while today we may see it most in areas like healthcare and microbiology, we must also remember that fields like climate science, technology, agriculture and so many others help pave the way to a brighter tomorrow for all of us. That belief is what drives us here at the Science Center.

In this issue of *NewScience*, you'll find stories looking back at the brightest moments of the year as well as exciting new ways to connect with curiosity. Learn about our newest STEAM Performance, *GermBusters!*, which gives a better understanding of germs and viruses. Discover how three of NASA's Solar System Ambassadors are providing the latest on the exciting Mars rover mission. Meet our new Planetarium star show, *Seasons Greetings*, which examines the winter solstice and objects in the winter sky. You'll also read about our team's continuing drive to develop new programs like our Esports Program, taking a widely loved pastime and framing it through the lens of STEAM learning, as well as the Youth Exploring Science's transition this summer to an all-online format.

Let me end by saying that I'm grateful for supporters like you who have been instrumental in enabling us to keep going. For a nonprofit organization like ours, members and donors provide the solid footing to pursue our mission "to ignite and sustain lifelong science and technology learning" under all circumstances. Science does not stop, and thanks to you, neither do we. If you're able, please consider making a donation to the **Science Center's Annual Fund** or **Youth Exploring Science Program, becoming a Science Center member** or **gifting a membership to someone** this holiday season.

Thank you for your support through this challenging year, and we look forward to giving you even more ways to discover science in the next one.



Safe and happy holiday wishes,

Todd Bastean  
President and CEO

**To ignite and sustain lifelong science and technology learning.** Mission of the Saint Louis Science Center

Connect with us for updates, special events and fun science.



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### Events

Host your next private event at the Saint Louis Science Center. Services and catering provided by Saint Louis Science Center Events. For information: 314.533.8179

### Accessibility

Complimentary wheelchairs and strollers available in the lobby. Motorized scooters are available for a rental fee. Personal Hearing Assistance Devices available at the OMNIMAX® Theater and Planetarium. Captiview captions devices available for all OMNIMAX films.

### Official Partners

The Saint Louis Science Center gratefully acknowledges the support of our Official Partners.



## Features



### 4 Membership Matters

Read about the surprising history of the Planetarium's holiday bow, how our team has adapted guest service to COVID-19 and how data from our Research & Evaluation department gives us insights on guest experience and our reopening.

### 8 Science Today

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### 14 Science Never Stops

Viruses are on everyone's mind right now. That's why our newest STEAM Performance, *GermBusters!*, explores how a virus works, how to reduce transmission and more. Plus, discover activities for at-home learning from Makerspace and GameXPloration, what a vaccine is from the Life Science Lab and updates from the GROW Gallery, including a surprising new addition to our plants.

### 24 Annual Honor Roll

A very special thank you to the donors and friends of the Science Center who have shown their support over the past year.

### 27 Partnership Spotlight

Learn about the latest support from partners like the Missouri Farm Bureau. See how the Toyota's African-American Collaborative is helping the Youth Exploring Science Program. Plus, read about the Science Center's 7th Annual Golf Tournament.



Engage with *NewScience* in a more interactive way. If you see this icon, click on it to see more content!



## The Surprising History Behind a Holiday Tradition

While it's not unusual to catch a glimpse of the iconic McDonnell Planetarium lit up at night, there's one distinct look unique to the last couple months of the year. Outside the Planetarium in November and December, you'll spot a bow wrapped around the building's hyperboloid shape.

For many St. Louisans, the sight of the Planetarium bow shows that it's the holiday season. "I've heard people say that the holidays don't truly begin until they see the bow up on the Planetarium," says Will Snyder, manager of the James S. McDonnell Planetarium.

The bow is a piece of Science Center history dating back to some of the earliest days of the Planetarium. And while it's become an annual sight (save for one year), its origin might come as a surprise.

On December 17, 1966, just three years after the Planetarium opened, locals noticed a strange sight: a bow and six-inch ribbon tied around the curved roof of the building. And who would do such a thing?

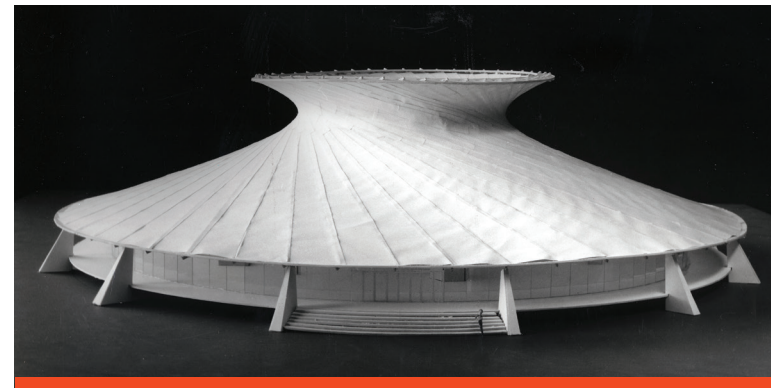
A large card nearby revealed the pranksters. The card read, "Merry Christmas St. Louis. Washington University School of Architecture."

While the bow was certainly a surprise, the people of St. Louis loved the decoration so much that it continued into the following years. Today, it can still be seen, making it a seasonal tradition that, despite the winter weather, warms the hearts of people across our community.

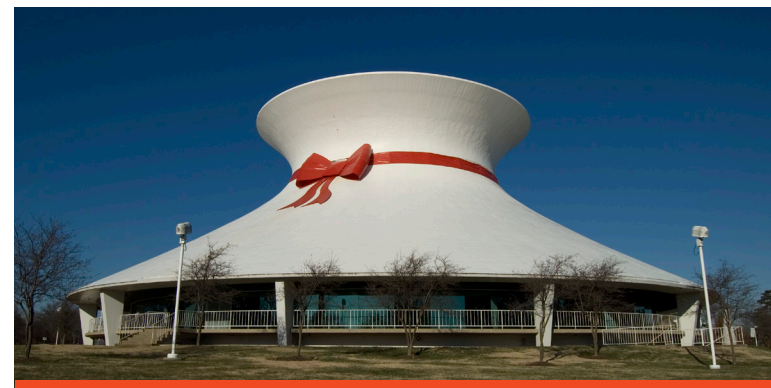


Ever wonder how the Planetarium bow gets put up? Watch this time lapse video of the bow being installed.

## Fun Facts



The McDonnell Planetarium was designed by world-renowned architect Gyo Obata, who still lives in St. Louis (and has contributed more recently to the Science Center by designing the GROW Pavilion). Thanks to Obata's eye-catching design, perhaps it's not so surprising that the Planetarium drew the attention of architecture students.



Typically, the bow goes up in late November prior to Thanksgiving and takes approximately four to five hours to put up. The bow stays displayed on the Planetarium until the first or second week of January, depending on the weather.



While the original bow is no longer displayed, the Science Center has a newer (and larger) red bow that goes up each year. The current one measures between four and five feet wide for the ribbon and twenty feet wide for the bow.



## Keeping Guest Experience at the Center

This year, the Science Center closed temporarily because of the COVID-19 pandemic. Reopening with new city and Centers for Disease Control guidelines for public spaces, the Science Center experience members and guests are used to could have felt drastically different.

Michelle McGruder, manager of visitor services, shares how she and her team have kept service at the forefront for members and guests alike.

### How have you and the Visitor Services team kept that welcoming feeling during COVID?

It can be challenging to communicate through a face mask, so we've learned to use body language to welcome people inside and get important messages across. One thing we've learned is that you have to use a little more enthusiasm when speaking through a mask. Plus, welcoming hand gestures show members and guests that you're excited to see them.

### What's one thing you'd like members and guests to know about coming back to the Science Center?

We care about both your safety and your experience. The world can seem strange right now, but we welcome you back to a familiar place to learn and grow safely together.

### How did it feel to reopen the building?

Honestly for me, once the door reopened, it felt like we never closed. I was so proud of the team when they expressed they were ready to jump back in and welcome our members and guests back inside.



Meet some of the Science Center team members behind the masks!

# Guest Feedback Gives Insight to Our Reopening

The Science Center routinely collects guest feedback about the visit experience through exit surveys and post-visit email surveys to help in our ongoing efforts to improve the guest experience. In fact, we're one more than 30 science museums across North America participating in the Collaboration for Ongoing Visitor Experience Studies (COVES) where all participating institutions collect comparative visitor data through a common exit survey. After reopening, the Science Center resumed collecting general feedback in June and COVES data in August. Here are some highlights of the guest feedback we received over the summer.



## Why do people visit the Science Center?

Here, survey respondents are invited to select their top two reasons for visiting from a list of 10 options. Guests' top selected reasons for visiting differ based on whether or not they visit with children.



For those visiting with children, the top three reasons for their visit are:

**1** To spend time together as a group/family (48%)



For fun/entertainment for group members/children (42%)

**2**

For an education experience for group members/children (14%)

**3**



For those visiting in adult-only groups, the top three reasons for their visit are:

**1** To spend time together as a group/family (44%)



For fun/entertainment for myself (33%)

**2**

To see a specific exhibit, program, or show (28%) (Most commonly this was either an OMNIMAX® film or the *Da Vinci* exhibition.)

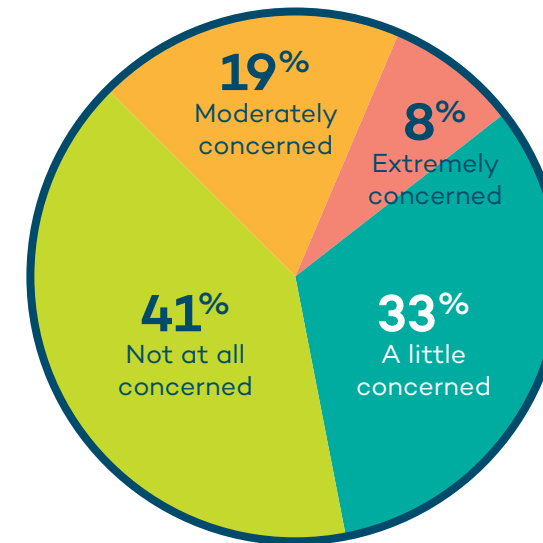
**3**

▶ Dig deeper into the Science Center's audience research data in our annual Opening Minds to Science report at [slsc.org/openingmindstoscience2019](https://slsc.org/openingmindstoscience2019).

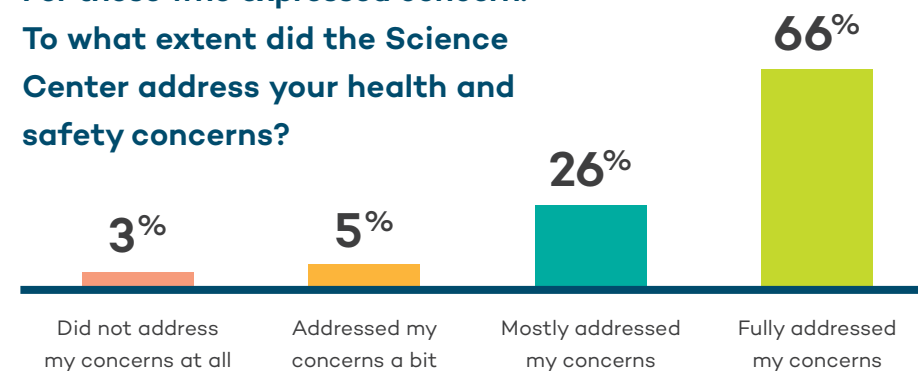
## How has COVID-19 affected guests' expectations and experience?

In August, 59% of respondents indicated that prior to arriving they were at least "a little concerned" about their group's health and safety at the Science Center, but by the time they left, nearly all of those who expressed concern said their concerns were either "fully addressed" (66%) or "mostly addressed" (26%).

Before arriving, how concerned were you about your and your group's health and safety at the Science Center amid the COVID-19 pandemic?



For those who expressed concern: To what extent did the Science Center address your health and safety concerns?



### Overall Experience Rating

**87%** Percent who rated their overall Science Center experience as either "Excellent" (44%) or "Outstanding" (43%)



Save The Dates



## Virtual Member Events

Join us in 2021 for more exciting members-only events like these:

- JANUARY  
Chat with a Scientist: Vaccines
- FEBRUARY  
Collections Tour: Spectacular Spacecraft
- MARCH  
Member Mission: Dinosaurs
- APRIL  
Member Chat: Climate Change

Please note that exact dates are coming soon. Watch your email inbox and [slsc.org](https://slsc.org) for more information.

## Catch up on previous Virtual Member Events

Collections Tour: Women in Science



GermBusters! at Energy Stage



GROW: The Fabric of Our Lives



# Does Science Cool Off in the Winter?

While the winter season is on its way, there's one area that doesn't slow down with the colder weather. Across many fields, scientists and STEAM experts, including our GROW agricultural partners, keep busy even in the winter months. From agriculture and medicine to engineering, zoology and meteorology, professionals across the STEAM spectrum show that winter might just be the coolest time for science.

Click or tap each photo to learn more about each STEAM expert.



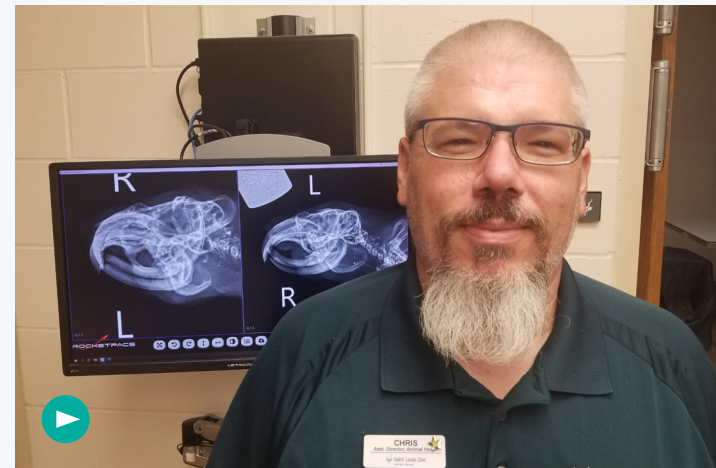
**Rick Ayers**  
Cattle Farmer, Ayers Cattle Farm  
and member of Missouri Beef Industry Council

In the winter months when grass is not available, Ayers feeds hay to his cattle and ensures his animals have a good, clean and unfrozen water supply. He unrolls his hay bales for his cattle to consume and strategically feeds them in different areas of his pastures. This spreads out the organic matter from manure and provides important nutrients to the soil where needed. In turn, this helps produce a high-quality forage to provide the best nutrition possible for his herd.



**Steve Templeton**  
Chief Meteorologist, KMOV TV

"In the winter, it takes a different set of skills to do weather forecasting. I have to use different forecast models and mathematical calculations to determine things like where snow will crystallize in the environment. [...] I have to focus on things such as wind, snow, ice, and not only air temperature, but also ground temperature. Those are critical factors here in St. Louis because they have a greater impact on people in the winter."



**Christopher S. Hanley, DVM, Dipl ACZM**  
Asst. Director of Animal Health, Saint Louis Zoo

"Colder weather is better than hot weather for performing routine, non-emergency procedures on animals prone to hyperthermia (heat stroke). We often schedule procedures for our larger carnivores, such as Amur tigers or polar bears, and some hoofstock, such as the Sichuan takin or Transcaspian ural, in the winter months."



**Kevin Daugherty**  
Director, Illinois Center  
for Agricultural Engagement  
and member of the Illinois Farm Bureau

"Winter means planning and utilizing data from the harvest. And farmers consult with seed and input experts to plan for spring planting."



**Brooke Magary**  
Outreach Specialist, U.S. Army Corps of Engineers, St. Louis District

"My job over the winter season focuses more on education with schools, building relationships between local students and the Corps of Engineers in order to enhance STEM competencies of local students to build a more diverse and capable future STEM workforce."



**Haley Strebler, RN**  
Trauma Injury Prevention and Outreach Coordinator,  
SSM Health Saint Louis University Hospital

"We collect data at our trauma center which allows us to determine the most common causes of injury. My job involves helping people prevent traumatic injuries through providing educational classes and programs in the community. [...] As we move into the winter months, my job includes helping keep people safe while participating in winter activities!"



**Dr. Katherine Rivera-Spoljaric, MD**  
Washington University  
Pediatric Pulmonologist,  
St. Louis Children's Hospital

"I am a Pediatric Pulmonologist, a pediatrician that specializes in lung diseases. With the winter months comes the cold and flu season. During this time my practice is busy caring for children with asthma flare-ups and recurrent wheezing. We focus on illness prevention and chronic disease symptom control."



**Linda Beckemeier**  
Manager at Stuckmeyers Farm and Market  
and member of the Missouri Farm Bureau

"In preparation for the coming winter and spring seasons, we have to get back into our greenhouse operation. This means putting plastic covers on the greenhouse frames and getting the furnaces running. We also place seed orders for the spring."

# A Deeper Look at a Landmark Mission

When the Mars Perseverance rover launched on July 30 as a part of NASA's Mars Exploration Program, the Science Center and space enthusiasts around the globe were thrilled at the potential discoveries that the mission would uncover. The Perseverance is designed to seek out signs of ancient life and help us better understand the geology of Mars. Prior to this landmark launch, three local NASA Solar System Ambassadors reached out to the Science Center to help us explore the science behind the mission.



Chris Heffner, Lindsey LaFore and John Mackin are Solar System Ambassadors (SSAs) who have partnered with the Science Center for several years, presenting about space science and NASA missions. All passionate space devotees, the three were thrilled and honored to join NASA's SSA Program. "[The] Solar System Ambassadors program is a public engagement effort that works with motivated volunteers across the nation to communicate the science and excitement of NASA's space exploration missions and discoveries with the people in their communities," says Mackin. "As an 11-year-old, I watched the first moon landing and became fascinated with space and space travel. I took my first astronomy course on Saturdays at the Saint Louis Science Center," he recalls. Although he dreamed of becoming an astronaut, Mackin was disqualified because he wore glasses and eventually taught science and engineering, but he never stopped following NASA's endeavors. After retirement, becoming a SSA helped him share his enthusiasm for space with others.

Heffner and LaFore, who happen to be father and daughter, both have professional backgrounds in STEAM fields and share a lifelong fascination with astronomy. LaFore says that her father taught her astronomy, "so it has always been a family interest!" After retiring from neurosurgery, Heffner decided to concentrate on astronomy. "For me, looking through the telescope at Mars makes it an actual place I

can visit. Two years ago, [Lindsey] asked me to apply along with her to become Solar System Ambassadors... we were thrilled to both be selected." The two now conduct public education programs together, working with places like the Science Center to educate the public about space exploration.

Since the launch, and as we count down to Perseverance's Mars landing in February 2021, Heffner, LaFore and Mackin have worked with the Science Center developing videos and information for a dedicated Perseverance Landing webpage, including do-at-home activities, a video blog and updates on the progress of Perseverance, Mars facts and even a Mars weather report. "The Mars 2020 Perseverance rover is the most capable rover we have built to send to another planet," Mackin states. With new capabilities, Perseverance will collect rock and sediment samples in a search for past microbial life, then store these samples for retrieval by a future Mars mission. When asked what the most exciting thing was about the Perseverance mission, LaFore replies, "The search for life on another planet in our solar system is exciting to me!"



Watch our July 2020 Virtual Member Event for a panel discussion about the Mars Perseverance rover launch.

## Meet the Ambassadors



Chris Heffner

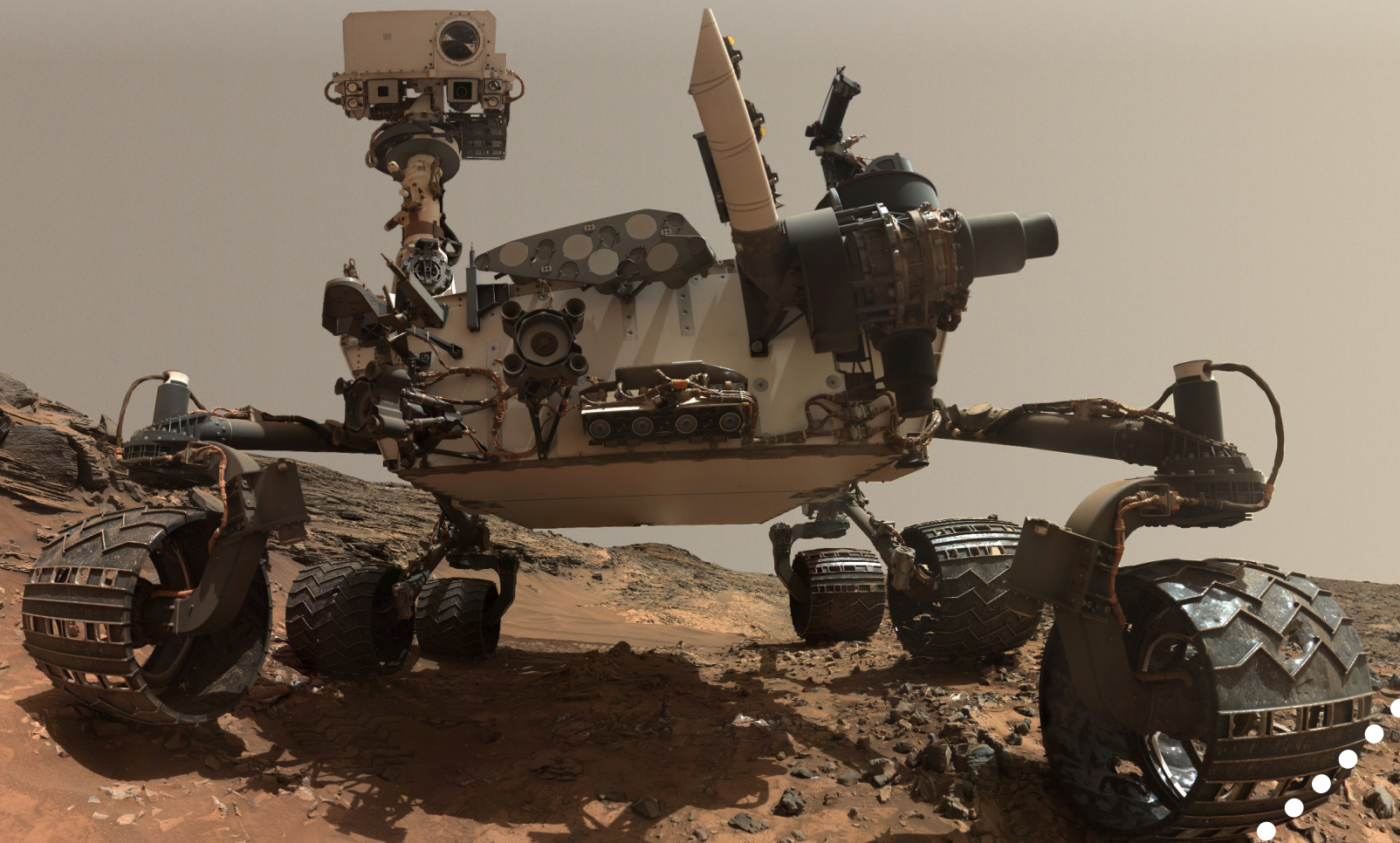


Lindsey LaFore



John Mackin

Learn more about the Perseverance mission with our NASA Solar System Ambassadors at [slsc.org/current-science](https://slsc.org/current-science)



# Finding Our Way Forward with A Core Value

For a science museum with hundreds of hands-on ways to learn, adapting to the COVID-19 pandemic was no small feat. Through planning, learning, pivoting and innovating, the evolution of our science education experiences during the early days of coronavirus led our teams and guests to some surprising places. But to bring back the Science Center we know and love, ultimately we had to look to our team's five foundational core values, a set of guiding principles that remind us to engage in open communication, be curious and open to learning, bring out the best in everyone, to experiment and to have fun. Take a look at some of the key moments in how our Education team evolved their approach to engagement this year.

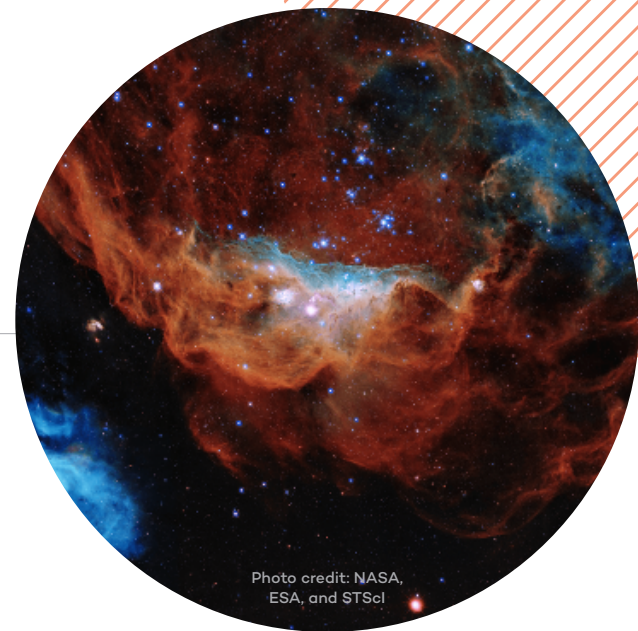


Photo credit: NASA, ESA, and STScI

## JULY

In 2020, the Science Center was one of 30 locations nationwide to unveil an image for the Hubble telescope's 30th anniversary. Once we reopened, "The Cosmic Reef" was displayed on a banner inside the Planetarium, allowing guests to see and experience the wonder of the cosmos up close while also inviting them to make connections to nearby exhibits on spectroscopy, space flight and more.

Learn more about the image here:  
[slsc.org/hubble-30th-anniversary-image](https://slsc.org/hubble-30th-anniversary-image)



## JULY

Although some experiences like Discovery Room were closed, socially distanced activities like Science Storytime helped fill in the gap for our smallest scientists.



## AUGUST

As people returned to the building, the gallery team noticed guests wanting to engage in more in-depth conversations across a variety of topics. According to Liz Senzee, associate director of gallery programs, "Reopening and having the opportunity for in-depth conversations with our guests reaffirmed our belief that those moments are central to how we connect with people and bring science to life."



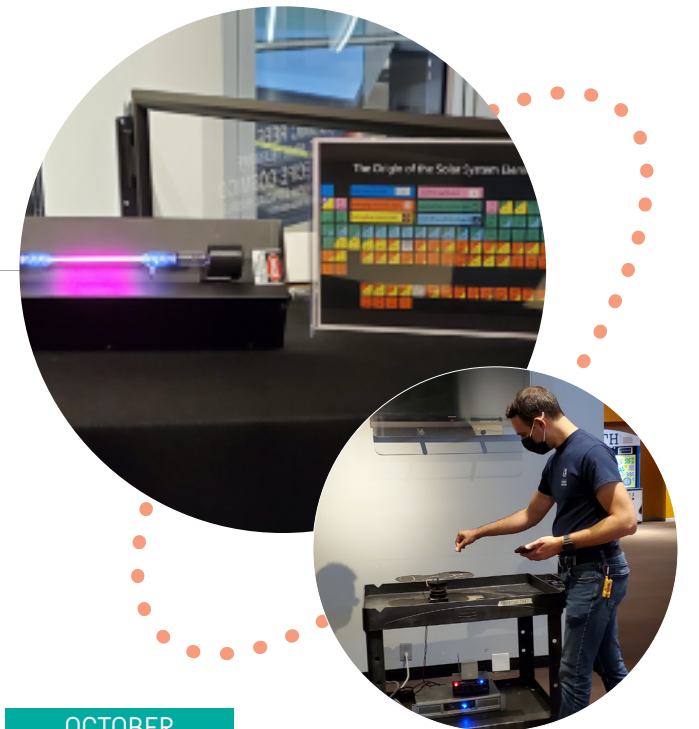
## SEPTEMBER

By adapting technology both old and new, the team was able to bring guests closer to science, even at a distance. Here, an old security camera highlights the details of mask making in Makerspace, while in the Life Science Lab an iPhone zooms in on the very beginnings of life for a Harlequin bug.



## SEPTEMBER

Each year, the Education team picks one of the Science Center's five foundational core values to guide program planning and development. After voting, the team chose "Experiment and Innovate" as the theme heading into 2021. This value reflects the openness to trying new ideas and the commitment to refining those experiences to make them even more accessible.



## OCTOBER

By taking the things our team learned over the past several months, we're continuing to experiment and innovate. This Fall, Science Conversation Stations made their debut. Located in many of our galleries, Science Conversation Stations allow educators to connect with guests and families using technology and one-on-one conversations, delivering science experiences that are safe and fun but also show that learning doesn't stop—not even for a pandemic.



## JUNE

The Science Center reopened to members on June 18, and the gallery team was ready to connect with guests right from the beginning. But we knew that in a time of social distancing things would look and feel different, both for ourselves and our community.

# Grab a Seat for GermBusters!

Members and guests of the Saint Louis Science Center have a brand new STEAM Performance at Energy Stage to see. In *GermBusters!*, audiences get to learn more about a topic that's on everyone's minds: viruses. *GermBusters!* goes in-depth on topics like what a virus is, how masks stop the spread of germs and the science behind hand washing.

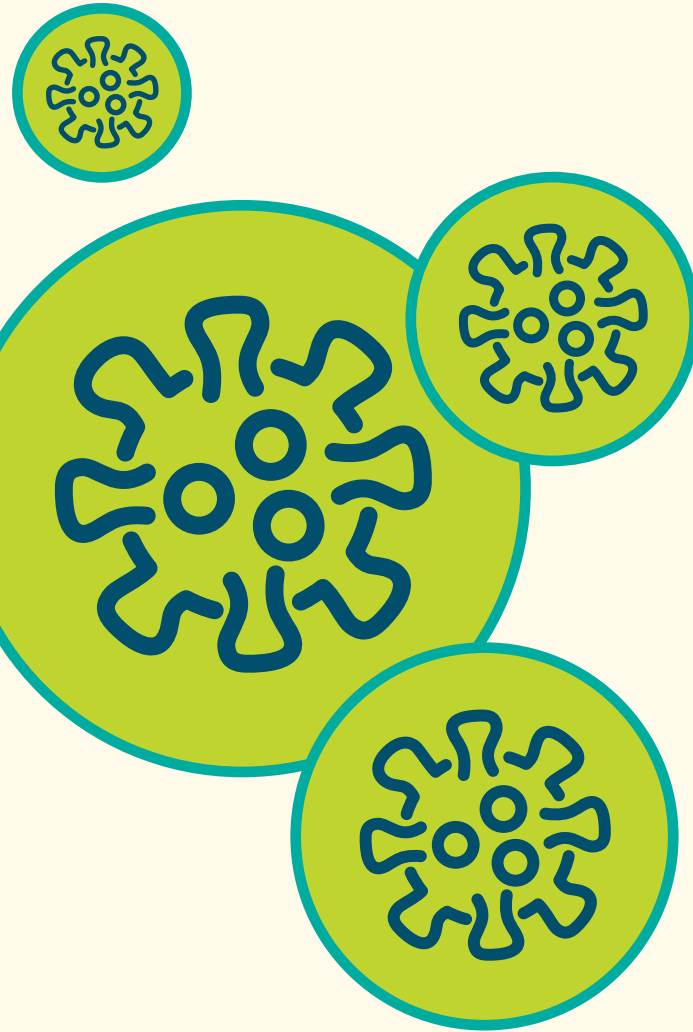
So, what can audiences expect to see in a show about submicroscopic infectious agents? "We mimic a sneeze with flame bottles," says John Nahon, manager of Energy Stage and earth sciences. "We do elephant toothpaste and talk about how peroxides kill viruses. Then we do a **whoosh bottle** after talking about denatured alcohol and how it has ethanol in it, and ethanol is what's used in hand sanitizer to kill viruses."

Since viruses are so relevant today, John and the Energy Stage team have also been able to incorporate more hard science, covering topics like what a protein is, how a virus self-assembles and more. This allows John and the educators to cover a topic that's important while still keeping the fun and engaging feel that people have come to expect from Energy Stage.

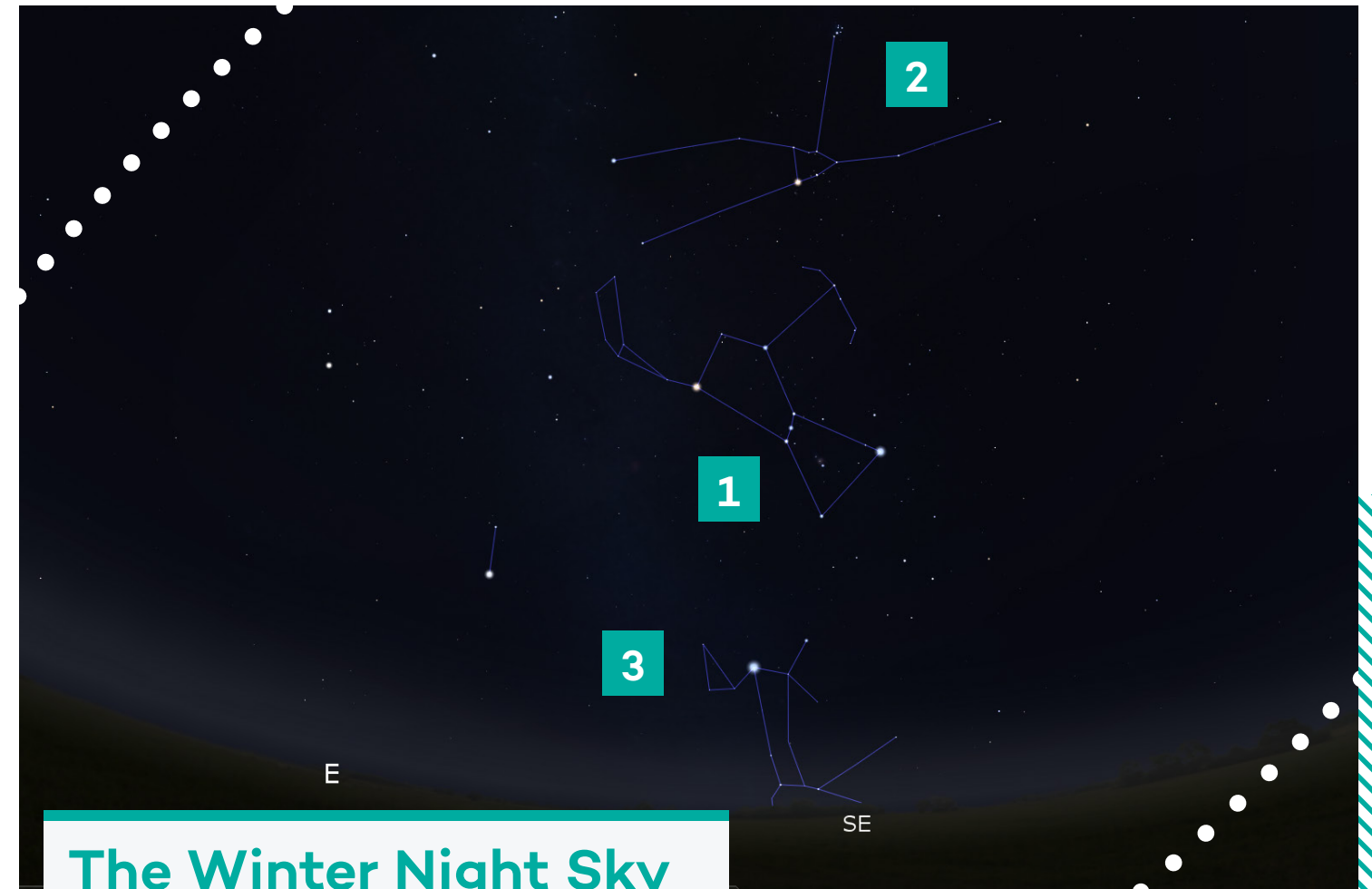
"We wanted [audiences] to feel empowered," John says. "To understand what a virus is and exactly how it affects their lives. We want to get them to the point where they feel accomplished enough to say, 'Oh, okay, I know what a virus is, and I know what's going on with it, and I have a little bit more understanding of what's happening in the world around me.'"



▶ Read more about how John and the Energy Stage team developed *GermBusters!* at [slsc.org/germbusters](https://slsc.org/germbusters).



After seeing the *GermBusters!* show, stop by the box office in the main lobby to pick up your special *GermBusters!* pin for just \$1.00. While supplies last.



## The Winter Night Sky

Winter in St. Louis is a stargazer's paradise. For those willing to brave the cold, the long nights ahead provide clear views of some of the brightest stars and most famous sights the year has to offer, including Orion the Hunter, Taurus and the Seven Sisters, the Grand Conjunction and more.

1

### Orion, Your Guide to the Winter

The bright stars of Orion the Hunter are unmistakable in the winter sky. Shining brightly in the underarm of the giant is the famous red supergiant star, Betelgeuse. Follow the three stars of Orion's Belt to guide you to his companions in the sky.

2

### Taurus and the Seven Sisters

Orion's Belt points upwards towards the bright star Aldebaran, known as the eye of the bull. Aldebaran shines in the V-shaped head of Taurus the Bull. Along the back of Taurus rides the famous Pleiades or Seven Sisters star cluster.

3

### The Dog Days of...Winter?

Follow Orion's Belt downwards and your eyes will be drawn towards the brightest star we see in the nighttime sky: Sirius. This star appears bright due to it being a mere 8.6 light-years (or approximately 50 trillion miles) away. Sirius shines in the larger of Orion's two hunting dogs, Canis Major and Canis Minor.

### The Grand Conjunction

December 21st, 2020, marks the Grand Conjunction between Jupiter and Saturn. Look west in the early evening hours of December to watch as these planets silently approach each other in the sky. On the winter solstice, Jupiter and Saturn will appear close enough as to almost "touch" in the sunset sky. Because of the time it takes these planets to orbit the Sun, Jupiter and Saturn will not be this close again in our sky until the year 2040.



# LIFE SCIENCE LAB

## Vaccines: A Shortcut to Immunity

Vaccines are on a lot of people's minds right now. Unlike medicines that treat active infections, vaccines help prevent us from getting sick in the first place. So how do they work?

When we get sick, our immune system launches a counterattack. Its best tactic involves analyzing the antigens on the invading germs' surface to build a secret weapon specific to that germ. Antibodies fit into enemy antigens like keys in a lock and destroy the invaders on contact.

Our immune systems "remember" every invader: antigens are stored away so that more antibodies can be made when that germ attacks again. With every invasion we acquire more and more antibodies, until eventually there are so many in our system that we no longer get sick—we become immune.

Vaccines act as a shortcut to immunity. By introducing a tiny amount of pathogenic material to our systems, our bodies can start making antibodies without getting sick. It's like having the answers to a test before you even take it.



## Take A Look at the Luffa

This year, the GROW Gallery welcomed a newcomer to its roster of plants. GROW proved to be a great spot for cultivating *Luffa aegyptiaca* or *Luffa cylindrica*, commonly known as sponge squash. If none of those names sound familiar, you might recognize this one: loofah sponge.

Typically grown in tropical areas, Luffa needs a warm climate and plenty of room to climb. St. Louis' climate is right on the cusp, and the arched trellises at the heart of GROW were the perfect place for this versatile plant.

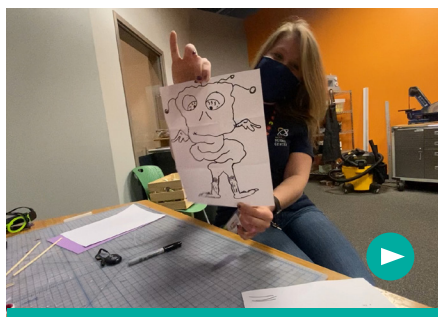
We in the United States typically think of this sponge gourd fruit in its dried form (sold as a bath or kitchen sponge), but it's also eaten as a vegetable when it's young and small in regions like the Indian subcontinent, Southeast Asia and the Caribbean. The fruit has several industrial uses, too: dried Luffa's versatile fiber can be used as a filter and even in shoe production.



Watch as Maddie Earnest, manager of GROW and life sciences, explores the history and uses of the Luffa.



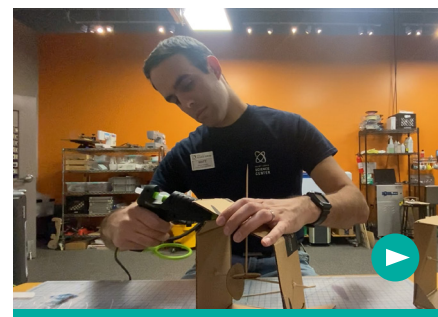
## Science @ Home Activities



### Exquisite Corpse

Bring the spirit of GameXPoration home in this fun drawing game. With its roots deep in art history, Exquisite Corpse explores the concepts of chance and collaboration. Play it with your family to create categories like people, places or things and see what kind of wild pictures you can create. But remember, no peeking!

**Materials needed:** Paper and any drawing materials



### Cardboard Automata

In this intermediate-level Makerspace project, explore simple machines like cams, axles, levers and linkages while creating a mechanical sculpture out of a surprising everyday material: cardboard.

**Materials needed:** Cardboard, scissors, hot glue gun, pencils, ruler and masking tape

## A Plentiful Harvest

The 2020 growing season was a good one for GROW. This year, the GROW team worked to improve productivity of the strawberries and the orchard, as well as to grow some new plants.

The work to increase the amount of strawberries produced actually began in 2019 when GROW volunteers divided the strawberry plants, replanted them to allow better spacing and then added a layer of compost. In January and again in March, the team added a nitrogen fertilizer to help spur production. Their efforts were a success, and the strawberry yield—despite its smaller amount of space—increased from last year's total of 4.3 pounds to an incredible 46 pounds!

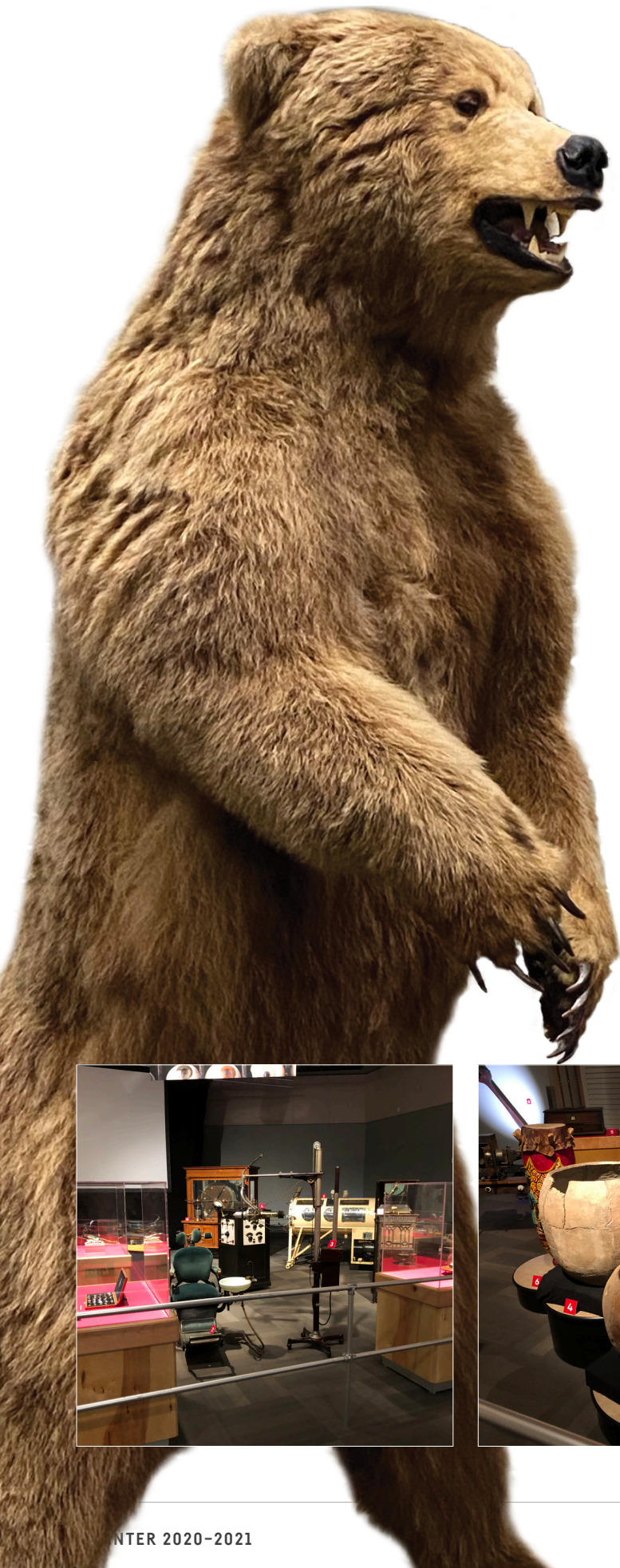
But it didn't stop with strawberries. This year, GROW also saw peaches, grapes and pumpkins with substantial increases in production (and wonderful flavor). In total, GROW produced 1,979 pounds between the aquaponics greenhouse and the growing beds.

The GROW team has already started preparation for next year and can't wait to see what the growing season in 2021 yields.



### FUN FACT

46 pounds equals approximately 870 strawberries.



## Artifacts of Wonder

Since the Science Center's reopening this summer, Artifacts of Wonder has been an exciting way for members and guests to cap off a visit as they exit through the Boeing Exhibition Hall. This curated display from the Science Center's collections features more than 40 items highlighting some of the most incredible pieces amassed over nearly 160 years, with some dating back to when the Science Center existed as the Academy of Science of St. Louis.

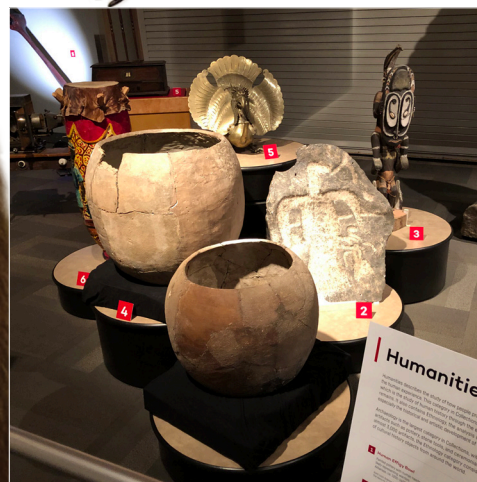
"Most visitors don't know how varied and awe-inspiring our collections really are," says Kristina Hampton, collections manager at the Science Center. "Artifacts of Wonder gave us the opportunity to showcase our amazing collections by displaying a sample of objects from the major categories in collections."

With items ranging from zoology and earth sciences to medical technology and space sciences, there's something for everyone. Hampton recommends the archaeological and ethnological artifacts—"It is simply astounding," she says, "to think that human hands crafted [some of] these objects more than a thousand years ago."—as well as real parts from inside a Gemini spacecraft. The exhibit features some rarely seen (and in some cases, never-before-seen) items. "More than half of the artifacts have not been displayed during my time here," Hampton says, "and some of [the items new to collections] have never been displayed."

With more than 100,000 items in collections, Hampton started by selecting a handful of larger objects that aren't often able to be displayed because of their size. "I was also looking for artifacts that would grab people's attention," she says. "What would make someone stop and stare? What artifact would make someone's jaw drop because of its size, detail, age, beauty or origin? What could we display that guests may have never seen in person before?"

Ultimately, Hampton hopes that Artifacts of Wonder will "evoke a sense of wonder and awe for the viewer, grab their attention and inspire them to stop and take a closer look as soon as they step in."

Artifacts of Wonder is a free experience.  
The exhibit will be available through early 2021.



## NEW PLANETARIUM STAR SHOW SEASONS GREETINGS

This winter, guests of the Science Center will have something new to experience inside the iconic McDonnell Planetarium. *Seasons Greetings*, a brand new live star show developed by the Planetarium team, explores the nature of our seasons and how the winter solstice continues to influence our modern celebrations.

Will Snyder, manager of the James S. McDonnell Planetarium, wants audiences "to understand the science behind our seasons, why the solstices and equinoxes are significant and how this science finds

its way into many of the holidays we still celebrate today." The show also explores why the winter solstice is a pivotal time for many cultures and offers tips for viewing the best celestial sights of the winter season.

*Seasons Greetings* will be offered from Thanksgiving to New Year's, and Snyder says, "We hope this show provides our members and guests a new way to incorporate the Planetarium into their seasonal celebrations."

In the northern hemisphere the winter solstice is literally the darkest time of the

year, yet cultures throughout history have managed to make it a time of celebration. "2020 has been a difficult year for many people," Snyder says. "Our hope is that *Seasons Greetings* will allow people the opportunity to safely come together and remember that there is always something beautiful to see by simply looking up."

Find showtimes for Planetarium star shows including *Seasons Greetings* at [slsc.org/planetarium](https://slsc.org/planetarium).



# The Winter Wonder in National Geographic's 50 Greatest Landscapes

Although we often associate winter with staying indoors, eager for spring, the winter season offers some of the most stunning aspects of our planet. One of winter's most spectacular natural phenomena is the aurora borealis, or northern lights. In National Geographic's 50 Greatest Landscapes, you can see the northern lights shining a brilliant green over Trosno, Norway, from photographer Babak Tafreshi. But what is the aurora borealis? And is it visible in St. Louis?

Named for the Roman goddess of the dawn, the aurora borealis is a colored light display visible at high latitudes, typically near and within the Arctic Circle. It occurs when electrons and protons from the sun, known as the solar wind, enter the Earth's atmosphere. There, many miles up, they collide with gas molecules, causing these molecules to emit light. Depending on the type of molecules and their location in the atmosphere, the lights can be a variety of patterns and colors, from pale green to deep red or bright purple.

Though rare, the aurora borealis has actually been observed in the St. Louis region. After a strong solar storm, if enough particles are released toward Earth they can cause the northern lights to be visible much farther south than usual. Our region's most recent sighting of aurora borealis took place in 2014. With the sun moving toward solar

maximum, an increased period of solar activity, between 2023 and 2026, it is possible we'll have another opportunity to see an aurora in just a few years!

Don't miss Babak Tafreshi's stunning image of the northern lights, as well as many other incredible winter landscapes, in National Geographic's 50 Greatest Landscapes on display until January 4, 2021.



## Exploring the Science in Sci-Fi and Fantasy... From Home

During the pandemic this year, First Friday remained something members and guests could look forward to. Although attendees joined from home rather than inside the Science Center, virtual First Friday From Home events continued providing engaging connections to STEAM topics across the science spectrum:

Starting in May of 2020, First Friday From Home brought the community event into the digital realm using Facebook and social media for Mega Movie Monsters.

In June, First Friday: Wonder Woman brought a live-streamed presentation from Pamela Toler, author of *Women Warriors: An Unexpected History*, to talk about courageous women throughout time.

August's First Friday: Star Trek delivered a presentation from astrophysicist Dr. Erin Macdonald, a science consultant involved in the Star Trek universe, on the physics of Star Trek.

October's First Friday: Mystery Night featured a presentation from the nonprofit Illinois

Innocence Project on how they use science to help exonerate people wrongly convicted of crimes.

While First Friday has adapted to this new way of connecting, the First Friday team is excited to bring the event back into the building once it's safe to do so. Stay tuned for new opportunities to experience the science behind your favorite science-fiction in 2021!

Check out some of our past First Friday events at [slsc.org/firstfriday](https://slsc.org/firstfriday)

## Asteroid Hunters

NOW SHOWING

Embark on an incredible adventure into deep space for a fascinating look at asteroids, their cosmic origins and the potential threat they pose to our world. Learn about the science of planetary defense and the scientists working to protect the earth from the destruction of an asteroid impact.

Discover the cutting-edge tools and techniques asteroid scientists use to detect and track the asteroid population in our solar system and how science, ingenuity and determination combine to study our world's most preventable natural disaster.

Filed using IMAX® cameras and utilizing awe-inspiring images and heart-pounding audio for a fully immersive experience, *Asteroid Hunters* explores our solar system and showcases the incredible importance of asteroid research and planetary defense. Narrated by Daisy Ridley (*Star Wars*), *Asteroid Hunters* will transport you into space and uncover the science, knowledge and communication that can be powerful enough to save our planet.

*Asteroid Hunters* is written and produced by Phil Groves, produced by Jini Durr and directed by W.D. Hogan.

Find showtimes and trailers for OMNIMAX® Theater films including *Asteroid Hunters* at [slsc.org/omnimax](https://slsc.org/omnimax)



## Virtual Learning Continues into Fall and Spring Semesters for YES Program

Like many schools across the country, the Science Center's Youth Exploring Science (YES) program needed to continue teaching students safely during the pandemic. Innovative thinking and creativity enabled YES to go virtual within weeks for the summer session. "It was essential that we kept the YES program current and accessible to the teen participants," says Siinya Williams, senior director of the YES program. Acknowledging there were some initial challenges, Williams states, "STEAM is a hands-on field and much of the curriculum required hands-on project development. Also, some students faced challenges accessing technology and internet service." Ultimately, the summer session was a positive experience for the YES teens and educators and became the basis for a new remote learning model for the YES program that would extend to fall and spring sessions.

The newly adapted curriculum and virtual classrooms offer teens an opportunity to explore STEAM learning through interactive digital platforms that encourage innovation while adhering to the core principles of the program. "We provide a pipeline for the next generation STEAM workforce and we could not allow COVID-19 to halt the important learning that YES provides our students. With the amazing advancements in technology, we are now designed to work with teens virtually or in person," says Williams.

For more information on the YES Program, visit [slsc.org/yes](https://slsc.org/yes).

## YES Teen Named 2020 Ernst & Young Entrepreneur of the Year

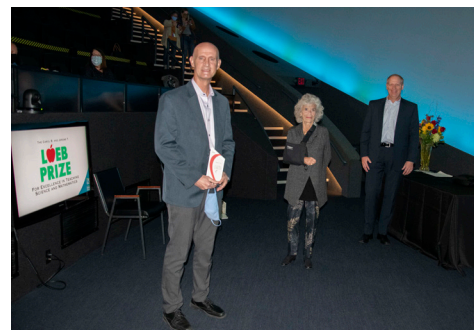
YES Teen Michael Bostic was honored with the Ernst & Young Entrepreneur of the Year award representing the St. Louis Region as part of his participation in Network for Teaching Entrepreneurship (NFTE). Bostic received a \$1,000 scholarship founded by Ernst & Young intended to recognize the endeavors of exceptional men and women who create the products and services that keep our worldwide economy moving forward.

# LOEB PRIZE

## 2020 Loeb Prize for Excellence in Teaching Science and Mathematics

For 25 years, the Loeb Prize has celebrated outstanding science and math educators in the Saint Louis region who demonstrate a passion for teaching.

Daniel See of St. Louis University High School was awarded the Carol B. and Jerome T. Loeb Prize for Excellence in Teaching Science and Mathematics at an award ceremony presided over by Carol Loeb, who serves on the Science Center's Board of Trustees, along with Todd Bastean, president and CEO.



"Students have a greater chance of succeeding and transferring their knowledge and skills outside of school when their interests and motivations intersect with learning goals," said See. "Therefore, I believe it is important to develop and facilitate activities that help students connect their interests to learning goals."

This year also honored educator Kathy Costello of St. James Catholic School as the second-place recipient. Other finalists included Kathy Alt of Millstadt Consolidated School, Rashida Chatman from Pamoja Prep Academy and Teri Range from O'Fallon Township High School.

"Great teachers are the cornerstone of a strong community and presenting these awards in 2020 is particularly meaningful as teachers across the world have been navigating new challenges to continue teaching during the global pandemic. All of our finalists demonstrate expertise in their subject areas, innovative teaching styles including the use of technology, and personal commitment to the overall well-being of their students," said Carol Loeb, who was a math teacher for 57 years.

The Loeb Prize, established in 1995 and endowed in 2002 by a gift from Carol B. and Jerome T. Loeb, honors effective teaching as a central component of quality education. It is one way in which the Loeb family and the Saint Louis Science Center demonstrate their commitment to teaching professionals and elevating public appreciation for teachers' efforts.

"The Science Center is proud to continue this 25-year partnership with the Loeb family to recognize and reward outstanding teachers throughout the St. Louis region," said Bastean. "We know that STEAM education is crucial in preparing students for the future, and the Loeb Prize is a wonderful way to honor area teachers who share in our mission 'to ignite and sustain lifelong science and technology learning.'"

SAINT LOUIS SCIENCE CENTER

# Esports

## The Science Center Levels Up with the Esports Program

Esports, or organized competitive multiplayer videogaming, is swiftly finding a place in high school and college STEAM education programs. Research shows that esports participation isn't just recreational. It can help develop creative problem solving, information gathering and technology fluency, and players gain crucial skills like critical thinking, collaboration and communication—all skills that can help esports gamers find their place in the 21st century workforce. So, it was a natural fit for the Science Center to connect the community with esports through a new Esports Program.

Michael Harris, manager of cyber security education, is leading the development of the program and is excited to create this new opportunity for area youth to experience the educational benefits related to esports. "Having youth learn crucial life skills by doing something they love made it worth pursuing. We are working with the next generation and meeting them where they are at through purposeful gaming," Harris says.

As the program continues to develop into 2021, the Science Center will launch efforts to support schools and offer exploration of esports industry careers. Resources for individual players are also in development to offer weekly coaching sessions, STEAM-related career exploration and sessions investigating topics like technology, media and events, human connection and art. Harris explains, "We have three core values in esports: (1) creating a wholistic gamer, (2) being accessible to all games, and (3) encouraging and supporting all gamers."

Official Partner

Learn more about the Esports Program at [slsc.org/esports](https://slsc.org/esports).



## Saint Louis Science Center Individual Giving Recognition

We would like to express our sincere gratitude to our donors and the support you provide for our continued development of innovative exhibits, educational programs and events that ignite and sustain a passion for science and technology throughout our community.

The following list represents new gifts and pledges made by individuals to the Saint Louis Science Center from November 1, 2019–October 31, 2020. Donors are listed in the category of their giving.

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## Eugene “Gene” Toombs III



The Saint Louis Science Center would like to recognize the contributions of Eugene “Gene” Toombs III, who passed away in September. Mr. Toombs was a distinguished community leader who generously dedicated countless hours supporting organizations in the St. Louis region. The Science Center is honored to be included among the nonprofits

and philanthropic initiatives to which Mr. Toombs committed his time. For three years, Mr. Toombs served on the Science Center’s Board of Trustees and subsequently became a Commissioner and served as Chairman of the Board of Commissioners in recent years.

Mr. Toombs was a highly respected industry leader and CEO, a dedicated family man and friend and an individual who graciously gave back to the community in which he lived. The Science Center is humbled by his service in support of our mission. Mr. Toombs championed the importance of science and technology learning and worked closely with the Science Center team to support strategic planning, fundraising events and organizational objectives. We are grateful for the innumerable ways that Mr. Toombs supported the Science Center over these many years, and we wish his family the very best in the years to come.



Thank you to everyone who donated for #GivingTuesday

Forget to give? It’s not too late!

Make your gift now at [slsc.org/donate](https://slsc.org/donate).

The Saint Louis Science Center regrets the misspelling or omission of any gift. If you discover a discrepancy or would like to change your honor roll listing, contact Erin Burnett at [erin.burnett@slsc.org](mailto:erin.burnett@slsc.org) or 314.289.1467.

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## Toyota's African American Collaborative Supports YES

The African American Collaborative (AAC) at Toyota Motor Manufacturing, Missouri, a cylinder head plant in Troy, is lending its expertise and support to the Science Center's Youth Exploring Science (YES) program this fall. The YES program was introduced to the AAC through a generous grant awarded by Toyota.

The AAC is an organization of dedicated Toyota team members who support the company's success by encouraging an environment that recognizes and respects diversity in the workplace through education and networking, creating a positive environment for all.

The group has generously donated funding for at-home tool kits needed for the YES Aerospace Engineering

students' virtual unit focused on the Tuskegee Airmen and their planes, history and science of flight. Students will learn to read plans, create measurements and utilize tools to create models. The students will use these transferable skills of the future to build a full-sized replica aircraft using wood, fabric and aerospace materials. The group will also provide mentoring and project support for the YES program's cyber security component.

In addition, the African American Collaborative will facilitate engaging virtual presentations for the YES teens on Toyota Missouri's plant operations, career opportunities in manufacturing and how to keep an engineering notebook.



TOYOTA



AFRICAN AMERICAN COLLABORATIVE

## Missouri Farm Bureau Supports GROW

The Missouri Farm Bureau generously presented \$50,000 to the Science Center's GROW Gallery. The check presentation also celebrated the retirement of the Missouri Farm Bureau's President, Blake Hurst, after 10 years of outstanding leadership.

Under Hurst's leadership, the Missouri Farm Bureau collaborated with the Saint Louis Science Center in 2016 as a founding partner to open GROW—the largest indoor/outdoor agricultural gallery of its kind in the world dedicated to the journey of food from harvest to home. The Missouri Farm Bureau's ongoing support and partnership has helped guide GROW exhibits and educational programming which gives our visitors unique access to discover more about our region's farmers and ranchers, the crops and livestock they raise and the advanced science and technology they use to feed the world.

"We are very appreciative of the outstanding guidance that Blake and the Missouri Farm Bureau has provided throughout the years to GROW," says G. Patrick Williams, the Science Center's chief institutional advancement officer. "His thoughtful leadership has been truly instrumental in helping develop GROW to be the outstanding agricultural attraction that it is today, and he has been truly a vital resource for connecting us with other agricultural organizations and partners that have also significantly impacted the success of the gallery."



The Saint Louis Science Center regrets the misspelling or omission of any gift. If you discover a discrepancy or would like to change your honor roll listing, contact Erin Burnett at [erin.burnett@slsc.org](mailto:erin.burnett@slsc.org) or 314.289.1467.



# 7th Annual Golf Tournament Benefiting Aviation and Aerospace

On October 1, the Science Center held its 7th annual golf tournament in Forest Park benefiting aviation and aerospace STEAM education programs. The beautiful fall day played host to 84 golfers who participated in the longest drive, closest to the pin and hole-in-one contests, as well as a tournament raffle and silent auction. Congratulations to all the winners, and a special congratulations to Controlled Products Systems Group who took first place for the second year in a row!

A special acknowledgement to our tournament chair, Daniel Ladenberger, for his outstanding leadership of the Science Center's tournament for the past seven years. His longstanding dedication to the tournament has been instrumental in raising more than \$500,000 for STEAM education programming to date.

**The 8th Annual Golf Tournament will be held on Thursday, October 7, 2021.**



Tournament winners, Controlled Products Systems Group



Daniel Ladenberger  
President, Kemco Aerospace Manufacturing

With the generosity of our sponsors and donors in this unprecedented year, the Science Center raised \$47,220 in Sponsorship and Registration, with 25 raffle and 4 silent auction packages valued at \$11,000.



Heartland Coca-Cola once again anchored the golf tournament's raffle.



Raffle package donated by Missouri Beef Industry Council.



Best Sports in Town silent auction package.



Hole In One Sponsor, Frank Leta Automotive

## STEAM Sponsors

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