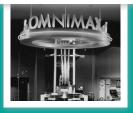
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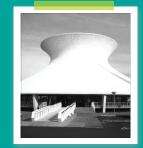










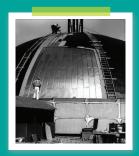


WE ARE THE **SAINT LOUIS** SCIENCE CENTER.

















ONE BUILDING | CELEBRATING 30 YEARS







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Connect with curiosity.

Dear Saint Louis Science Center Friends

As I write this, we are approaching halfway through 2021. We are more than a year into the COVID-19 pandemic, and I'm encouraged with the progress the world continues to see in the fight against the virus. With every vaccine announcement and every vaccine administered we are seeing science at work, and it is truly something special to watch.

I'd like to offer a heartfelt thank you, as always, to our members, donors and community. Your continued support for the Science Center mission not only drives me and the entire Science Center team to provide excellent experiences to you and our guests, but it also enables us to continue that mission for decades to come. Science never stops, and thanks to you, neither do we.

This issue of *NewScience* is also special in a couple of ways. First, you may be holding it. We have returned to physical copies of the magazine, while also keeping many of the features of the digital edition available as well. Second, this issue contains many memories and insights from our team members from throughout the Oakland Building's 30-year history. I am inspired by the team's touching (and sometimes surprising) moments as they've welcomed our community each day to discover the wonder of science.

Inside this issue of *NewScience* you'll find a wealth of stories, including news about First Fridays and our incredible limited-time special exhibition, *Mummies of the World*. If you haven't yet, I encourage you to see it and be amazed at both the rich history on display and the interesting ways that science allows us to uncover it. You'll also take a look at a team of St. Louis science professionals who are keeping us safe from vector-borne diseases. And with the summer weather, it's a perfect time to come explore some exciting new updates in our GROW Gallery, including the installation of our new Root Towers exhibit.

Finally, read about the Youth Exploring Science (YES) Program's teens in the aerospace component as they work with professional instructors to go hands-on with aviation, as well as exciting developments in our growing Esports Program, including details on how our YES Teens are playing a key role.

We have so much to share with our St. Louis community. It's a perfect time to discover something new at the Science Center.



Sincerely,

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.









Extended Summer Hours

May 29—September 6 Thursday—Monday 9:30am—5:30pm Closed Tuesdays & Wednesdays

Contact

314.289.4400

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Saint Louis Science Center 5050 Oakland Avenue St. Louis, Missouri 63110

Membership

Services & Sales: 314.289.4491 slsc.org/membership memberships@slsc.org Member Reservations: 314.289.4424

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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 Anniversary

The 5050 Oakland Building expansion 30 years ago paved the way for new exhibitions, galleries and educational activities. Hear stories from over the years from the people who make the Science Center happen every day—our staff.

8 Mummies of the World: The Exhibition Now Open

Our new exhibition explores the different countries who preserved history through mummification and the stories behind them. Plus, hear about the art of ancient tattooing on mummies.

Science Today

With summer comes sunshine, outdoor adventures and... BUGS. We take a look at some local pesky critters and vector-borne diseases. Plus, tips for bug and bite prevention and control.

14 Gallery Spotlight

It's time to lay some roots with our new GROW Gallery exhibit that focuses on what lies beneath. Learn about the Root Towers being constructed in GROW this summer and then come on in to take a look.

22 Community

The Youth Exploring Science (YES) Teens take flight with professional instructors that work with them on their aerospace component. Plus, learn more about the involvement YES Teens have in our newest initiative, esports.



Engage with NewScience in a more interactive way. If you see this icon, head to slsc.org/newscience for extended digital content.

2 SUMMER 2021 slsc.org 3

The Stories That Make Us.

As we continue to celebrate the 30th Anniversary of our 5050 Oakland Building Expansion,

we are not only honoring the building that has housed so many innovations and moments of excitement over the years, but also the people and faces behind the Science Center. Each team member strives to ensure that you can experience curious moments and learn something new every time you walk through those doors. From our floor staff to our production team, each one plays a part in making the Science Center what it is today. And even more so, how you, our members, remind them why they do what they do.



Dave OMNIMAX® Theater Manager & Chief Projectionist, 25 YEARS

"The first OMNIMAX film I ever saw was To the Limit in 1991. I was a volunteer at the Planetarium at the time, the summer after my first year of high school. As volunteers, we were given the chance to see a show while the theater was still under construction and the current "Main Building" was also still unfinished. The first public shows weren't until that fall. It's my understanding IMAX had just finished the installation and I remember some of the entryway walls of the theater were not yet completed. In 1996 I returned as a paid employee in a position called Technical Assistant, which entailed being a Projectionist in the OMNIMAX as well as a Planetarium Operator."



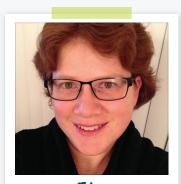
Ruth Manager of STEM Events,

"I remember right before DNA Zone opened. Dolly the sheep was cloned. It was a big science moment, and we had to come up with a way to mention Dolly in the gallery. Fortunately, we had built in casework that could be filled with a variety of items as we covered changing content. I remember driving all over St. Louis (didn't have Amazon back then) looking for lots of little sheep we could put in the case with mirrors so it looked like a bunch of cloned sheep. I emailed Ian Wilmut, the scientist who cloned Dolly, about coming to the opening of our new genetics gallery. He actually wrote me back, and unfortunately couldn't attend, and okay, he would have had to fly in from Scotland, but it was cool to hear back from him."



Neville Special Exhibitions & Experiences Manager, 4 YEARS

"In 2018 during Destination Moon, I met Al and Doretta, a Navv vet and his wife who loved all things space. As I got to know them, I found that he had served on the USS Arlington and had worked on recovery operations during the Apollo missions including Apollo 11. Some of their information was worked into our interpretation of that exhibition, and they came back for some of our special space-themed programming. Sadly, Doretta is no longer with us, but Al and I stay in touch, 'nerding out' over the past and future of space travel. They've both become a huge part of my story here at the Saint Louis Science Center, and a reminder of why I love this job!"



Elisa Director of Research & Evaluation, 25 YEARS

44 After 25 years at the Science Center, I have more than a few stories, but one of my favorites comes from my early days here, when I was part of the Gallery Team. One day, while I was talking with visitors about paleontology at an activity table near the T.rex and Triceratops, a family approached the table. The group included a shy little boy who was probably no more than 5 years old. The boy was visiting from out of town, but this was not his first time at the Science Center. He remembered from his previous visit that the Triceratops in the diorama was injured and he was very concerned about this. He brought with him several Band-Aids that he wanted to give to the dinosaur. I took the Band-Aids and assured the little boy that I would give them to the people who took care of the dinosaurs. Of course, that little boy is a young adult by now. Perhaps, like so many other young adults I've met over the years who grew up visiting those animatronic dinosaurs, he has now brought his own children to see them."



Vickie Director of Membership. 13 YEARS

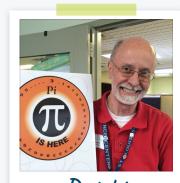
"I absolutely love being in membership. One of the biggest rewards of being in membership is the connection we make with our members. They are very connected to our mission and they become our friends. We look forward to seeing them again and again at our member events. It is like a family reunion! Our membership staff was invited to one of our members' weddings! And it was the best wedding ever. Thanks to all of our members for all you do to support our mission and our friendship."



Michelle Manager of Visitor Services, 17 YEARS

"My time at the Science Center has been educational and very entertaining to say the least. Throughout my 17 years of being in the Visitor Services Department, I have encountered memorable interactions with guests, team members and local celebrities* of all ages and backgrounds. It's hard to highlight all of my unforgettable experiences, but between our jaw dropping Titanic Exhibition, our 63-hour Body Worlds Exhibition marathon, our zombie and dinosaur flash mobs, there has never been a dull moment."

*Chingy (local rapper), Mr. Crouppen (Brown & Crouppen Law Firm), STL Blues player (forgot his name) and local news anchors



Dwight Previous Employee & Current Volunteer, 33 YEARS

"In anticipation of the grand opening of the Saint Louis Science Center's major expansion in November of 1991, schools in the metro area were invited to join a campaign to contribute 'Dimes for Dinosaurs' to raise funds for our current display. Several schools who participated on a high level were invited to be the first public visitors to enter our new Science Center in October. I witnessed the crush of excited kids rushing to the overlook that day and exclaim, 'THERE'S OUR DINOSAUR!' Needless to say, it was a chaotic, but inspiring day for this informal science educator—a day I can't and don't want to forget!"



A LOOK BACK

The Gallery staff from the summer of 1997. These are the educators who interacted with and inspired guests and developed content to share with the public. The team in the photo is celebrating Tamara Korina (the woman holding the cake) having recently obtained citizenship.

The Evolution of Us

Just as science advances and expands, so do the Saint Louis Science Center and its members. Not only do we constantly rethink our galleries, exhibitions and membership benefits, but we also continue to grow our institution. Over the past 30 years, you may have noticed some differences in our uniforms as well as our logos.

Take a look below to see our evolution...





1991-1998



2003-2004





2018-PRESENT



1999-2003

The Saint Louis community has always been a big part of our identity and has been very apparent in our logos throughout the years. While the OMNIMAX Theater and Planetarium silhouettes are iconic in themselves, the arch became a big part of our logo, as well, and is still present in our most recent logo today.



2005-2018











A LOOK BACK

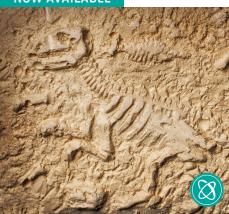
Here's a photo one of our colleagues, Elisa, took a couple of years ago (right before we launched the new brand) of her collection of Saint Louis Science Center shirts. She still has the first teal polo shirt she received 25 years ago when she was hired.

Upcoming Member Events

Catch up with us virtually or in person at these exclusive member events. We've got so much in store for you.

MISS AN EVENT? Watch online today.

NOW AVAILABLE



VIRTUAL MEMBER MISSION: THE JOURNEY OF A DINOSAUR BONE

Join us during this virtual behind-thescenes tour of the Fossil Prep Lab as we explore how we unearth fossils here at the Saint Louis Science Center.

SAVE THE DATE



JUNE 24 **Member Mission: Zeiss Turns 20**

6pm-8pm McDonnell Planetarium Tickets Available June 3 -Limited Spots

NOW AVAILABLE



VIRTUAL MEMBER CHAT: CLIMATE CHANGE

View this prerecorded conversation about climate change, its impact on our world, and the ways we can come together as a community to address it.



AUGUST 12 Chat with a Scientist: **Vector-Borne Disease Control**

Live Zoom Call | 6pm Reserve your online spot via email starting July 19 -Limited Spots

Gift memberships & member gifts

Gifting a Science Center membership unlocks a full year of benefits for someone you care about, whether they're a budding paleontologist or a lifelong learner.





A membership purchase includes a limited edition, members-only 30th Anniversary postcard set (Available in June) or a plush Science Center dinosaur (Available in July).

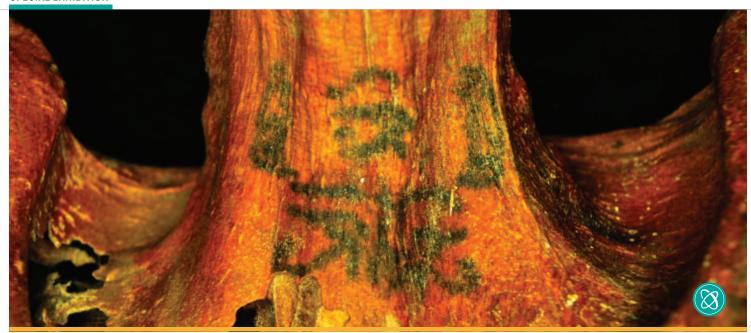
*While supplies last—limited quantities.

VISIT slsc.org/memberships to gift a membership today.

A LOOK BACK



Our current prehistoric pal isn't the only dinosaur that roamed our halls. The Science Center used to have a mascot named Dinomite. He used to be the "smiling face" that welcomed each guest as they entered the building but has since retired.



© Anne Austin | Tattoos found on a mummy's neck at Deir el-Medina

Did you know that tattoos have a long and extensive history with humans?



Dr. Austin photographs a mummy's tattoos at our current exhibition.

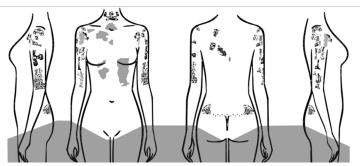
Mummies have even been discovered with various tattoos over the years. Dr. Anne Austin, Assistant Professor of Anthropology & Archaeology at the University of Missouri-St. Louis, has a particular interest in the practice of tattooing in ancient Egypt. Her research at Deir el-Medina led her to figural tattoos in ancient Egyptian human remains.

Dr. Austin has most recently become interested in one mummy in particular that is currently on display at the Saint Louis Science Center—the mummy from the Burns Collection in our special exhibition, *Mummies of the World: The Exhibition*. We asked Dr. Austin to provide us some perspective on her career exploring tattoos.

Q1. What are you able to find out about the history of a culture or an individual from a tattoo?

Tattooing can tell us so much about a culture. It is a practice that was adopted and invented across cultures worldwide and dates back basically as far as we can detect it. When you look at some of the world's oldest human mummified remains—like Ötzi the Iceman—they have tattoos.

In Egypt, studying these tattoos opened up new stories that had otherwise been untold. The human remains I work with date to a time in Egypt when women were no longer called priestesses and when other scholars assumed their bodies were deemed too impure to be able to interact with the divine. Yet, in the case of the heavily tattooed woman we discovered, her body was covered in divine imagery that was permanent and public. The nature of their tattoos and their placement could have given her an important religious role. The tattoos exposed an entire side to women's roles in daily life religious practice that was undocumented in texts.



© Anne Austin | Tattoo Diagram (gray areas are damaged or missing).

Q2. Where do you see ancient tattoos located (i.e. hands, back, etc.) and does that have any significance? Do you see more ancient tattoos on men or women?

We have some tattooed men from the earliest periods of Egyptian history—around 5,000 years ago, but that is an exception. For the rest of Pharaonic Egypt, we only see tattoos on women. We are really just starting to study this practice. Previously, the only human remains with tattoos that had been found in Egypt were three women found near each other and discovered a century ago. Many people thought they were women from ancient Nubia and that tattooing, if it did exist in Egypt, was imported and really a Nubian practice. Now that we are finding tattoos in a local Egyptian community and tattoos that reflect a variety of symbols including those local to that space, we are rethinking what tattooing looked like in ancient Egypt.

In terms of location on the body, a colleague and I recently studied several tattoos on the lower back of women. The imagery of these tattoos connects them with childbirth, and we think that tattooing might have been connected to women's various roles in childbirth both as those who give birth but also as midwives.

Q3. Do ancient tattoos show status of individuals or are they more so a reflection of personality and remembrance?

They really vary across cultures and spaces. Tattoos can signify a person's community, their coming-of-age, their status, or personal experiences. Some scholars have argued that Ötzi's tattoos, for example, were medicinal treatments for joint pain.

Q4. Do you know who did ancient tattoos and what type of materials were used to make them permanent?

It's very hard to determine how tattoos were made because it is like finding a needle in an ancient village that has been abandoned for thousands of years. Even then, when we do find ancient needles, are they for tattooing or for some other purpose like sewing? The most convincing work that people have done to identify ancient tattooing instruments is through experimental archaeology. For example, some colleagues have looked at cactus spines as potential tattooing implements. They tried using them for tattooing and looked at them before and after tattooing. Through comparing their breakage patterns and ink residues on the experimental cactus spines with those found in archaeological settings, they were able to argue that people used cactus spines for tattooing in the American Southwest.

Q5. Any other information around tattoos you would like to mention?

There's a lot of modern stigma around tattooing. This has certainly shifted over the past several decades, but if you look at recent survey data, many people still carry with them a lot of negative associations with tattooing, especially when people are heavily tattooed. When I talk to people about this, a lot of people think of the younger generations who are more open to tattooing as having new and potentially naïve views of tattooing. When we put tattooing in its historical context, however, it is one of the oldest and widest traditions we have as human beings. It is really only in the past two centuries with extensive colonialism that we have seen tattooing disappear as a practice in many cultures worldwide.

We were honored to join Dr. Austin as she researches a tattooed human remain in the *Mummies of the World:* The Exhibition. Read about what she discovered here.



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Discover More

Explore the process of mummification through the eyes of a chemist as our educators prepare our mobile mummy for preservation in our latest Energy Stage show, Chemistry: Mummified.



Prevention, **Protection and Public Outreach**

How the Vector-Borne Disease Control Program Helps Keep St. Louis Safe from Pests

Information provided by Vector-Borne Disease Control Specialist, Brooke Dedrick

In 1933 an unexpected epidemic swept through the St. Louis area. Nearly 1,100 cases of Saint Louis encephalitis (SLE) emerged, resulting in 221 deaths, which prompted the St. Louis County Health Department and the City of St. Louis' Division of Health to respond.

The culprit? Mosquitoes.

Many mosquito species are *vectors* for disease, meaning they can carry and transmit an infectious disease without actually being infected themselves. St. Louis has seen its fair share of vector-borne epidemics: SLE in 1933 and 1937, malaria in the mid-1940s, and West Nile virus in 2002—all of which involved mosquito-borne transmission.

The story of St. Louis' efforts to prevent mosquitoes from negatively affecting public health is a decades-long one, and it continues thanks in part to STEM professionals like Brooke Dedrick. Dedrick is a Vector-borne Disease Control Specialist with the Saint Louis County Department of Public Health and part of the Vector-borne Disease Control Program (VBDCP).

St. Louis County and the City of St. Louis are unique in that they are not only located in a portion of Missouri that experiences mild winters and hot, humid summers, but are also situated between 19 square miles of waterways: the Missouri River, the Meramec River, the Mississippi River, as well as the River des Peres. "It is this natural biophysical environment", she explains, "that predisposes the area to the prevalent fostering of a variety of mosquito species, and, naturally, mosquito-borne disease."

Dedrick develops and implements new aspects of the VBDCP—for example, surveillance efforts relating to ticks and the migration of non-native mosquito species, as well as mosquito rearing for the purposes of insecticide resistance testing. These efforts expand the program's scope of surveillance for vector-borne disease. "Preventing imported diseases from becoming a part of the local public health landscape is just as important as protecting the public from known endemic vector-borne diseases."

"In the United States, mosquitoes and ticks are responsible for carrying and spreading life-threatening infectious diseases," Dedrick says. "Mosquitoes are the second most dangerous animal on the planet (second only to humans) and kill millions of people each year. With a warming climate, mosquito and tick habitats will continue to expand, and vector-borne disease infections will continue to increase."

The VBDCP uses an evidence-based, ecosystem-informed Integrated Mosquito Management (IMM) method endorsed by the CDC (Centers for Disease Control and Prevention) and EPA (Environmental Protection Agency). IMM focuses on the prevention of mosquito-borne disease transmission using a combination of methods: Surveillance (mosquito collection, species identification and arbovirus testing); Source Reduction (environmental and habitat control); Targeted Control; Impact Monitoring (through resistance testing); and Community Outreach and Education. These efforts work in concert to drive the program towards sustainable, long-term prevention of vector-borne disease transmission with the inclusion of environmental stewardship by ensuring all control decisions are directed and supported by surveillance data and appropriate thresholds. These help to reduce insecticide applications, prevent insecticide resistance and minimize risk to non-target species, the local environment and, most importantly, the health

Control measures dictated by IMM are specifically tailored to safely counter each stage of the mosquito life cycle. All mosquitoes undergo four distinct stages during their life cycle: egg, larva, pupa, and adult. Females lay their eggs either directly on or above a waterline as all immature stages require water for maturation. Once the eggs hatch, larvae will emerge and feed on microbes within the water. Larvae then undergo four stages of development before metamorphosing into pupae. Like caterpillar pupae in cocoons that turn into winged moths or butterflies, mosquito pupae rest in this form before emerging as winged adults.

> **UP NEXT:** How To Protect Yourself from Mosquito and Tick Bites

Head to slsc.org/newscience for extended digital content 11



© CDC/James Gathany | Culex quinquefasciatus

(continued)

The VBDCP collects adult mosquitoes across 523 square miles of St. Louis County. Weather dependent, traps are set five nights per week and collected the next morning. Traps are designed to capture Culex species mosquitoes, which include several species that serve as carriers—or vectors—of diseases that affect humans and other animals. Collected mosquitos are taken back to the lab, identified and tested for West Nile virus (WNV). Control measures, such as insecticide use, can be targeted to areas where they find an abundance of disease-transmitting species, or areas where mosquitoes have been found to test positive for WNV.

While local species of mosquitoes are competent vectors for numerous diseases including (but not limited to) Zika, malaria, dengue, chikungunya, yellow-fever and Eastern equine encephalitis, Dedrick notes that we do not have any current local transmission of these viruses. She cautions, though, that "preventive measures against these mosquito-borne diseases should be taken when traveling to places where transmission of these diseases has been observed."

In addition to collecting and testing adult mosquitoes, the VBDCP team monitors more than 5,800 known sites of standing water. What they find in the water dictates the control method they apply. If they find mosquito larvae, for example, they use an EPA-registered larvicide, which is a naturally occurring bacterium that is only effective against mosquito larvae after ingestion and is safe for non-target organisms. Since pupae don't feed, if the team finds mosquito pupae in an area, they use a coconut-oil pupicide on the surface of the water where the pupae are resting.

One special project Dedrick is working on is tracking the migration of medically significant non-native mosquito species into the St. Louis area. In partnership with the State of Missouri Department of Health and Senior Services and in coordination

with the City of St. Louis' vector program, mosquito traps called Ovillantas (also known as "tire traps," as they're made from old tires) will be set up in public places along the Mississippi River.

These traps are meant to attract "container breeding" Aedes species mosquitoes. These mosquitoes prefer to lay their eggs above a water line so that when the water rises, the eggs become submerged, which serves as a signal for the eggs to hatch. This is why there is often an increase in mosquito numbers after a flood. According to Dedrick, "mosquitoes have a natural affinity for tires, which is why we recommend residents not keep old tires around. They collect just enough water to allow for mosquito breeding."

What about ticks?

Dedrick is developing the Vector-borne Disease Control Program's tick surveillance program to monitor tick populations in St. Louis County. She hopes to have a citizen science project implemented in the near future to help with these surveillance efforts. Tick surveillance is intended to monitor changes in the distribution, abundance and infection rates in ticks that can affect human health and the data collected can provide actionable, evidence-based information regarding when and where people are at risk for exposure to ticks and tick-borne pathogens.

Tick species common to Missouri include the Blacklegged Tick (commonly referred to as the "Deer Tick"), the American Dog Tick, and the Lone Star Tick. Each can transmit a number of diseases. The Blacklegged Tick, for example, can transmit ehrlichiosis and Lyme disease; the American Dog Tick can transmit Rocky Mountain spotted fever; and the Lone Star Tick can transmit ehrlichiosis and alpha-gal syndrome. Dedrick notes that alpha-gal is a sugar molecule found in the tick's saliva that is transmitted instantly upon being bitten, which results in the infected individual developing an allergy to red meat.



© CDC/James Gathany | Amblyomma americanum

But keeping the area safe from mosquitoes and ticks isn't all that the Vector-Borne Disease Control Program does.

Part of the team's Integrated Mosquito Management method is to step out of the laboratory and into the community, where outreach and education efforts can help inform the public about vector-borne diseases. Dedrick and other members of the VBDCP team, for example, can sometimes be spotted as exhibitors and STEM experts at the Science Center's SciFests. That outreach, she says, is an important part of connecting with the community—not only to encourage support for what the VBDCP does, but also to drive public understanding of prevention and protection.

Public outreach is something that Dedrick would like to be able to do even more of in the future. In fact, she describes it as a personal goal for the program. "I would absolutely love to be able to invite the community to tour our facilities," Dedrick says, "and show them how our program works, to really build a hands-on experience and allow for residents to have a more visual representation of our work."

Dedrick says that she would enjoy having a public-facing facility where school field trips could come out and learn more about their work, insects, vector-borne diseases and safety measures—a way of not just cultivating curiosity in entomology and the environment but promoting awareness. Also, ultimately empowering the public with the knowledge and tools to protect themselves and their families from vector-borne diseases.

There are two main ways to protect yourself and others from mosquitos and ticks: reduce breeding sites around your home and follow safety measures.

Standing water is essential to mosquito breeding. One inch of water can harbor up to 200 mosquito larvae! If you are seeing mosquitoes nearby, perform a breeding site inspection and dump, cover or fill in areas where you see standing water. Common areas in which you may find mosquitoes breeding include clogged gutters, old tires, wheelbarrows, buckets, unmaintained pools, potted plants, pet dishes and drains that are not properly flowing.

For protection against ticks and mosquitoes, use an Environmental Protection Agency (EPA)-registered insect repellent with one of these active ingredients: DEET, Picaridin, IR3535 or Oil of lemon eucalyptus (OLE). When used as directed, these repellents are proven safe and effective, even for children and pregnant or breastfeeding women. (Dedrick cautions to always read the label before applying repellent.)

DEET and Picaridin are known to be the most effective repellents in that they tend to not need reapplying as often as other repellents. DEET generally won't harm cotton, wool or nylon, but it can damage some synthetic fabrics (acetate, rayon and spandex) and plastics. DEET also tends to have more of an oily residue, which may offer a small amount of added protection against ticks. Picaridin has little to no oily residue, minimal odor and no damaging effect on plastics and other synthetics.

When applying a repellent against ticks, pay attention to shoe tops, socks and the lower portion of pants, as ticks tend to crawl up. Dedrick recommends wearing light colored long-sleeved shirts with long pants (weather permitting, of course) in addition to repellent. Some mosquito species are attracted to the smell of lactic acid found in human sweat, and darker colors tend to retain more heat making the wearer warmer and more likely to sweat. Additionally, ticks are tiny and can be seen better against light colored clothing. Long sleeves and pants also provide less skin exposure which makes things more difficult for both ticks and mosquitoes.

Finally, always conduct a tick check after an outing (or even after gardening or being in your backyard) even if you have used a repellent. Tick checks allow you to find ticks that may not have attached yet, or allow you to remove one that hasn't been attached long. (Tick-borne diseases are not transmitted instantaneously, with the exception of alpha-gal, so the sooner you find and remove a tick, the better.)

There are a lot of tick removal suggestions on the Internet: rubbing petroleum jelly, gasoline, nail polish, or 70% isopropyl alcohol over the tick so that they detach—there is only one tried and true method that actually works without backfiring: use fine-tipped tweezers, grasp the tick as close as you can to the skin, then pull upward with steady, even pressure. Be sure to clean the bite area (and your hands) with either rubbing alcohol or soapy water.

For more information on how to protect you and your family, visit slsc.org/bugcontrol for a list of resources.



STEM EXPERT SPOTLIGHT

Brooke Dedrick



Brooke Dedrick is a Vector-Borne Disease Control Specialist with the St. Louis County Department of Public Health Vector-borne Disease Control Program (VBDCP). Her background includes positions with the Centers for Disease and Control, the St. Louis County Department of Public Health, as well as her current role with the St. Louis County Department of Public Health.



Roots Before Leaves

This summer, the GROW Gallery unveils the new Root Tower exhibit designed to offer guests a chance to view what's right beneath the surface. The root towers, also called rhizo boxes, house a variety of plants and are constructed with windows to allow guests to easily view the life of roots. The GROW team was inspired to create these towers after learning how scientists in St. Louis and around the world use them for research.

Maddie Earnest, GROW Gallery Manager, says she was "enthralled with the possibility of showing guests the underground parts of the plant and the inner life of soil by using this research tool as a teaching tool. What makes these towers so engaging is that guests will be able to see the underground world of roots and the root systems of different plants. Guests will literally open a door to the hidden half of the plant life we see every day."

Creating an exhibit like this is a complex process. It takes a variety of skills and team members to design structures and graphics, integrate text and images, build the towers, fill them with plants—and change plantings out with the seasons. The Science Center team partnered with scientists from around the world to develop timely content and to get input on the design and functionality of the towers.

Dorte Bodin Dresbøll, Ph.D, with the University of Copenhagen and Felix Fritschi, Ph.D, of the University of Missouri provided technical expertise on the construction and filling of the root towers as well as advice on using these towers as exhibits. Allison Miller, Ph.D and Chris Topp, Ph.D from Donald Danforth Plant Science Center were instrumental in guiding the initial vision. Miller has a long history with GROW, serving as an advisor for the development of the gallery and inspiring the GROW team to plant deep-rooted perennials that are being

researched around the country for use as future crops. Topp uses new imaging technologies to study underground growth. His research reinforces that what we see above ground is only made possible by the interactions occurring below ground. Earnest says, "Chris Topp was the first person to get us excited about rhizo boxes and root architecture."

The Root Tower exhibit explores the interactions between roots and soil and the hidden processes that make plant growth possible. Playful poems and surprising images spark curiosity for topics like carbon storage and chemical signaling. Rulers on the tallest towers encourage repeat visits, as guests can see how they measure up to deep-rooting plants. As always, GROW educators are excited to talk to guests who want to dig deeper. Check out this unique experience located in the northwest corner of GROW (near the orchard and giant sunflower).

The Root Towers are made possible by funding through a grant from the USDA



MORE NEW GROW INTERACTIVES

Cattle Mural



Come check out and take a picture with one of the newest additions to the GROW Gallery made possible by the Missouri Beef Industry Council.



A LOOK BACK

Many people remember when GROW used to be the EXPLORADOME, housing our early exhibitions. But did you know that under the EXPLORADOME, staff members took their breaks, ate their lunches and had offices right below? Staff have since been moved to various locations throughout the Science Center for their work stations.



EARLY CHILDHOOD PROGRAM

Discover Science with Me

Members enjoy discounted tickets!

At this time, Discovery Room sessions are temporarily closed. However, we invite you to try out our new early childhood program, Discover Science with Me.

Each 45-minute session, guided and facilitated by a museum educator, will feature experiments and playful hands-on STEAM experiences for young scientists that are focused on developing motor skills, enhancing language acquisition, encouraging exploration and discovery, and helping children deepen their understanding of the world.

To learn about safety protocols and procedures, please visit slsc.org/discover-science-with-me.

Member Discount: \$20 per table (reg. \$25 per table). Up to 5 people per table.

Call 314.289.4424 to make your reservations today.

UPCOMING SESSION TOPICS:

Fridays and Saturdays 11:00 AM and 2:00 PM | Sundays 12:00 PM and 2:00 PM

Pollination Power	June 4, 5, 6, 18, 19, 20	Stop in to smell the flowers with us as we explore pollination and the important role pollinators like butterflies and bees play in helping to grow many of the foods we eat.
Dazzling Dirt & Marvelous Mud	June 25, 26, 27 July 2, 3, 4	Learn about the developmental benefits of dirt and mud play for little ones. Come dig in the dirt, play in the mud and observe critters that make their homes in the ground. (International Mud Day—June 29)
Clay-Mazing Creations	July 9, 10, 11, 16, 17, 18	Let's get creative as we explore many STEAM concepts using clay and other modeling compounds. Discover the learning and development benefits of clay.
Innovation Lab	July 23, 24, 25, 30, 31 August 1	Calling all engineers, inventors and problem-solvers! Come learn about the engineering design process. Help us solve problems and create inventions with a variety of cool materials.
Math Mania	August 6, 7, 8, 13, 14, 15	Little mathematicians should "count on" joining us for this session! Through hands-on activities, games, sensory experiences and art, we will explore early math concepts such as numbers, quantities, sorting, patterning and more.
Physics Fun	August 20, 21, 22, 27, 28, 29	Join us for some physical fun as we investigate things that roll, fly, spin and go "splat." Through their play, young physicists will explore concepts of force, motion and gravity.

SCIENCE @ HOME

Fun with Magnets

Discover magnetism right at home by making a magnetic exploration bin for your young learners.

> The following activity was inspired by our recent Discover Science with Me session, Magnificent Magnets.

MATERIALS:

- Magnet wand (or any other magnet will work)
- A variety of magnetic and nonmagnetic objects from around the house
- A bin or box to hold the objects



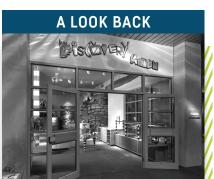
ACTIVITY:

Let your child freely explore the objects using the magnet. Once your child has had time to play and explore, start discussing the following topics:

- Which objects stick to the magnet? Which ones do not?
- How do magnets "attract" or pull those objects toward it.
- Identify which objects are magnetic and non-magnetic by sorting them into piles.

To keep the investigation going, look around the house or go for a walk around your neighborhood and test more objects.





The Discovery Room used to be located in the Planetarium and then moved to the lower level of the 5050 Oakland Building during the building expansion. In 2004, it got moved to its current location on the 2nd floor of the 5050 Oakland Building and was renovated over the years.



Stop Motion Animation Makerspace | June-August | 2-4pm

Come to our workshops and learn the basics of stop motion animation! What kind of a story will you tell?

SAVE THE DATE

Join us for these nationally recognized days.



JUNE 8 **World Ocean Day**



JUNE 21-27 **Pollinator Week**



JULY 4 Rube Goldberg's Birthday

16 SUMMER 2021



After over a year of virtual First Fridays, we are officially moving our summer First Fridays to onsite at the Saint Louis Science Center. During the months of June, July and August 2021, First Friday will temporarily take place during regular daytime hours of 9:30am-5:30pm instead of after hours.

Visit slsc.org/first-fridays for updates and schedules.

Please note: First Friday events will follow all existing Saint Louis Science Center health and safety guidelines, including capacity guidelines. See more here: slsc.org/explore-safe.

A LOOK BACK

First Friday is celebrating its 10th anniversary in 2021!

First Friday started as a way to discover the real science behind science fiction, growing out of interest in the 2011 special exhibition Star Trek: The Exhibition. The initial First Friday was Star Trek themed and took place in November 2011. Though it has changed throughout the years, First Friday continues to provide a space for people to connect on popular culture topics they enjoy while learning about science and technology.

First Friday Star Trek through the years...



JUNE 4 The Mummy

Blast to the past and discover the real science behind mummies at this archaeology-themed First Friday. The event will include educational activities, trivia, featured speakers, and food and drink specials. Try your hand at our building-wide game "The Mummy's Quest" and check out the special exhibition Mummies of the World.



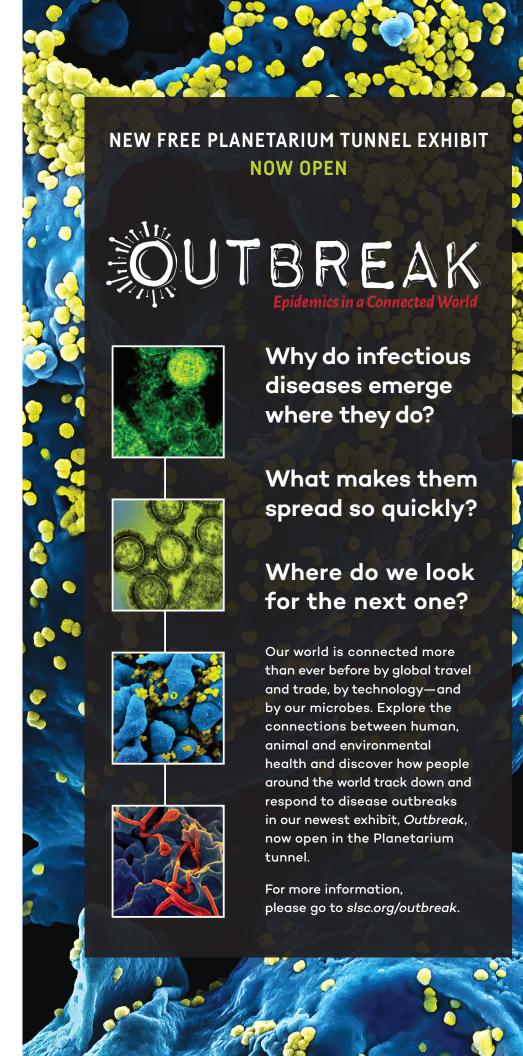
JULY 2 Top Gun

I feel the need, the need for ... science. Join Maverick and the rest of the USS Enterprise and dive into the real science and technology behind Top Gun. Enjoy educational activities, trivia, featured speakers, and food and drink specials. Take the "TOPGUN Challenge" buildingwide game and see if your STEM skills are up to the challenge!



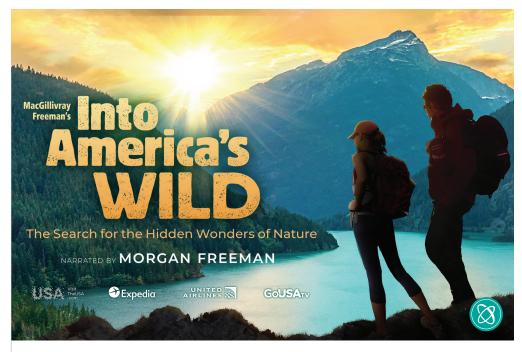
AUGUST 6 Black Widow

Join us for a look at the real science behind everyone's favorite Marvel spy, Natasha Romanoff. This event will include educational activities throughout the building, featured speakers, trivia, a building-wide game, as well as opportunities to see Black Widow (2021) in the OMNIMAX Theater!



Documentary Films at the OMNIMAX® Theater

Take a seat and enjoy the ride. Make sure to come out and see one of these amazing films before they leave town. Members receive free documentary film tickets and discounted feature-length film tickets. Visit slsc.org/omnimax for show schedules.



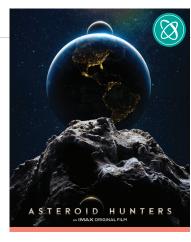
OPENS MAY 28 | DOCUMENTARY FILM

A non-stop ride via kayak, bike, train, hot air balloon, zipline and more, Into America's Wild explores some of the most beautiful but little-known landscapes of North America, from the wilds of Alaska and the lush coastline of Oregon to the ancient canyons of the Southwest and the rolling hills of the Appalachian Trail. Come discover the special human connection we all share with the natural world.



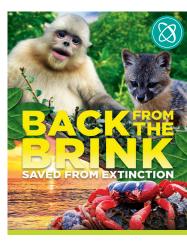
A LOOK BACK

Just before Halloween in 2012, a skeleton appeared during the preshow presentation in the OMNIMAX, where he was briefly illuminated to movie goers. His appearance was originally intended as temporary, but the reception he received was so warm he decided to stick around as our skeleton staff. In case you were wondering, his name is Crazybonez, and he moves around the OMNIMAX quite a bit. Can you find him?



CLOSES JUNE 10 | DOCUMENTARY FILM

Venture into deep space for a fascinating look at asteroids, their cosmic origins and the potential threat they pose to our world.



NOW PLAYING | DOCUMENTARY FILM

Join this amazing adventure to save California's enchanting Channel Island Fox, China's fabled Golden Monkey and the wondrous migrating crabs of Christmas Island.

BACK BY POPULAR DEMAND



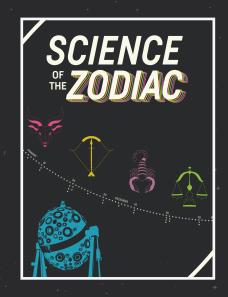


Superpower Dogs | June 11-July 1 Volcanoes | July 2-August 12

McDONNELL PLANETARIUM

Star and Laser Shows!

Come discover a world underneath the stars in the iconic James S. McDonnell Planetarium and experience a star show or a laser show.



NEW! PLANETARIUM STAR SHOW OPENS MAY 27

SCIENCE OF THE ZODIAC

The twelve constellations of the Zodiac hold a special place in popular culture, but what makes these patterns different than any of the others found among the stars? Discover how to observe these constellations and how they have shaped our scientific understanding of the sky in Science of the Zodiac.



MORE SUMMER

STAR SHOWS

Gateway to the Solar System



The Little Star That Could

BACK BY POPULAR DEMAND!

LASER LIGHT SHOWS FRIDAY, JULY 2-SUNDAY, JULY 11

For a limited time, join us for an experience in the Planetarium like none other. Immerse yourself in the music of your favorite artists as their songs come alive in a 360-degree environment of light and sound. The laser show series fuses music, laser artwork, immersive lighting and 3D-atmospheric effects to create an unforgettable live experience.

\$9.95 Members | \$10.95 Non-Members

For more information on schedules and shows, visit slsc.org/planetarium and slsc.org/lasers.



A LOOK BACK

Happy 20th Birthday, Zeiss! Our Zeiss Universarium Mark IX star projector is celebrating 20 years recreating the stars in our James S. McDonnell Planetarium. Installed in 2001, our Mark IX star projector is still the world's most realistic planetarium projector and is one of only three of its kind in the United States and thirteen in existence.

JAMES S. MCDONNELL PLANETARIUM

THE CAROL B. AND JEROME T.





2021 Loeb Prize winner Susan Zareh from Forsyth School

For 26 years, the Loeb Prize has honored outstanding science and math educators in the St. Louis area who demonstrate a passion to inspire learning.

Susan Zareh from Forsyth School was awarded the Carol B. and Jerome T. Loeb Prize for Excellence in Teaching Science and Mathematics at an event celebrating the finalists at the Omnimax® Theater on May 20th.

This year's event also honored Devon Lahr from Mehlville High School as the second place honoree. Other finalists included Jennifer Adams from Clayton High School, Laura Schowalter from Nipher Middle School and Elizabeth Walsh-Rock from STEAM Academy at McCluer South-Berkeley. All finalists received cash awards.

"This year's nominated teachers are an extraordinary group of highly qualified and dedicated educators. They are masters of their subjects, technologically savvy, innovative in their classrooms and consummate professionals. It is most rewarding to be able to recognize these outstanding teachers of tomorrow's STEM leaders," said Carol Loeb, a math teacher for 53 years, who along with her husband, the late Jerome T. Loeb, established the Loeb Prize in 1995 in partnership with the Saint Louis Science Center. Carol Loeb also serves on the Saint Louis Science Center's Board of Trustees.

"We are proud of the longstanding partnership with the Loeb Family in recognizing and rewarding outstanding teachers dedicated to STEM education," said Todd Bastean, president and CEO of the Saint Louis Science Center. "The Loeb Prize is one of the many ways we honor educators who share the mission of the Saint Louis Science Center: to ignite and sustain a lifelong interest in science and technology."

YES Teens Take Flight Thanks to Boeing Grant

This spring and summer, the Youth Exploring Science (YES) Program is excited to welcome professional instructors to work with teens in their Aerospace component, allowing teens the ability to learn more about flying planes and opening them up to more career possibilities.

Thanks to a generous grant from Boeing, three flight instructors as well as a drone instructor will be available to work with the teens each week. The flight instructors guide teens through online ground school and flight simulators, while the drone instructor teaches drone regulations and flying techniques.

Flight instructor David Brickhaus says, "My interest in the YES aviation program comes from my personal childhood experiences. I have, all my life, been interested in aviation and aerospace. Growing up, I did not know how or have access to resources exposing me to that field. It was not until I had graduated college that I was able to become part of what is truly an amazing activity/career opportunity. I want to help individuals who have an interest in aviation get flight experience and learn earlier in their lives how to engage with the field, whether just out of curiosity or if there are larger career aspirations."





Evernorth Sponsors Esports at the Saint Louis Science Center

The Saint Louis Science Center is proud to announce that Evernorth, a division of the Cigna Corporation, is a Founding Sponsor of our esports program. This innovative program is dedicated to providing an inclusive environment for gameplay and a place to learn about the educational and career opportunities found in the competitive video gaming industry.

Support from Evernorth, a health services company that includes St. Louis-based Express Scripts, will enable the esports program to purchase top-of-the-line technology, including gaming rigs and monitors for console play, as well as shoutcasting equipment that will support broad event participation and inclusive access to everyone in our community interested in gaming and esports. The program hosts FREE open video gameplay sessions and competitions four to five times a month, and each event is outfitted with gaming PCs and consoles for the participants to use. To ensure the program reaches students who may not have access to gaming consoles at home or at school, the program is also being promoted through our Youth Exploring Science (YES) Community Partner network and St. Louis school districts that serve underserved areas.

"At Evernorth, we believe it is critically important to support innovative technology education in our communities, so we have the best and brightest minds helping us solve healthcare's biggest challenges," said Glen Stettin, MD, Chief Innovation Officer, Evernorth. "Esports is designed to spark imagination and knowledge in a new generation of STEM professionals, and we believe that will strengthen the growing technology entrepreneurship and innovation talent that we see here in St. Louis."

The Science Center takes a unique approach to producing the esports events by integrating teens from our signature YES program. For over 20 years, YES has helped prepare high school students from underserved areas in our community to become STEM learners

and the next generation of STEM professionals. YES Teens from the Cyber Security and Media components are able to gain valuable real-world experience and workforce skills for the future by helping to facilitate the esports program. At the events, YES teens in the Cyber Security component demonstrate how to build and upgrade a computer and also provide tech support. Teens in the Media component conduct interviews, operate cameras, help with sound and broadcast engineering and even provide commentary.

"We are very appreciative of the Evernorth sponsorship that will advance our vision of being the hub for esports in the region accessible to all gamers and provide valuable workforce development opportunities for our YES teens," says Mike Harris, manager of cyber security education for the YES program.

Esports program participants are exposed to path to a profession, where they receive both expert coaching for gaming skills, along with unparalleled education about future career opportunities. The program is also designed to boost critical thinking, problem solving, teamwork, and technology fluency—all vital skills that will help esports gamers find their place in the 21st century STEM-based workforce from computer science and game design to engineering and healthcare.

UPCOMING ESPORTS INITIATIVES

Throughout the summer, we will be hosting a variety of different esports activities. Join us for one, or all, of the following:

- Open Play Sessions in Boeing Hall
- Esports Summer Camp with University of Health Science and Pharmacy
- Esports Competitions

For the most up-to-date information and dates and times of activities, please visit slsc.org/esports.





Rice Growing Season in the Missouri Bootheel

As a GROW Founding Partner, the Missouri Rice Research and Merchandising Council has been an integral partner in helping GROW guests learn the story of how Missouri Bootheel rice farmers have become the fourth largest producer of rice in the United States due to innovative farming practices, extensive research and farm conservation efforts.









The Missouri Rice Council's demonstration bed in GROW provides a snapshot of what is happening on thousands of acres of rice farms located almost 200 miles away in the bootheel of Missouri.

"The Bootheel region's soils that were once part of the Mississippi delta are outstanding for growing rice—rice does well in soil that holds water," says Dwight Roberts, president and CEO of the US Rice Producers Association. The fertile land in the Bootheel sits atop an aquifer that can be easily reached through wells to support the rice growing season.

"Over the past few years, Missouri rice farm families have planted an average of 200,000 acres of rice that is sold domestically coast to coast and around the world," says Mitchell Thomas from the Missouri Rice Council. Missouri is one of six states, including Arkansas, Louisiana, Mississippi, Texas and California, that make up 99% of all rice grown in the country. The farmers plant medium grain, long grain and long grain aromatic rice, commonly known as Jasmine rice.

Medium grain rice is used for granola bars and puffed rice cereal, and long grain is used for everyday cooking. Jasmine rice has a sticky texture and fragrant aroma and is a staple of Asian cooking.





1. Field Preparation

Being furthest north, Missouri rice farmers are among the last in the country to begin to prepare their fields for planting season in early spring. They regularly use GPS or laser-guiding grading equipment to level the fields. Level fields allow the rice farmers to conserve water throughout the season.



4. Rice Growth

Rice grows very quickly, ultimately reaching a height of three feet in just four to five months. During this time, farmers are careful to maintain a consistent water depth. Farmers use the rice gates and levees to help maintain a consistent flood level throughout the rice field.



2. Seeding

By April or May, the fields are ready to be planted. Many of the Missouri farmers use a technique called drill seeding. A seed drill is pulled by a tractor and evenly distributes the rice seeds, planting them deep in the ground where the soil has more moisture. This allows the seeds to germinate and grow, but if it doesn't rain, irrigation is needed.



3. Flooding the Fields

Once the rice has grown five to eight inches, the fields are flooded. About five inches of water are run into the fields which helps improve the plants' ability to compete against weeds for nutrients and sunlight, reducing the need for herbicides. The "rice gates" in the flooded fields are plastic tarps that allow water to flow over levees without washing them away



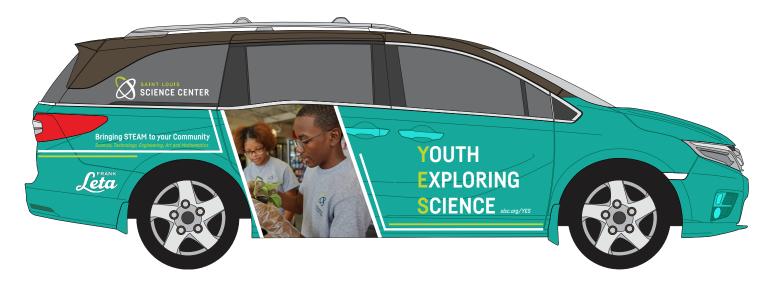
5. Harvest

By September, the grain heads have ripened and turned golden. They are now ready to harvest. Once the fields are drained and dry, hi-tech harvesters like those featured from our GROW Founding Partner, CASE IH, gather the perfectly ripe grain. Tractors pulling grain carts come alongside, receiving the rice and delivering it to waiting trailers that transport grain to storage facilities.



6. Storage & Milling

Rice is carefully dried and stored for processing. At the mill, the hull is first removed by rubbing the rice against each other, leaving brown rice. Additional bran layers are then gently removed to produce white rice. Rice by-products from the milling process are used for a variety of uses including animal feed.



YES Brings STEAM to the Community thanks to Frank Leta Honda & ADgraphix

This summer, look for our Youth Exploring Science (YES) educators and teens out driving the streets to bring STEAM learning to the St. Louis community.

Thanks to the generous donation of two 2020 Honda Odyssey vans from the Frank Leta Family of Dealerships, the YES program will hit the streets with fun and engaging STEAM (science, technology, engineering, art and math) activities for the public including "Pop-Up Science" demonstrations and "Science Savvy" on-the-street interviews. The YES program's STEAM outreach activities will follow all current health guidelines and take place at parks, events and festivals around the St. Louis area.

But how will you know it's the Science Center's YES program?

Thanks to another outstanding donor, ADgraphix, the vans will be wrapped in the YES program's signature design, logo and messaging—Bringing STEAM to the Community. You won't be able to miss us! ADgraphix, a unique full-service graphic design house and digital printing facility, has been a valued supporter and trusted vendor of the Science Center for the past 13 years. The experts at ADgraphix have been our go-to supplier for everything from wrapped educational vehicles to printing and installing large-scale window graphics. We are grateful for the generous ADgraphix donation of all signs and banners for the Science Center's Annual Golf Tournament for the past 7 years along with their new gift of wrapping the new Honda vans for the YES program.

"It has been an honor to both work with the Science Center for the past 13 years and support the exceptional STEAM education opportunities they bring to the St. Louis community," says Chris Schreck, Co-Owner ADgraphix.







8th Annual Golf Tournament

THURSDAY OCTOBER 7, 2021 9:30AM SHOTGUN START

Save the date for our fall golf tournament benefiting aviation and aerospace programs. Dan Ladenberger, President of Kemco Aerospace Manufacturing, has been announced as golf tournament chair for the 8th consecutive year.

A LOOK BACK

The Frank Leta team during our first Golf Tournament in 2014.





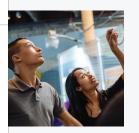
Thanks to our St. Louis Cardinals Partnership.





A brighter future starts with big ideas.

Show your support for the Saint Louis Science Center's immersive science education experiences and programs. By making connections to STEAM accessible for everyone in our community, you're powering the big ideas that make our future brighter.



A gift to the Science Center's Annual Fund provides the resources to maintain and update our open, accessible science learning galleries, deliver connections to real scientists and STEAM professionals through programs like SciFest and First Friday, and sustain the Science Center's daily operation for our community today and tomorrow.





For more than two decades the Science Center's Youth Exploring Science (YES) Program has provided a path to STEAM learning for teens from underserved local communities. YES Teens gain experience in topics from aerospace to agriscience through hands-on experiences, college and career readiness training and mentoring, and YES Teens help spark our community's interest in STEAM through in-person and digital programming with community partners. Over 90% of graduates from the YES Program go on to college, with many pursuing STEAM fields and careers vital to a 21st century workforce.





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NewScience is always GREEN

The Saint Louis Science Center is a committed steward of the environment. We are proud to continue to offer the digital and interactive version of NewScience at slsc.org/newscience. If you would like to opt for a sustainable choice and only view NewScience digitally, please send an email to us at memberships@slsc.org to no longer receive a paper subscription.

You can also send us an email if:

- Your email address has changed
- Your name is misspelled
- · Your address is incorrect













Gift memberships & member gifts

Gifting a Science Center membership unlocks a full year of benefits for someone you care about, whether they're a budding paleontologist or a lifelong learner.

A membership purchase includes a limited edition, members-only 30th Anniversary postcard set (Available in June) or a plush Science Center dinosaur (Available in July). *While supplies last—limited quantities.

VISIT slsc.org/memberships to gift a membership today.







AVAILABLE IN JUNE AVAILABLE IN JULY