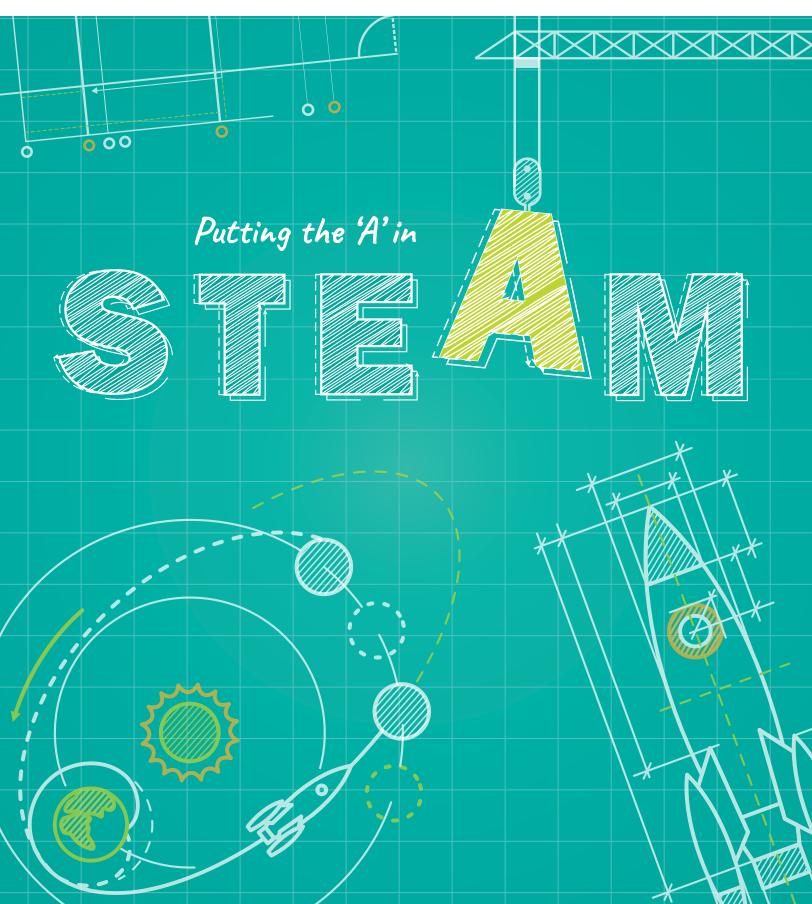
newscience

NEWS FOR MEMBERS AND FRIENDS OF THE SAINT LOUIS SCIENCE CENTER

WINTER 2022-2023



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Connect with curiosity.

Dear Friends of the Saint Louis Science Center,

On the cover of this issue of NewScience, you may have noticed the phrase "Putting the A in STEAM." In fact, you have likely noticed that term, STEAM (science, technology, engineering, the arts and math), throughout many of the Science Center's programs, events and activities. But some of you may be wondering: What is STEAM? Why is it important?

STEAM is so much more than just the addition of "art" to STEM. Scientific curiosity and artistic ingenuity go hand in hand, and STEAM provides an integrated approach to learning that connects science, technology, engineering, the arts and math to encourage skills like critical thinking, creative expression and collaboration. More than the sum of these individual disciplines, the holistic approach of STEAM encourages people to ask questions, think more broadly and creatively, and make personal connections to science and technology concepts in order to apply them to everyday life and real-world problems.

STEAM is at the heart of how we at the Science Center deliver hands-on, self-directed science and technology learning experiences to empower the next generation of innovators, problem solvers, STEAM-skilled workers and more. This intentional approach to learning fosters the 21st century skills needed to solve the critical challenges of today, and for the careers and opportunities of tomorrow—skills like critical and creative thinking, problem solving, collaboration and more.

The emphasis we put on STEAM reflects how more and more schools and educators are taking a STEAM approach to help students succeed. And as the role of science and technology plays a bigger part in the future of the St. Louis region, we believe that connecting our community through engaging, equitable and empowering STEAM experiences is more important (and more impactful) than ever. By integrating a diversity of concepts, topics and project-based learning, STEAM invites everyone to engage with science and explore their full potential.

In this issue of NewScience you'll read a number of examples of the intersection of science, technology and the arts, including a look at our Youth Exploring Science (YES) Program's Media Arts component and a peek at our newest McDonnell Planetarium star show, Planets of Rock, as well as some exciting updates coming to our paleontology exhibits where guests will be able to explore paleontology in the 21st century.

We're also proud to present our annual honor roll of philanthropic partners and supporters. Thanks to their generosity and the support of our members and community, the Science Center continues to serve as a STEAM resource for our St. Louis neighbors and region.

Happy holidays, and we can't wait for you to find something new to explore at your 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.









Hours

Thursday-Saturday 9:30am-4:30pm Sunday 11:00am-4:30pm Monday 9:30am-4:30pm Closed Tuesdays & Wednesdays

Contact

314.289.4400

slsc.org

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

Reservations

Advance Sales & Group Reservations: 314.289.4424

Education

Field trip information: slsc.org/field-trips

Educator Resources:

education@slsc.org

slsc.org/educator-resources

Programming information:

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.













Holiday Hours

CLOSED for Thanksgiving Thursday November 24 9:30am-5:30pm Friday November 25 November 26 9:30am-5:30pm Saturday

December 19-22 9:30am-4:30pm Open Every Day Friday December 23 **CLOSED for Christmas** Saturday December 24 **CLOSED for Christmas** Sunday December 25 **CLOSED for Christmas Open Every Day** December 26-31 9:30am-4:30pm

In This Issue...

Membership Matters

See a recap of some of our recent member events (and get a sneak peek at upcoming events) and learn more about some of the women working in science and technology today. Learn how membership helps make an impact with a special look at the Science Center's impact on STEAM education in 2021.

Science Today

Hear from Dr. Crickette Sanz, professor of biological anthropology at Washington University in St. Louis, as she talks about some of the work and research she's doing both locally and internationally.

Science Never Stops

Read about our newest Star Show at the McDonnell Planetarium, Planets of Rock, mark your calendar for upcoming astronomy events, and learn more about the return of our popular Laser Light Show Series.

Join Us

Join us at the OMNIMAX® Theater for our next documentary film, Antarctica. Plus, read an exclusive interview with diver Todd Kelly, one of the stars of Ancient Caves, playing now at the Science Center.

Community

Meet Chastity Culberson, the new manager of the YES Program's Aerospace component (and a former YES Teen herself!), and take a closer look at the YES Program's Media Arts component. Read about the Esports Program's recent presentation at the Association of Science and Technology Centers annual conference.

Partnership & Support

Check out a recap of the Science Center's 9th annual golf tournament benefiting our STEAM education programs and read about the Institutional Advancement team's recent travels catching up with our GROW Gallery agricultural partners. Then take a look at our Annual Honor Roll, recognizing the philanthropic partners and supporters who over the past year have helped make the Science Center's mission possible.





Our member events this past fall were adventures in science learning!

IN SEPTEMBER, we hosted PBS' Catherine Neville and Peter Hofherr from St. James Winery for a fantastic evening of wine tasting and education, plus a showing of the new PBS tasteMAKERS film Winemaking in Missouri: A Well-Cultivated History.

NEXT, we welcomed members to our amazing new special exhibition, *Becoming Jane: The Evolution of Dr. Jane Goodall,* which we successfully made a zero-waste event with the help of the Science Center's Sustainable Futures team and you, our members!





AND LATER IN OCTOBER, Manager of Collections and Special Projects Kristina Hampton thrilled members as she showed off some of the creepiest, ickiest and spookiest items in our Collections at Member Mission: Creepy Collections.

"What a variety of events 2022 brought our way! I hope the members are as excited as we are for next year's offerings!" says Director of Membership Vickie Corkhill.

Upcoming

Member Events

DECEMBER 8, 2022 | 5:00-9:00PM

Holiday Member Appreciation Night

Reservations available now!

Our most popular member event every year! Enjoy our exclusive event filled with fun and festive activities in every gallery. We love offering our members a chance to explore the entire building!

JANUARY 12. 2023 | 5:30 & 7:00PM

OMNIMAX® Member Preview: Antarctica

Reservations available December 22

Members see it first! The most remote continent in the world is a land of mystery, and yet, what happens here affects every single one of us. With never-before-seen footage, this story brings audiences to the farthest reaches of this wild and majestic place. It is the coldest, driest and windiest place on Earth with the roughest oceans, but it's also home to weird and wonderful creatures in astounding abundance. Free member tickets include popcorn and a drink.

JANUARY 26, 2023 | 6:00-8:00PM

Virtual Chat with a Scientist: Gene Editing

Reservations available January 5

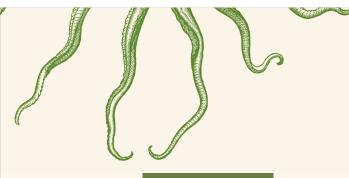
What is gene editing and how does it work? How is it applied in various science fields? Join our moderator Christina Carlson, associate director of special projects at the Science Center, for this member event that takes place on your sofa! Hear from knowledgeable scientists who will contribute to our understanding of, and answer our questions about, gene editing.

FEBRUARY 23, 2023 | 6:00-8:00PM

Member Mission: Planets of Rock

Reservations available February 2

Planets of Rock, the McDonnell Planetarium's newest live Star Show, is an out-of-this-world look at the rocky planets in our Solar System-Mercury, Venus, and Mars. Join us for a Member Mission where our Planetarium Presenters will show us the rocky worlds as we have never seen them, and our special guests from Washington University will answer your questions about what we can learn from them.

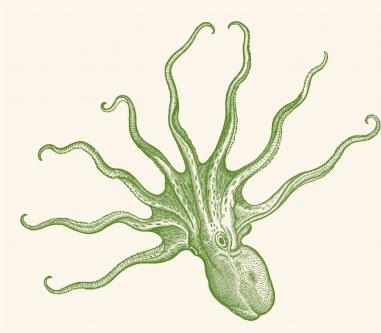


COMING SOON

Natural Histories: 400 Years of Scientific Illustration

Featuring scientific illustrations spanning five centuries, the exhibition Natural Histories: 400 Years of Scientific Illustration will open on December 26! Showcasing images that were created in pursuit of scientific knowledge and to accompany important scientific works in disciplines ranging from astronomy to zoology, the exhibition explores the integral role illustration has played in scientific discovery through striking, large-format reproductions from the Rare Book collection of the American Museum of Natural History's Library, including illustrations by celebrated artists Albrecht Dürer, Joseph Wolf, Moses Harris, and John Woodhouse Audubon.

Visit Natural Histories on the Second Floor next to the Makerspace to experience the beauty and the importance of scientific illustrations for our understanding of the natural world!



American Museum 6 Natural History

Natural Histories: 400 Years of Scientific
Illustration is organized by the American
Museum of Natural History, New York (amnh.org).



Science Center members play a powerful role in our mission to ignite and sustain lifelong science and technology learning. Each Science Center membership provides funding that supports opportunities for accessible, hands-on STEAM (science, technology, engineering, the arts and math) experiences that enable people of all ages to develop a better understanding of how science impacts our world.

By supporting STEAM, members help foster important skills like critical thinking and inclusive learning, empowering tomorrow's leaders and STEAM professionals both in St. Louis and beyond to use creativity and collaboration Last year, over **379,000 people** had the chance to connect with curiosity through the Science Center's on- and off-

Did You Know?

with curiosity through the Science Center's on- and offsite STEAM exhibits and galleries, events, and education programs—"aha" moments that were made possible by members like you!

as they solve real world challenges in areas like healthcare,

agriculture, climate change and more. Take a look at some

of the ways your membership and support are helping the

Science Center make an impact on STEAM in St. Louis.

2021 By the Numbers

- The Science Center served 379,400 people through STEAM education experiences, exhibits, events and programming including:
 - **3,490+ people** in school groups at the Science
 - **1,239 people** in offsite programs at schools
- * The McDonnell Planetarium served **51,251 people** with live programming in the Orthwein Star Bay.
- Free SciFest events immersed over 5,400 guests in STEAM with Mars Landing Party! and The Great Outdoors.
- + First Fridays held **10 free events** in person and virtually, connecting attendees with the real science inside science fiction and pop culture.
- Our early childhood program Discover Science
 With Me served 1,541 guests in 25 STEAM topics.

2021 Highlights

- In May, the Science Center debuted a new McDonnell Planetarium star show, Science of the Zodiac, developed by our Planetarium team. This live star show looked at the twelve constellations of the zodiac to ask, what makes these patterns different than any of the others found among the stars?
- Over the summer, the GROW Gallery debuted the new Root Tower exhibit, allowing guests to explore the interactions between roots and soil and the often hidden processes making plant growth possible.
- In December, the Science Center invited guests *Inside the Vault* to see the largest display of the Science Center's Collections in over 30 years, showcasing six themed collections including the Morton Lighting Collection, which helped shine a light on the story of lighting technology over the past 2,000 years.

Science Center members also help support our nationally recognized Youth Exploring Science (YES) Program. Each year, YES empowers up to 200 underserved St. Louis high school students to realize their potential as STEAM learners, career professionals, and future innovators. Combining four years of handson STEAM learning, college and career readiness training and STEAM outreach in the community, YES provides a one-of-a-kind work-study program for members of communities traditionally underrepresented in STEAM fields.







2021 YES Highlights

- YES Teens in the Cybersecurity component distributed over 2,400 STEAM kits to the community.
- YES Teens in the Engineering component exhibited a prototype electric go-kart at World Wide Technology Raceway during IndyCar weekend.
- YES Teens in the Agribusiness component competed in the Network For Teaching Entrepreneurship (NFTE)
 Youth Entrepreneurship Challenge's local and regional competitions and advanced to the national competition.
- In the Integrative Medicine & Well Being component, YES Teens participated in the St. Louis Neuroscience Brain Bee
- YES Teens in the Aerospace component flew a turboprop airplane through the Discovery Flights project with the Experimental Aircraft Association (EAA).

The YES Program: Bringing STEAM to the St. Louis community in 2021

- * Summertime Science served approximately 858 elementary and middle school students.
- The YES Program's STEMtastic Camp pilot program in the University City school district guided 280
 1st-5th graders in engaging and fun STEAM lessons.
- * 800 members of the St. Louis community increased their science literacy as the YES Teens demonstrated STEAM projects at 14 parks and community centers in collaboration with the Science Center's community partners.



Support makes our mission possible!

If you'd like to help the Science Center spark curiosity for STEAM in the coming year, consider making a gift to the Science Center's Annual Fund or YES Program today. Visit slsc.org/donate.



History is filled with notable women in the fields of STEAM—science, technology, engineering, the arts and math—who have pushed for equality and demonstrated that their talents have the power to change the future.

Today, science is still striving for more equal representation in STEAM fields and professions, and women in science continue to make their mark and play trailblazing roles in STEAM.

Photos courtesy of the If/Then Project. Learn about the project and see more examples of women in science at *ifthencollection.org*.



Jennifer Adler

CONSERVATION PHOTOGRAPHER | Gainesville, FL

Through her work as a conservation photographer and underwater photojournalist, Adler draws on her science background, including a degree in marine biology and a PhD in interdisciplinary ecology, to help communicate topics around science and conservation. She specializes in underwater photography and is a trained free-diver and cave diver. Throughout her work, an ongoing theme is the connection between people and water in a changing climate.

Learn more at *ifthencollection.org/JenniferA*Follow her on Twitter @jadlerphoto

Monica Rho

DIRECTOR OF WOMEN'S SPORTS MEDICINE, SHIRLEY RYAN ABILITYLAB | CHICAGO, IL

Dr. Rho is an Associate Professor at Northwestern University Feinberg School of Medicine, where she serves as the Chief of Musculoskeletal Medicine for the Shirley Ryan AbilityLab. For the past two years she's traveled the world with the US Women's National Soccer Team as their team physician. Previously, Dr. Rho served as the team physician for the US Men's Paralympic Soccer Nation Team, as well as the company physician for the Joffrey Ballet in Chicago. After receiving her undergraduate degree and completing her medical degree and residency training at Northwestern University, Dr. Rho did her Sports Medicine fellowship here in St. Louis at Washington University.

Learn more at *ifthencollection.org/monica*Follow her on Twitter @MonicaRhoMD





Chanté Summers

SENIOR ASSOCIATE SCIENTIST, PFIZER INC. | ST. LOUIS, MO

After falling in love with science during high school, Summers was motivated by her family's long-term challenge with genetic disease to ease the pain and find cures for people in similar situations. After completing a Master of Science in Chemistry, she spends time volunteering for local non-profits and working here in St. Louis at Pfizer. Summers engages the community through science demonstrations, conversation and inspiring local youth to explore STEAM. As a research scientist in therapeutics, Summers works on a variety of projects including vaccine development, targeted cancer therapy and more.

Learn more at ifthencollection.org/chante

Learn more about how companies like Pfizer are part of a STEAM-powered St. Louis on page 21.

Come to the Science Center to answer the question, "What does a scientist look like?"

See select posters from the If/Then Project on display throughout the Oakland Building, including at January's Community STEAM Showcase, to learn more about the wide-reaching roles women play in science, technology, engineering, the arts and math. And at the Taylor Community Science Resource Center, posters from the If/Then Project continue to inspire our YES Teens to pursue the STEAM-powered opportunities of tomorrow.

Correction: In the previous issue we misstated Marie Curie's accomplishments regarding the Nobel Prize. Mrs. Curie was the first woman to win a Nobel Prize (in Physics in 1903), the first person and only woman to win the Nobel Prize twice (for her prize in Chemistry in 1911), and the only person to receive a Nobel Prize in two scientific fields.

Mrs. Curie and her husband, Pierre, shared the 1903 prize, making them the first married couple to win a Nobel Prize.



Community

STEAM

Showcase

January 14, 2023 10:00am-4:00pm

FREE EVENT

Join us for our annual Martin Luther King, Jr. weekend event showcasing the diversity of the scientific community in St. Louis.

Participate in hands-on activities and see presentations led by STEAM role models representing a variety of backgrounds and perspectives.

Meet and interact with teens from our Youth Exploring Science (YES) Program.



STEM EXPERT SPOTLIGHT

Crickette Sanz began her studies of great apes at Central Washington University in Ellensburg, Washington. While earning undergraduate and master's degrees in experimental psychology, she spent six years working with chimpanzees that had been raised learning American Sign Language. She followed her research interests in chimpanzee behavior to the Goualougo Triangle in Republic of Congo. After obtaining her Ph.D. from Washington University in Saint Louis, she was a post-doctoral research fellow at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. In 2009, she then joined the faculty of the Anthropology Department at Washington University in Saint Louis.



WITH DR. CRICKETTE SANZ

Tell us a little about your current role at Washington University and the work and research you're doing both locally and internationally.

I am a professor within the Anthropology Department at Washington University in St. Louis and co-Principal Investigator of the Goualougo Triangle Ape Project in the Republic of Congo. In 1999, David Morgan initiated the project to increase our knowledge of the central subspecies of chimpanzee and use this information to address the urgent conservation threats facing these apes. We documented unique cultural behaviors by the chimpanzees in the pristine forests of the Goualougo Triangle—for example, the use of a "tool set" comprising different types of tools to gather termites, ants and honey. Information about these chimpanzees' complex tool technology was used to lobby for increased protected status of this area, and in 2012 the Goualougo Triangle was included in the Nouabalé-Ndoki National Park.

We then expanded the scope of the project to include a focus on the western lowland gorillas who coexist within these forests with the chimpanzees. Each day, research teams conduct daily follows of the chimpanzees and gorillas in the Goualougo Triangle and at Mondika. In 2014, the Wildlife Conservation Society asked us to oversee research at the Mondika research site, which is being developed for tourism.

My research involves field studies and collaborative projects with sanctuaries and zoos to examine intraspecific variation (or the differences within a species) in the behavioral ecology and sociality of great apes. I am particularly interested in the evolution of ape social systems, animal cultures, and how this information can be used to inform conservation initiatives. I also conduct long-term monitoring of ape health and environmental change, which are directly linked to the survival of great apes.



Photo credit: Sean Brogan, GTAP/WCS
Gorillas and chimpanzees coexist throughout much of the Congo Basin, but detailed observations of social relationships between these ape species have only recently been reported by Sanz and colleagues.

What are the most challenging and the most rewarding parts of the work and research you do?

The most rewarding aspect of my research is to work alongside the next generation of scientists and conservationists. The greatest joys in my career have been to witness the many successes of the research assistants and graduate students that we work with at the Nouabale-Ndoki National Park in northern Congo and here at Washington University in St. Louis. Their dedication to studying the apes and preserving these ecosystems is truly inspiring.

How did you get started in your STEAM area of interest? Was science always something you had an interest in, or was it something you came to as you grew up?

It was uncertain whether I would be able to afford college, and so pursuing a career in science seemed completely out of reach. However, once I got onto campus, I was surrounded by a world of opportunities. Working part-time jobs throughout my undergraduate and graduate studies helped me to make ends meet and also keep a balanced perspective. My mother always encouraged me to find a career that I was passionate about and that could make a positive difference in the world. Following that path led me to studying chimpanzees and gorillas in the Congo Basin.

The Science Center recently opened a new special exhibition dedicated to the life and work of Dr. Jane Goodall. How does the exhibition relate to your own work, what is your favorite part of the exhibition, and what do you hope people take away from visiting the exhibition?

The Becoming Jane exhibit is a truly marvelous tribute to Jane and her work. It not only highlights her discoveries about chimpanzee behavior, but also immerses you in where and how she accomplished these amazing feats. Through this exhibit, you visit Jane's research camp and meet the chimpanzees that she observed. You also see the meticulous notes from her field observations that have been critical for all the subsequent field studies of chimpanzees. My hope is that each visitor to the Science Center will find aspects of the exhibit that they connect with, whether it be attempting to speak chimpanzee or through a personal pledge to make a difference in the world.

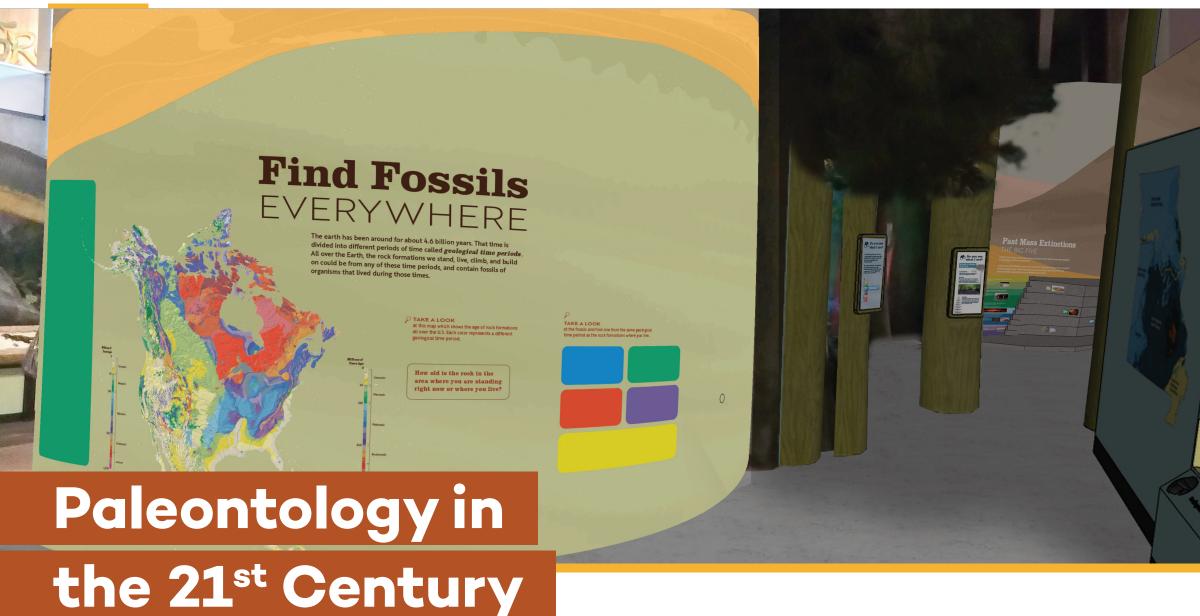
Speaking of Dr. Goodall, you actually had the opportunity not just to meet her but also work with her. Can you tell us a little about the work you did together and what that was like?

We had the great privilege of hosting Jane at our field site in northern Congo and then collaborated to compare tool-using traditions across study sites. During her visit to the Goualougo Triangle, she walked along paths created by elephants in the intact forest and met many of the chimpanzees whom we are still studying today. Directly after visiting the study site, Jane met with the President of the Republic of Congo to lobby for including this area within the Nouabale-Ndoki National Park. This effort was eventually successful due to the contributions of many organizations and people, including Jane.

Then as part of the comparison of tool technology between field sites, we had the tremendous honor of watching videos of the chimpanzees in Gombe, the site where Jane discovered tool use and which has since become one of the longest-running studies of animal behavior in the wild. In Congo, we documented tool use behaviors that differed from those in Gombe and wanted to know how these traditions were shared among individuals in the different chimpanzee communities. Through a systematic comparison of behavior, between sites, we found that the chimpanzees at the two sites not only differed in the complexity of their tool behaviors but also in the social mechanisms that support these behaviors. This research also showed that the social learning mechanisms underpinning these traditions were more flexible than we had previously realized. None of these insights would have been possible without Jane's initial discovery or her continuing support of field research!

What do you want to become?

Join us on a quest to see Jane's childhood dream come true as she pursues it into adulthood, becoming a game-changing animal researcher. Becoming Jane: The Evolution of Dr. Jane Goodall is our newest special exhibition, available for a limited time. Visit slsc.org/jane to learn more.



It's time to say goodbye to the last of the Saint Louis Science Center's original exhibits—created in 1991 when the Oakland Building first opened and bring it into the future!

The last exhibit to be modernized is the Paleontology area, located just outside the Dana Brown Fossil Prep Lab on the Lower Level. Guests facing the T. Rex would find this area just to their right. In its original form, this area hosted fossils of both plants and animals to highlight adaptation and survival in prehistoric periods, and briefly covered the process of coal formation and its connection to ancient life. While some parts of this area will remain the same-particularly the Pennsylvanian Period diorama-guests will be able to experience paleontology in new ways.

The new paleontology exhibit will focus on the ways that studying past life helps inform decisions we make about the future of our planet. "Paleontology is cool, but we don't often think about how it relates to us today," Manager of Energy Stage and Earth Science John Nahon explained. The new exhibit will examine the varying reasons why extinction events have occurred throughout Earth's history and take a closer look at the causes of the one happening today in the Anthropocene Period, stemming from our species' interactions with the Earth's atmosphere.

The new exhibit will focus on creating an interactive, close-up and touchable experience by including specimen displays containing both casts and actual fossils of brachiopods, ammonites and trilohites

Turning away from the distant past and focusing on the present and future, other changes will showcase the technology used to find fossils in the field and then analyze them in the lab. These exhibits will showcase "what it really means to be a paleontologist," according to Liz Senzee, associate director of galleries.

Yet another area will invite guests to ask themselves, "What Can We Do?" to learn what specific tasks, outside of recycling or other more obvious solutions, we can do to help prolong the health of our planet

Guests can expect the renovated paleontology exhibit to open at the end of December.

FEATURED FOSSIL:



Trilobite

Trilobites were marine arthropods, sea creatures related to the horseshoe crabs and lobsters of today. First appearing in the fossil record in the Cambrian period, trilobites lived an impressive span of nearly 270 million years before perishing in the mass extinction event during the Permian period. Despite their lengthy existence, trilobites were completely extinct by the time dinosaurs lived!

Trilobites became smaller over the eras of their existence; the largest trilobite fossils found suggest that they topped out at about 18 to 20 inches in length, getting smaller and less diverse over the millennia. There were thousands of distinct species of trilobites, some with no eyes and some with multifaceted eyes like today's flies have. Others had spiky spines to protect them from predators. Like the pill bugs or "roly polies" that they resemble, trilobites rolled up into balls to protect themselves.

According to one of our resident paleontologists, Rick Porapat, most trilobites lived on the ocean floor, although some could swim. Rick also explained that trilobite fossils are some of the most sought-after fossils because of the difficulty in finding a complete fossil. Trilobites shed their exoskeletons, and those exoskeletons comprise most of the fossils found.

Rick also warns that fossil fans should use caution when purchasing trilobite fossils, particularly on eBay, as many of these have been proven fakes.

Visit Rick to view trilobite fossils, and learn more about what paleontologists do, in the Dana Brown Fossil Prep Lab on the Lower Level.



Winter Planetarium Star Shows

Visit slsc.org/planetariumshows to learn more about these fantastic live Star Shows!









Join us at the James S. McDonnell Planetarium this winter for the return of Laser Light Shows! The shows will run from December 26-31, and tickets

will go on sale on December 5. Last summer's shows were sold out and garnered rave reviews!



Visit slsc.org/laser-light-shows/ for the latest information on showtimes and to reserve tickets.

Winter Astronomy Dates

DECEMBER 7 Lunar Occultation of Mars

Look up to see Mars "disappear" from our sky! A lunar occultation occurs when the Moon passes in front of another celestial object. The Moon will obscure Mars between 9:05pm and 9:52pm CST in St. Louis. Lunar occultations are only visible from a small fraction of the Earth's surface.

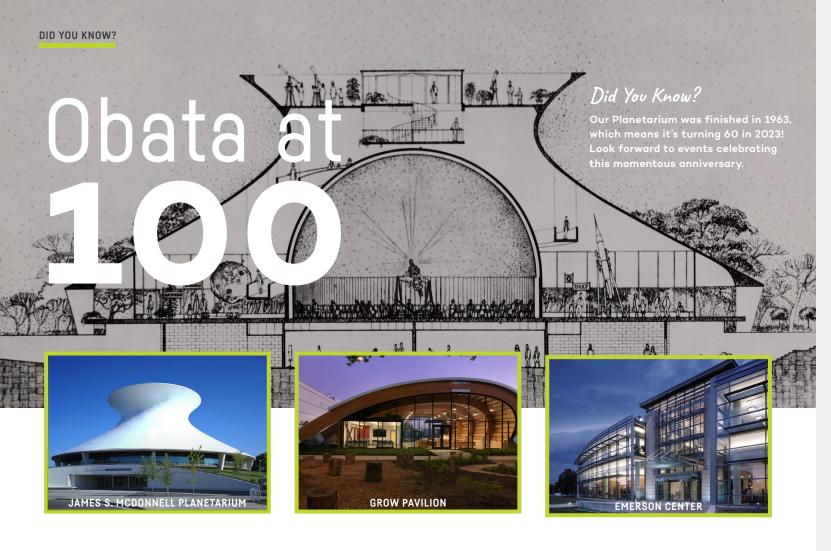
DECEMBER 13-14 **Geminid Meteor Shower Peak**

The annual Geminid meteor shower will peak the night of December 13-14. One of the best showers of the year, the Geminids are produced by debris from rocky asteroid 3200 Phaeton, rather than a comet. Upwards of 120 meteors per hour can be observed from a dark location during the peak.

DECEMBER 21 Winter Solstice

The Sun will reach its lowest position in the sky at local noon, marking the start of winter in the Northern Hemisphere. The winter solstice also is the "longest night of the year" with over 14 hours of darkness. Happy stargazing!





Gyo Obata's contributions to St. Louis architecture and culture cannot be dismissed. In the ZMD (Zoo Museum District) alone, Obata designed our iconic James S. McDonnell Planetarium and GROW Pavilion, as well as the Emerson Center at the Missouri History Museum and the Living World at the Saint Louis Zoo. Obata's designs can be found elsewhere in St. Louis, as well.

Will Snyder, manager of the McDonnell Planetarium, explained how important the building itself is to him, saying, "Gyo Obata's hyperbolic paraboloid design of the Planetarium is an icon in St. Louis and a phenomenal example of mid-century modern architecture. It truly is a privilege to work each day in this beautiful building and to be a steward of Gyo's legacy for future generations."

Did You Know?

Obata studied under Finnish architect Eliel Saarinen, whose son Eero Saarinen designed the St. Louis Arch!

Obata passed away last year at the amazing age of 99. Gyo Obata's 100th birthday would be February 28, 2023, and to celebrate his contributions to St. Louis and the world, we wanted to pay tribute to his feats of engineering. What a lucky city we are to be able to call so many of his architectural wonders our own.

Did You Know?

Obata was involved in the design of the main terminal of Lambert International Airport, along with Minoru Yamasaki, who designed the twin towers of the World Trade Center in New York City and the Pacific Science Center in Seattle.





All First Friday events will take place from 5:00pm-9:00pm.

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

(Note that there will be no First Friday in January 2023.)



DECEMBER 2 Harry Potter

Return to Hogwarts once more and explore the science of our favorite wizarding world. Shop from local artists and crafters, test your knowledge at trivia, journey through the building on a special mission and attend a feature presentation all about how the fans have shaped the series. Wrap up the evening with screenings of *Harry Potter and the Goblet of Fire* in the OMNIMAX® Theater.



FEBRUARY 3 Black Panther

Welcome to Wakanda. Join us for an evening filled with Marvel-ous activities celebrating Black Panther and featuring many of your favorite superheroes! Design your own comic book panels, test your knowledge at trivia and learn about the legacy of Black Panther. Don't forget to come in costume as your favorite Marvel character!



DECEMBER 3 & 4 | REGULAR BUSINESS HOURS

Extend your Harry Potter First Friday experience throughout the weekend at our family-friendly Wizard Weekend! Enjoy the following on Saturday, December 3 and Sunday, December 4:

- Harry Potter films in the OMNIMAX® Theater
- Free activities throughout the Science Center
- Wand Making workshops
- Special Energy Stage STEAM presentations
- Potterific decorations and photo opportunities
- Food and drink specials Including butterbeer and other Hogwarts favorites!

See more details and full schedule: slsc.org/wizard-weekend



SciFest: Engineering Expo

SATURDAY, FEBRUARY 25, 2023 | 9:30AM-4:30PM

Celebrate Engineers Week 2023 at our free event showcasing the creative problem-solving process that engineering is all about. Meet and learn alongside real engineers and STEM experts who build, invent and impact the world around us. Find inspiration for applying your own creative abilities, and maybe even discover a new hobby or career path while you're here.

See the latest news about SciFest at **slsc.org/scifest**.

5 Questions

WITH CAVE DIVER TODD KELLY

Cave diver Todd Kelly recently visited the Saint Louis Science Center for the member preview of his film, Ancient Caves, and the members in attendance were thrilled to ask him questions about his experiences in the world's most mysterious caves. We were fortunate to follow up with Todd after his visit for a short Q&A session of our own.

1. How did you get interested in cave diving and what led you to get scuba certified at age 12?

Family friends had a cabin on a lake up in Pelham, NH, so I was lucky enough to spend a lot of the summer swimming and snorkeling in the lake. My friend's older cousin, who was about 20, was a diver and worked at the local dive shop. He would bring tanks and some dive gear up to the lake, and he allowed my friend and [me] to use it. The lake was very shallow, and we were good swimmers. He showed us the basics. Eventually this led to both of us being able to take a scuba class at the local shop.

2. What's your favorite cave you've ever visited (or a dream cave you'd like to visit)?

I can't really choice-rank caves, or really anything for that matter. When we are young, we are told we should have a favorite for things like color. I just don't see the world that way. Each cave, just as each color, has its own special character and beauty to it. I try to appreciate a thing for what it is. So to the extent I have a favorite, it is either the one I am currently in, when lucky enough to be out caving, or the next one I am going into. Because all we really need to be happy is something to look forward to. The next cave adventure for me is likely in Florida in December.

3. What's the longest you've ever been submerged?

One of the dives in the film, to Fangorn Forest in Dan's Cave in Abaco, was one of the longest dives. I think our in-water time was about four hours. However, at Devil's Hole, also in the film, I was in the water for seven consecutive hours, but mostly at the surface in a supporting role for Brian's deep dive. There were a few dives during that time, but much of the time was spent gear-ready to provide support if Brian needed anything on his dive to over three hundred feet [below the surface].

4. Have you ever felt afraid while cave diving? If so, how did you cope?

Fear is a great thing – it is a form of excitement. But the danger is not fear; it is the panic that comes out of fear. Training and experience prevent fear. There is nothing about caving or diving that really frightens me anymore. When you first start out diving or caving, [there] may be some amount of fear, which should be easily overcome. Over time, and because we are trained and experienced, the things you may be afraid of go away. When I was young, I was afraid of sharks. Now I love sharks. They are the most pleasant and awesome creatures, much like dogs. By getting to know and spend time with them, I not only lost any fear I had, but now look forward to every interaction I can have

When there is fear, it is a sign that something new is happening. The goal when you are afraid, and the one thing that worries me about fear, is that fear becomes panic if not checked. Panic will get you killed in diving, especially in cave diving, because a panicked person becomes irrational, which leads to mistakes and bad judgement.

The solution when there is fear is always to focus on breathing. Then focus on one thing at a time, and then another thing, until you overcome the fear. By shifting focus to small things that we can control and do, you will work around fear.

But to be clear, there is nothing in caving or diving that I am afraid of at the start of any adventure. But I do know that dangerous situations can develop, and the goal is to avoid those. If a dangerous situation does develop, that is when I would anticipate that fear may show up. If I was afraid at the thought of diving in a cave, I would not do it.

5. Could you please share your best and worst cave diving experiences?

My best cave diving experience was making the Ancient Caves film.

For my worst experience, check out the story here: slsc.org/newscience/divesto



If you haven't yet seen Ancient Caves, it's a thrilling visit to the most beautiful, secret and hard-to-reach parts of our planet. Thanks to Todd Kelly, Dr. Gina Moseley and MacGillivray Freeman Films for sharing this adventure with us!

Now playing at the OMNIMAX® Theater



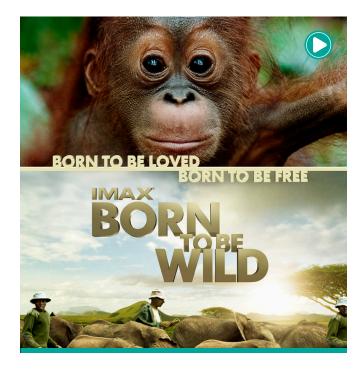
NOW PLAYING | DOCUMENTARY FILM

Travel with scientist Manuel Calderon de la Barca Sanchez as he journeys to the largest machine ever built, the greatest scientific instrument ever created: the large hadron collider (LHC). There, he joins a global team working to uncover another amazing breakthrough in this new world of technology-driven physics.



CLOSING JANUARY 12 | DOCUMENTARY FILM

As the glaciers retreated at the end of the last ice age, they left an astounding gift of connected rivers, lakes and wetlands across the heartland of North America. Today. these largely unknown water highways remain an oasis for wildlife, especially for the millions of magnificent birds that migrate along these "flyways."



NOW PLAYING | DOCUMENTARY FILM

This film documents orphaned orangutans and elephants and the extraordinary people who rescue and raise them-saving endangered species one life at a time. Narrated by Academy-Award winner Morgan Freeman, be transported into the lush rainforests of Borneo and across the rugged Kenyan savannah as teams rescue, rehabilitate and return these incredible animals back to the wild.



OPENS JANUARY 13 | DOCUMENTARY FILM

Join narrator Benedict Cumberbatch for a spectacular exploration of the mysterious and wild continent of Antarctica. With never-before-seen footage and the latest underwater filming techniques, this epic documentary transports you to the farthest reaches of this majestic land—and reveals that what happens there affects every single one of us.

Meet the Team

Chastity Culberson

COMMUNITY SCIENCE MANAGER, AEROSPACE COMPONENT

The Science Center's Youth Exploring Science (YES) Program welcomed back a familiar face earlier this year when Chastity Culberson joined the Community Science team as the manager of YES's Aerospace component. A graduate of the YES Program, Chastity brings both a unique perspective and an accomplished background as an educator to the program. We spoke with Chastity to learn more about what types of activities the Aerospace teens will be jumping into, how the YES Program impacted her, and what lessons she's looking forward to bringing full circle as she helps inspire the next generation of YES Teens.

- Q: Can you tell us a little bit about your current role at the Science Center and what you'll be doing with the YES Teens?
- A: I am currently a community science manager for the Aerospace component of the Youth Exploring Science Program. In the Aerospace component, I'll be exposing teens to state-of-the-art technology and career experiences in the areas of space science, aeronautics and aviation.
 - Aerospace teens will work with a pilot monthly to receive real pilot hours through the Redbird flight simulator. Also, teens will be creating and leading space science activities with students in the St. Louis community through programs, camps and events. Additionally, Aerospace teens will be working on individual projects in their areas of interest.
- Q: Chastity, you happen to be a former YES Teen yourself. When did you graduate from YES, and do you have any standout experiences or memories from your time in the program?
- A: I graduated from YES in 2002. My standout experience was the summer where I taught 3rd graders at Compton-Drew earth science activities. We were doing a volcano demonstration using baking soda and vinegar to create a chemical reaction, and I remember so vividly all the excitement and curiosity on the kids' faces as they watched the volcano explosion.
 - Even more, I remember how happy and confident it made me feel to see them so happy to learn from me.
- Q: You have a background in education. Can you share a little about your career path after the YES Program and how YES helped prepare you for pursuing and achieving those goals?
- A: For the first 13 years of my career, I worked as a middle school math and science teacher in Metro Nashville Public School



District and Ferguson Florissant Public School District. My love for science and education came directly from the YES Program.

All of the fun I was having with doing science with younger kids is the reason I changed my major in college from nursing to education. My experience working with children helped me discover my passion for educating and serving them. Because of this background, I have also been able to make science fun and engaging for my own students by giving them so many hands-on science lessons over the years.

- Q: What are some of the skills the YES Program helped you develop? Are there any lessons you're particularly excited about bringing with you to YES?
- A: The YES Program helped me to develop skills such as leadership, communication, teamwork, adaptability and empathy. One of the main lessons that I look forward to giving the YES Teens is positive representation for minorities and women in the fields of STEAM. I will be intentional in affirming the abilities, strengths and confidence of these groups so that, through our work in the YES Program, they can continue achieving in STEAM.

STEAM-Powered

STL

PFIZER

St. Louis is a home for STEAM. Pfizer, a multinational bioscience company, has two St. Louis-based locations in Chesterfield and Weldon Spring. With over 250,000 square feet of laboratory and manufacturing space—and more on the way—Pfizer is playing a part in St. Louis' STEAM-powered economy.

Applying science and global resources, Pfizer aims to advance wellness, prevention, treatments and cures for disease, while collaborating with health care providers, governments and local communities to support access to health care around the world.

Pfizer's St. Louis laboratories focus on the area of bio-therapeutics and vaccine development and work to help prepare biologic therapies and vaccines for clinical trials. Among other roles, the group also provides data for regulatory submissions and develops manufacturing processes that aid Pfizer's global supply chain.

The company is currently in the process of a multi-million dollar expansion of its Chesterfield campus, which will support the company's research and development projects, as well as the manufacturing of Pfizer's bio-therapeutics and vaccine portfolio, which includes COVID-19 vaccines and boosters, flu and shingles vaccines and more.





Over 3.6 billion

doses of COVID-19 vaccine shipped to **180 countries** to date

Did you know! Millions of those vaccines had their start at Pfizer's facility in Chesterfield, where the company produces raw materials used in the creation of the vaccine.



81.3 Billion

89 projects in development, ranging from medicines and vaccines to consumer healthcare products*

*as of February 2022

39 manufacturing sites worldwide



79,000 employees globally

Pfizer's Chesterfield campus employs about 750 people, with plans to hire an additional 40 scientists and engineers in the near future.

According to Greater St. Louis, Inc., together, St. Louis' health and bioscience companies like Pfizer collectively employ over **200,000 people** in the St. Louis region.

Pfizer is currently building an additional **30,000 square feet** of space to their existing research and development facility in Chesterfield. The project was included in the *St. Louis Business Journal's* List of St. Louis' Largest Construction Projects in September 2022.









YES Component Spotlight:

Media Arts

In the Science Center's Youth Exploring Science (YES) Program, local teens explore seven STEAM components ranging from aerospace and engineering to agriscience and cybersecurity as they develop the skills to pursue the career and educational opportunities in today's STEAM-skilled workforce. Here, we're taking a look at the YES Program's Media Arts component.

"In the YES Program we emphasize STEAM learning in each component," says Jasmine Krueger, manager of YES's Media Arts component.

In the Media Arts component, the YES Teens learn the fundamental STEAM skills needed to succeed in a career in the field of media arts, including skills in photography, videography, editing, sound design, graphic design and art. Teens get the opportunity to gain hands-on experience with technology, including industry equipment—everything from DSLR cameras, lighting systems, photo backdrops and a 20-foot green screen to iMac Pros, iPad Pros and Wacom tablets in order to capture and edit footage.

In addition, the YES Teens get to edit and share their projects through both the Science Center's and the YES Program's social media and YouTube pages, allowing them to gain skills in branding and social media management, as well as participate firsthand in marketing campaigns.

"The Media Arts component shows how science and art are connected, and it's aligned with the Missouri Media Arts standards," says Krueger. "However, we take the teens a step further by giving them the option of becoming an Adobe Certified Associate." Based on their interests and career goals, teens can work toward getting certified in Adobe Premiere Pro, Illustrator or Photoshop, teaching them the cutting-edge skills needed to succeed in the media arts industry and giving them a leg up on the competition.



Support from members and philanthropic partners enables the YES Program to provide hands-on STEAM learning experiences for local teens—many from traditionally underserved neighborhoods. If you'd like to help support programs like YES, consider making a gift at <code>slsc.org/donate</code> or scan the QR code.



The main goal of the program isn't just to teach the teens how to use media equipment and edit footage, but how to do so creatively and ethically.

"I want the teens to gain confidence as media artists," says
Krueger, "and be able to walk out of my classroom with the skills
needed to make smart and safe choices, whether it's posting to
social media, vetting a news outlet or creating a piece of artwork.
In the Media Arts component, I want to empower them to use their
critical thinking skills when approaching media art."



Jasmine Krueger

Jasmine Krueger is a multimedia artist and educator. She received her Masters Degree in Art and Visual Media from Tiffin University, her BFA in Art Education from the Rocky Mountain College of Art and Design, and her Associates Degree in Secondary Education from Saint Louis University. Exhibited in numerous galleries across the U.S.—including 40 West Gallery, ReCreative Denver, The Anton Art Center and the Community Fine Arts Center in Rock Springs—her work takes form across all mediums (although her true passion is graphic design). Jasmine hopes to bring her expertise and passion as a digital artist to teach the YES Teens that career pathways in media arts are valuable and worth pursuing.



The Saint Louis Science Center is a proud member of the Association of Science and Technology Centers, or ASTC, and at this year's ASTC conference, our esports team was able to show science museums across the country just how ahead of the game we are here in St. Louis!

The presentation, titled "National STEM Gaming Network: Let's Talk About Purposeful Gaming," brought together representatives Doug Stanze and Mike Harris from the Science Center, but also managers, directors and leaders from the Science Museum of Minnesota, the San Antonio Museum of Science and Technology, the Arizona Science Center and the Whitaker Center in Harrisburg, Pennsylvania.

This loose network of science centers is referred to as the National STEM Gaming Network and aims to allow each member institution to become a resource for gaming and esports education in its community. All the members of this network support the idea that gaming and esports programming are vital ways to engage youth in the future, and they have been communicating and assisting each other in their endeavors for over a year now.

Director of Guest Services Doug Stanze said, "It was a pleasure to finally meet these individuals that we have been collaborating with virtually for the last 18 months."

In the presentation, Stanze and Harris, as well as their collaborators Chris Demko, Cliff Zintgraff, Ph.D., Alyson Smith and Ted Black, discussed the programs they have started at their own science museums and explained how their completed projects in the esports arena are faring.

Each institution has approached the esports and gaming programming differently, allowing the presenters to share various experiences with the attendees. Some museums have created physical spaces, events and competitions, while others have focused on educational programming. These five museums, among the first to offer programming of this kind, will truly bring science and technology centers into the future.

Pictured above (from left to right):

Mike Harris | Manager, Cyber Security Education Saint Louis Science Center

Chris Demko | Manager, Omnitheater & Immersive Media Manager Science Museum of Minnesota

Doug Stanze | Director, Guest Services Saint Louis Science Center

Cliff Zintgraff, Ph.D. | Chief Learning Officer San Antonio Museum of Science and Technology

Alyson Smith | Senior Vice President, Engagement Arizona Science Center

Ted Black | President & CEO Whitaker Center



Congratulations to the Cee Kay Supply team for coming in first place.

9th Annual Golf Tournament Benefits STEAM Programs



Second place went to the Controlled Products Systems Group.



Third place went to the Calcaterra Photography team.

On October 6, the Science Center held its 9th annual golf tournament in Forest Park benefiting aviation and aerospace STEAM education programs.

The beautiful fall day played host to 96 golfers who participated in the longest drive, straightest drive, closest to the pin and hole-in-one contests, as well as a tournament raffle with prizes from the St. Louis Blues, Cardinals and Heartland Coca-Cola just to name a few. Congratulations to all the winners, and a special congratulations to our first place tournament winners at Cee Kay Supply. A special acknowledgement to our tournament chair, Daniel Ladenberger, for his outstanding leadership of the Science Center's tournament for the past nine years. His longstanding dedication to the tournament has been instrumental in raising more than \$500,000 for STEAM education programming to date.

Congratulations to all the winners, and save the date for next year's tournament on October 5, 2023!



GOLF TOURNAMENT CHAIRMAN DAN LADENBERGER

"I've been honored to chair and be a part of the Saint Louis Science Center golf tournament for 9 years. The Science Center is providing critical education in science, technology, engineering and math to the community and to our future generation of employees and entrepreneurs. We view this work as an important talent pipeline for companies that rely on these skills to deliver the increasingly technology driven services our country and the world demand."







STEAM Sponsors

SCIENCE











TECHNOLOGY





















ARTS & MEDIA

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MATH





SEILER











FOOD AND BEVERAGE











SIAMAL EMOCION TO CAME

State Fairs and Agriculture **Partnerships**

In August, the Science Center's Institutional Advancement (IA) team again traveled across the bi-state area visiting some of our founding GROW Gallery agriculture partners by attending meetings and conferences at the Illinois and Missouri State Fairs.

At the annual Governor's Ham Breakfast, the IA team met with Missouri Governor Mike Parson and discussed the important agriculture education being accomplished in the GROW Gallery.

"Maintaining strong connections with our partners and the agriculture community is vital to keeping our GROW Gallery 'growing' and thriving," explained Christine Cox, sponsorship and promotions manager at the Science Center, pictured to the right with Governor Parson and Senior Director of Corporate, Foundations, Community & Government Relations Patti LaBrott.

Come visit the GROW Gallery to learn more about Illinois and Missouri agriculture!



Christine Cox, Smokey the Bear, Patti LaBrott at the Illinois State Fair



Garrett Hawkins, Missouri Farm Bureau President, and Patti LaBrott attend the Governor's Ham Breakfast at the Missouri State Fair



Christine Cox, Governor Mike Parson, Patti LaBrott attend the Governor's Ham Breakfast at the Missouri State Fair



Patti LaBrott & Illinois Farm Bureau President Rich Guebert attended the Ag Breakfast at the Illinois State Fair



US Army is Esports



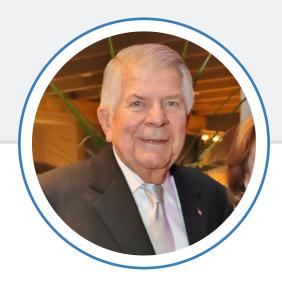
The Saint Louis Science Center recently played host to another Show Me Showdown Series event featuring Rocket League. On October 16, the Science Center welcomed a new partner for their event: the US Army joined in on the action for the first of five planned events for the 2022-2023 school year.

The Science Center continues to host gamers who are looking for a fun and competitive atmosphere where they can showcase their talents, and the US Army's support allows the Science Center to create unique experiences for these scholastic gamers.

Director of Guest Services Doug Stanze says, "We are excited to welcome the US Army as our newest esports partner. Their support will allow us to continue to show all the unique and interesting STEAM careers that a passion for gaming can lead to." In the future, the Science Center and the US Army plan to showcase many of the STEAM careers found in the military, and more specifically in

"We are excited to showcase some amazing gaming talent and provide a unique environment for our local students to compete in. We couldn't continue to provide these opportunities without support from partners such as the US Army," Stanze added.

In Remembrance



Jerry Ritter

The Saint Louis Science Center was deeply saddened by the passing of Jerry Ritter this August at the age of 87. Jerry was a prominent community leader whose tireless dedication to philanthropic work supported organizations across the St. Louis region. We are honored to be counted among the nonprofits Jerry—along with his wife, Peggy—dedicated his time to

Jerry was a longtime leader at the Science Center.

He served as Chairman of the Board of Commissioners from 2003–2006 and became a Life Trustee in 2008. He generously dedicated his time as a member of multiple Board Committees. Jerry was essential to the success of our Transform Tomorrow Campaign, serving as campaign chair and securing \$43 million.

A highly respected professional who retired as Executive Vice-President, Chief Financial and Administration Officer of Anheuser-Busch Companies, Inc., Jerry served on multiple boards including those of the St. Louis Blues Hockey Club, St. Louis Trust Company and Brown Shoe Company. Together, Jerry and Peggy served the community through their tireless philanthropic work. Jerry was a past president of SSM Cardinal Glennon Children's Foundation, a member of the Board of Trustees at the St. Louis Art Museum and a board member for Webster University, among countless other philanthropic endeavors. The Science Center is honored to be counted among the organizations Jerry supported, and we wish his family the very best in the years to come.



Barbara Bridgewater

It is with great sadness that the Saint Louis Science Center honors Barbara Bridgewater, who passed away this August at 84. Barbara was dedicated to supporting the success of the St. Louis region through her diligent commitment to charitable work. She was a longtime supporter of the Science Center, and we are honored that she was one of our philanthropic partners.

Barbara contributed countless hours to volunteerism and philanthropic endeavors that served to strengthen numerous nonprofits throughout this region and beyond. She began her dedication to philanthropy in Chicago by volunteering on the Women's Board of the Maternity Center of Chicago and the Infant Welfare League of Chicago and then as President of the Kenilworth Girl Scout Council. In St. Louis, Barbara continued her important work by serving on many local nonprofit boards including the Saint Louis Art Museum, the Repertory Theater of St. Louis, the Opera Theatre of St. Louis, Forest Park Forever and the Arts and Education Council of Greater St. Louis. She also endowed scholarships at Washington University in St. Louis, among many other initiatives that helped advance the St. Louis community.

The Science Center is grateful for the time Barbara spent in support of our mission including serving on our Development Committee in 2004, on the Gala Committee from 1993–2005 and on our Board of Trustees for many years. Barbara was also a Charter Member, having been a supporter of the Science Center from our very founding. We wish Barbara's family and friends all the best in the coming years.

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, 2021–October 31, 2022. Donors are listed in the category of their giving.

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