

# newscience

NEWS FOR MEMBERS AND FRIENDS OF THE SAINT LOUIS SCIENCE CENTER

FALL 2022



 NATIONAL  
GEOGRAPHIC

 Jane  
Goodall  
Institute

## BECOMING JANE

THE EVOLUTION OF DR. JANE GOODALL

**Photo by Michael Nichols**  
National Geographic

Jane Goodall, 35 years after her original observations, finding great joy in watching the Gombe chimpanzees. Gombe National Park, Tanzania. Learn more about Jane Goodall's groundbreaking behavioral research at "Becoming Jane: The Evolution of Dr. Jane Goodall," an exhibition organized by National Geographic and the Jane Goodall Institute. **SPECIAL EXHIBITION | OPENS OCTOBER 7**

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## Connect with curiosity.

Dear Friends of the Saint Louis Science Center,

STEAM—science, technology, engineering, the arts and math—is increasingly being recognized as a powerful part of our community's future through reports like the STL 2030 Jobs Plan, the Missouri Chamber of Commerce's Technology 2030 Report and St. Louis Community College's 2020 State of the St. Louis Workforce Report. That's something we at the Science Center can't help but be excited about.

As we look to the future of our region, the STEAM opportunities available across a spectrum of fields continue to grow, including aerospace, advanced manufacturing, biomedical and health services, and developing technology fields like fintech, geospatial and agtech. These fields will play important parts in our region over the coming years. But look around and you can see that, even today, we live in a STEAM-powered St. Louis.

In this issue of *NewScience* we're proud to continue exploring the science happening both inside the Science Center and out in our community. Read about what's new for our galleries, events and programs, and get a sneak preview of our upcoming special exhibition, *Becoming Jane*, about the life and work of renowned ethologist Dr. Jane Goodall. Dr. Goodall's inspiring story helps highlight the contribution of women in STEAM, and I can't wait for you all to experience it.

In *Science Today*, Katie Lefton, a PhD candidate at Washington University School of Medicine, explores an important but often overlooked part of the nervous system. Then, on page 22 discover more about Washington University and its role in putting STEAM to work in St. Louis, from scientific research like Ms. Lefton's to thousands of jobs that contribute to the ecosystem of our local economy.

As the role of STEAM careers (and the demand for STEAM-skilled workers to fill them) continues to grow, I'm so proud of the work of our Youth Exploring Science (YES) Program. By inspiring a passion for science and technology, the YES Program is equipping our community with not only the curiosity to pursue STEAM, but also the skills to succeed in it. In this issue, you'll find a number of stories illustrating how YES and our YES Teens are making an impact.

As always, thank you to our supporters—from our philanthropic partners and members to our community—for making our mission possible. The stories in this issue are all thanks to you. And to the many STEAM organizations across St. Louis, from longstanding partners to those we haven't yet had the opportunity to partner with, thank you for helping show that science and technology can change our world and our city for the better.

I can't think of anything more powerful than that.



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](http://slsc.org)  
Saint Louis Science Center  
5050 Oakland Avenue  
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## Membership

Services & Sales: 314.289.4491  
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## Events

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

## Accessibility

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

## Official Partners

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



## In This Issue...



### 4 Membership Matters

Take a look back at some of our recent member events and get a sneak peek of our upcoming Holiday Member Appreciation Night.

### 8 Science Today

Dive into the microscopic topic of glia, astrocytes and microglia with Katie Lefton, a PhD candidate at Washington University School of Medicine. Learn more about these cells and the important roles they play in the world of neurobiology, from brain functions and development to neurological diseases.

### 10 Science Never Stops

Discover our newest special exhibition, *Becoming Jane*, opening October 7. Take a look back at Preschool Science Series and the reopening of the Discovery Room. Learn about our Planetarium's star projector and what it takes to keep its stars shining bright, and then meet two former YES Teens who have returned to the Science Center.

### 16 Join Us

Mark your calendar for these exciting on-site events, activities and more. See what's coming for First Fridays, learn about our SciFest: Health & Safety Expo this November, and get ready for spooky science during Science Spooktacular. Then, discover which films are showing in the OMNIMAX® Theater and read a special interview with Audubon's Chief Conservation Officer Marshall Johnson about our OMNIMAX® film *Wings Over Water*.

### 22 Community

Our Community Science team and the YES Program have been busy this summer! Read about the Science Center's summer STEMtastic Camp, the YES Program's STEM Lane adventures at World Wide Technology Raceway, and a special networking opportunity for the YES Teens. Check out the latest from the Esports Program, and see how Washington University is showing how St. Louis is STEAM-powered.

### 30 Partnership & Support

Take a look at some of the recent grants, sponsorships and gifts helping power our mission. Learn more about the Science Center's upcoming 9th Annual Golf Tournament. And see how you can show your support for the Science Center this Giving Tuesday.



# WOMEN IN SCIENCE

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.

Throughout history, women like Marie Curie, Rosalind Franklin, Jane Goodall, Mae Jemison and many others have played important roles in science and technology. Today, the legacy of women in STEAM is carried on by people like Dr. Mitu Khandaker, Miriam Fuchs, Dr. Chavonda Jacobs-Young and many others.

While science is still striving for more equal representation in STEAM fields and professions, it's evident that women have played—and continue to play—a trailblazing role in driving our world into the future.

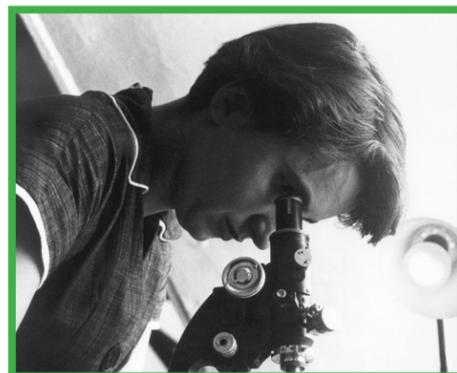


## Marie Curie

### PHYSICIST AND CHEMIST

Ms. Curie was a Polish physicist and chemist who pioneered research into radioactivity.

She was awarded the 1903 Nobel Prize in Physics and the 1911 Nobel Prize in Chemistry, making her the first woman to win a Nobel Prize.



## Rosalind Franklin

### CHEMIST AND X-RAY CRYSTALLOGRAPHER

Ms. Franklin's work as a chemist and x-ray crystallographer was instrumental in understanding the molecular structure of DNA, RNA, viruses and more.



## Mae Jemison

### PHYSICIST AND ASTRONAUT

Ms. Jemison joined NASA's astronaut corps in 1987 and became the first Black woman in space when she served aboard the Space Shuttle *Endeavour* as a mission specialist.



## Dr. Mitu Khandaker

### VIDEO GAME DESIGNER AND ENTREPRENEUR

Dr. Khandaker designs, codes and researches games. She also teaches game design and engineering with an emphasis on gender and racial equity in STEAM.

Photo Credit: If/Then Collection

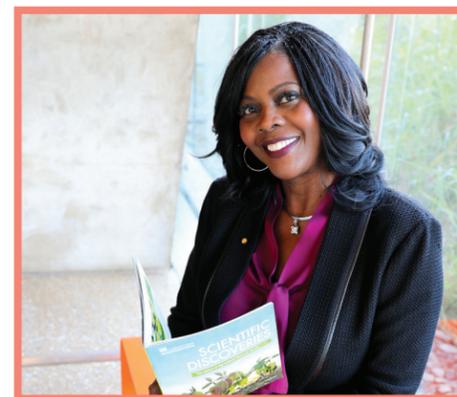


## Miriam Fuchs

### TELESCOPE SYSTEM SPECIALIST

Ms. Fuchs utilizes radio telescopes to collect data in order to help scientists discover and unlock the mysteries of the universe.

Photo Credit: If/Then Collection



## Dr. Chavonda Jacobs-Young

### CHIEF SCIENTIST AT USDA AGRICULTURAL RESEARCH SERVICE

Dr. Jacobs-Young oversees research at the U.S. Department of Agriculture. She also led the establishment of the USDA Office of the Chief Scientist.

Photo Credit: If/Then Collection

### If/Then Collection

See more examples of women making an impact today by exploring the If/Then Collection, a digital library of photos, videos and other media highlighting women in STEAM fields. Visit [ifthencollection.org](http://ifthencollection.org) to learn more.



### Women in Science

In this special issue of *NewScience*, look for more highlights of women in science and technology fields who are making an impact.

## SAVE THE DATE



### Holiday Member Appreciation Night

THURSDAY, DECEMBER 8 | 5:30-8:00PM

As a thank you for your support this year, you're invited to this special holiday event exclusively for our members. Watch a film in the OMNIMAX® Theater, catch a Star Show in the Planetarium or get discounted tickets to our latest special exhibition, *Becoming Jane*. (Learn more about *Becoming Jane* on page 10.) Plus, enjoy special holiday-themed activities and member giveaways.

## SUMMER RECAP

## Recent Member Events

### This past summer's member events were hot, hot, hot!

In late June, we hosted diver Todd Kelly at the member preview of *Ancient Caves*. Kelly is featured in the film and was thrilled to answer a few questions for our members after the sold-out showings of the film.

And in August, we hosted not only our own members but also members of the Cardinals Kids Club for an esports event unlike any other! Educational sessions, open play, and a virtual reality home run derby on the Energy Stage were just a few of the highlights of this event.

**Director of Membership Vickie Corkhill said, "It was a thrill to offer these events to our members this summer. We can't wait to see you in the fall for more member fun!"**

# Upcoming Member Events

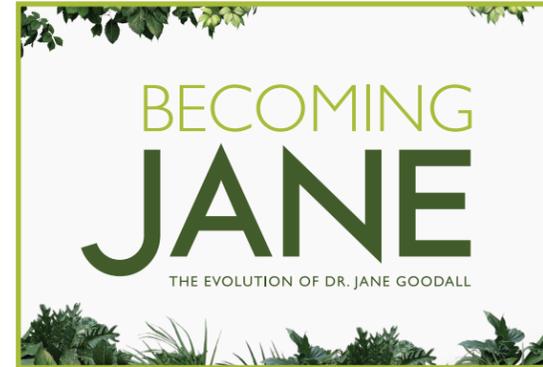


THURSDAY, SEPTEMBER 22 | 6:00PM-8:30PM

### Wine Tasting & A Movie

Reservations available September 1

Join Emmy-winning producer Cat Neville and representatives from Missouri vineyards for wine tasting and appetizers in GROW's Fermentation Station, followed by a viewing of the new PBS tasteMAKERS film *Winemaking in Missouri* in the GROW Pavilion. For members 21 and older.



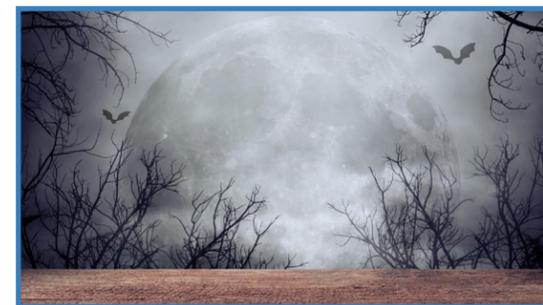
THURSDAY, OCTOBER 6 | 5:30PM-8:30PM

### Member Preview:

### *Becoming Jane: The Evolution of Dr. Jane Goodall*

Reservations available September 15

Members see it first! Visit our newest special exhibition, *Becoming Jane: The Evolution of Dr. Jane Goodall*, and be inspired by the life and legacy of groundbreaking chimpanzee researcher Dr. Goodall. This immersive special exhibition provides a wonderfully close look at a fascinating personality beloved by several generations of explorers and science enthusiasts.



THURSDAY, OCTOBER 27 | 6:00PM-8:00PM

### Creepy Collections: Presenting Weird Wonders from the Science Center Collections

Reservations available October 6

Join us at Energy Stage to see examples of peculiarly interesting wonders from the Science Center's Collections during this Halloween inspired event. Learn about hidden creatures of the deep, medical tools straight out of a horror film, and human cultural practices that will make you squirm. Not for the faint of heart!



DATE TBA-COMING IN NOVEMBER!

### Chat with a Scientist: All About A.I. Part 2

This virtual event in January was so fascinating that we're bringing you more discussion with our artificial intelligence experts! Check your email for more details in the coming weeks.

\*Reservations required for all member events.



Women in Science

STEM EXPERT SPOTLIGHT



**Katie Lefton** is a PhD candidate at Washington University School of Medicine. She studies the role of astrocytes in neuromodulation in the lab of Thomas Papouin, PhD. She earned her BA in neuroscience and psychology from Boston University before moving home to St. Louis for graduate school. Katie splits her time between her graduate research, working with neuroscience outreach programs as the coordinator of St. Louis Neuroscience Outreach, and throwing tennis balls for her two dogs.

Photo credit: Oshri Avraham, PhD  
Satellite glial cells (green) surround dorsal root ganglia (magenta), which are clusters of neurons near the spinal cord that transmit sensory information.

# Glia:

## Unsung Heroes of the Nervous System

For centuries, scientists have been captivated by the complexity and diversity of cells in the nervous system, from Luigi Galvani's Frankenstein-like experiments in frogs that discovered the importance of electricity in nerves in 1780, to the beautiful drawings of cells in the nervous system by Santiago Ramón y Cajal throughout the 1800s. The human brain alone consists of 171 billion cells, but only about half of those are the neurons for which the whole system is named. The other half of the brain consists of cells called glia, meaning "glue," but these cells do much more than just hold neurons in place. While they may not have the same fame as neurons, glia are essential to healthy, functional brains.

There are numerous types of glia in the nervous system, and in recent years scientists have uncovered a multitude of roles they play. Here, we'll get to know a few different types of glia and how researchers at Washington University are helping develop a better understanding of the important ways these unsung heroes impact both the brain and the body.

### Astrocytes:

#### A Starring Role in Brain Function

While there are many types of glial cells that contribute to a healthy nervous system, none is as abundant as the astrocyte, which accounts for 40% of glia in the brain. Because these star-shaped cells connect blood vessels and neurons scientists thought that the primary role of astrocytes must be to feed neurons, by pulling nutrients from the blood. However, astrocyte biologists such as Dr. Thomas Papouin, assistant professor at Washington University School of Medicine, dispute this idea: "Astrocytes are not supportive cells, or helpers, or housekeepers, as we often hear.. If anything, it is probably the opposite: they might very well be the master orchestrator of brain function, the key to understanding and unlocking the mysteries of the brain."

When contacting neurons, astrocytes do not simply deliver nutrients. They can also change the way in which neurons communicate with each other by taking up signals released from neurons, altering the ionic environment and even sending their own signals to neurons directly. We are still learning all the ways in which astrocytes are a part of healthy brain activity, but one thing is clear: without them, our neurons would not be enough for a fully functional nervous system!

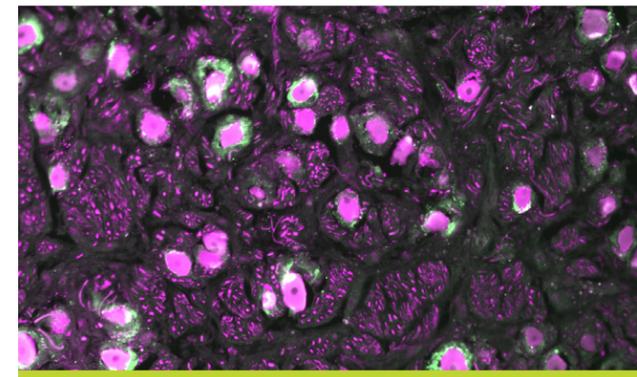


Photo credit: Oshri Avraham, PhD  
Dorsal root ganglia (magenta) enveloped by satellite glial cells (green).

### Microglia in Development:

#### Small but Mighty

Building a fully functional nervous system from scratch is a complex task for an embryo, requiring a diverse set of cells, each with their own expertise. One cell type that is crucial for brain development is microglia, a small and mobile cell that plays several roles throughout our lifetime. Microglia take charge in shaping development in two major ways.

They directly shape neural circuits—connected neurons that serve a particular function—by eating unwanted connections and cells to make sure the brain is a well-run machine. Additionally, they send out signals called cytokines that can direct the complex choreography of cell development and neural circuit formation.

### (Microglia in Development Continued)

The ways in which microglia shape the developing system are complex and still being untangled by scientists such as Dr. Tristan Li, assistant professor at Washington University.

"[V]ery few questions in neuroscience, if any, would be fully answered if we do not consider glia within the nervous system."

Losing microglia during development leads to disorganized communication between neurons, and between neurons and glia, too. Microglia may be small, but they are workhorse cells setting up the nervous system.

### Satellite Glial Cells:

#### Beyond the Brain

Glial cells are not only confined to the brain. Satellite glia wrap around nerves outside the brain and spinal cord in what's called the periphery, with each satellite glial cell covering one or two neurons.

"This morphology is there for a reason," says Dr. Valeria Cavalli, the Robert E. and Louise F. Dunn Professor of Biomedical Research at Washington University, who studies how satellite glia are involved in nerve injury and regeneration. "And a better understanding of how they interact with the neuron might help understand many diseases and disorders related to peripheral nerves."

Unlike neurons in the brain, nerves in the periphery can recover after they have been damaged, and the key to this recovery may be found in satellite glia. In addition, satellite glial cells can play a significant role in pain after injury. One of the most important ways in which satellite glia contribute to chronic pain is by changing the environment around neurons that carry pain signals, making them overly sensitive to painful stimuli. Chronic pain has been remarkably difficult to treat previously, but with new knowledge on the role of satellite glia, researchers have fresh opportunities to develop potential treatments that target these peripheral cells.

### Fascinating Facts About Glia:

There are **four main groups of glia:**

1. Microglia
2. Astrocytes
3. Oligodendrocytes
4. NG2-glia

Astrocytes contact up to **2,000,000** synapses, or connections between neurons, in the human brain.

**Half** of cells in the human brain are glia.

In the cerebral cortex, the hub for thinking, learning and emotions, glia outnumber neurons **4 to 1**.

The average lifespan of each microglia is **4.2 years**.



# BECOMING JANE

THE EVOLUTION OF DR. JANE GOODALL



## Women in Science

### The World's Most Famous Animal Lover.

Activist. Advocate. Author. Conservationist. Ethologist. Dr. Jane Goodall is all these things and more. Visit our newest special exhibition, *Becoming Jane: The Evolution of Dr. Jane Goodall* and be inspired by the life and legacy of Dr. Goodall. The interactive, immersive special exhibition provides a wonderfully close look at a fascinating personality beloved by several generations of explorers and science enthusiasts.



Dr. Jane Goodall, DBE, founder of the Jane Goodall Institute and UN Messenger of Peace, braved the unknown to give the world a remarkable window into humankind's closest living relatives: chimpanzees.

A childhood fascination with nature led Dr. Goodall to spend her career studying the lives of chimpanzees in the wild. Rather than viewing the animals as subjects, Dr. Goodall considered them individuals with personalities and emotions—a notion once rejected by the scientific world, but now considered groundbreaking. Today, her work continues to guide the next generation of scientists and researchers and has expanded to advocacy for the conservation of the environment and animals across the globe.

In this hands-on, transportive multimedia exhibition celebrating her extraordinary life and work, guests will explore Dr. Goodall's early years through iconic images and a multiscreen experience and venture on an immersive projection of Tanzania's Gombe Stream National Park where she did her famous behavioral research on chimps.

Neville Crenshaw, manager of special exhibitions, is enthusiastic about the opportunity to experience the story of the legendary Jane Goodall through her own perspective. "Reading her handwritten notes and walking through memories of her first

experiences, you'll feel as though she's telling you a remarkable story of her life's work. Particularly exciting is a recreation of her first expedition tent, where you can see where her days started and ended while studying these fascinating creatures."

Guests will also see a life-size hologram of Dr. Goodall and learn about her current role as a leader in community-centered conservation and youth empowerment. Finally, guests will find out what they can do today to make a positive impact in the world.

Crenshaw explains, "Not one to rest on her laurels, Jane then guides you through her current work as a conservationist and the importance of preserving habitats for chimpanzees and other primates. She calls us all to action to ensure these beautiful places and the animals within them remain intact."

Dr. Goodall has truly changed the world, starting with a small child's dream. Guests can discover their own world-changing dreams while being inspired by her groundbreaking accomplishments.

*Becoming Jane: The Evolution of Dr. Jane Goodall* is an exhibition organized and traveled by the National Geographic Society in partnership with the Jane Goodall Institute. The special exhibition will open to the public on Friday, October 7, 2022 at the Saint Louis Science Center.



THURSDAY, OCTOBER 6 | 5:30PM-8:30PM  
**Member Preview:** *Becoming Jane: The Evolution of Dr. Jane Goodall*. Reservations available September 15.





## Discovery Room and Preschool Science Series Relaunch to Much Fun-Fare

The reopening of the Discovery Room in June was an absolute success! The first week of access to the Discovery Room was limited to members and member kids only, and did they ever show up and shower praise upon the early childhood team! The Discovery Room's newly enhanced offerings are designed especially for kids ages 6 months to 6 years old to help them discover STEAM concepts and play in a self-guided setting.

The hour-long Discovery Room sessions are ticketed, but free for members, and members can make their reservations over the phone or at the membership desk in the lobby.

After a long, fun summer of science discovery, Early Childhood Manager Emily Lemonds tells us she is very excited to kick off the fall programs! Visit [slsc.org/discovery-room](https://slsc.org/discovery-room) to learn more about the program and its most current schedule.

**"We've also had a very successful relaunch of our Preschool Science Series,"** Lemonds added.

Preschool Science Series replaced the Discover Science with Me program and kicked off this past May. The 45-minute sessions, designed to engage children ages 3 to 6, take place in the Learning Lab, just outside the Life Science Lab on the first floor. These ticketed, educator-led sessions are held on weekends only and provide opportunities for children and their caregivers to wonder, play and discover together.

Topics in our fall sessions include dinosaurs, reptiles and amphibians, art, coding, physics, sensory play and more – all tailored to capture the imaginations of our littlest scientists. Learn more about this program at [slsc.org/programs/preschool-science-series/](https://slsc.org/programs/preschool-science-series/).



**Preschool Science Series**

# Starlight, Shine Bright

**Before St. Louis' iconic McDonnell Planetarium celebrates its 60th anniversary in 2023, a smaller annual event is about to take place this fall when the Planetarium's ZEISS UNIVERSARIUM Mark IX Star Projector undergoes its annual maintenance from September 19–23.**

Connecting people with the stars is no small matter for Will Snyder, manager of the McDonnell Planetarium, and the educators who guide guests through each show. In 2021, in spite of reduced capacity caused by the COVID-19 pandemic, more than 50,000 guests experienced a live star show in the Planetarium. Since the projector's installation in 2001, millions of guests have been inspired to look up.

So, taking a week away from sparking audiences' curiosity about the cosmos isn't something the team takes lightly.

The projector is the technological marvel powering those experiences, using a complex system of intricate glass lenses and motors rather than digital projection, allowing the Zeiss to more accurately project over 9,100 individual stars and other celestial objects. Custom-built in Germany by Carl Zeiss Jena, the famed optics company, the projector is one of only three in the U.S. and 13 in the world. When combined with the McDonnell Planetarium's 80-foot theater dome, the projector is able to create the largest artificial sky in the western hemisphere. Maintaining the four-ton projector combines the talents of both the Science Center team and a Zeiss technician from Germany who's been servicing the Planetarium's star projectors for over a decade.

Each fall, the Planetarium shuts down for a week to allow the Planetarium team and visiting technicians from Germany to give this mechanical marvel an annual tune-up, helping ensure the stars continue shining bright for both returning audiences as well as new ones.

This annual shutdown also enables the team to perform various upgrades that keep the projector equivalent to one fresh off the assembly line. Notable improvements have included retrofitting the original light engine with high-power and energy efficient LEDs; upgrading the Milky Way projection with new slides utilizing the latest GAIA map of our galaxy; and replacing the projector's original axis motors to help ensure both the machine's silent operation and its longevity.

To Snyder, ultimately the star projector is an instrumental part of ensuring that the Planetarium can serve as a gateway to the stars for the St. Louis community. For many guests, he points out, the Planetarium is the only way to experience the night sky unobscured by light pollution. "We're stewards of this incredible piece of technology," Snyder says, "so that we can provide these impactful experiences for people."

**The McDonnell Planetarium's ZEISS UNIVERSARIUM Mark IX Star Projector will undergo its annual maintenance September 19–23. Star shows will resume on September 24.**

# Meet the Team

Science never stops for these former YES Teens. As graduates of the Science Center's Youth Exploring Science (YES) Program, Je'Nai Burns and Chris Lau are no strangers to inviting people to connect with curiosity, and the Science Center is excited to welcome them back! We spoke with Je'Nai and Chris about their new roles at the Science Center, how the YES Program has made an impact on their lives, and what part of the Science Center stands out as their favorite.

## Je'Nai Burns

### GUEST SERVICES REPRESENTATIVE

**Q: Tell us a bit about your new role at the Science Center.**

**A:** My current role is in Guest Services as a guest service representative, and I do many things. I help out in the parking lot, work as a greeter at the main entrance, sell tickets at the box office, make reservations in the reservation office and just make sure that everyone who comes in the building knows what's going on.

**Q: What made you want to come back to the Science Center after the YES Program?**

**A:** Coming from the YES Program, I came from a family. I loved being there and enjoyed stepping foot into that building every day. There was never a dull or boring moment. Coming from that made me want to go to the Science Center's Oakland Building, thinking it would be the same, and I was not let down—it's an amazing experience to be here.

**Q: When did you graduate from YES, and how has the program helped prepare you for this role?**

**A:** I graduated in 2021. With the amount of public speaking I had to do in the YES Program, it really helped me learn to articulate my words and slow down.



**Q: What's your favorite part about the Science Center?**

**A:** To most this may sound ironic but I absolutely love hearing all the kids laugh. Watching them come in, look up at the Energizer Ball Machine and just be amazed puts a smile on my face every time. I love walking around the building and seeing all the kids just so happy to learn and interact with so many things.

## Chris Lau

### GROW FACILITATOR

**Q: What's your current role here at the Science Center? Tell us a little about what you do.**

**A:** I'm currently a GROW facilitator. My coworkers and I are responsible for everything happening in that outdoor space. When the crowds are smaller, you can find me watering plants or harvesting crops. When there's a lot of activity, I'll often post up by the chicken coop or beehive, talking to guests and answering questions.

**Q: What made you want to come back to the Science Center after the YES Program?**

**A:** The uniqueness of working at the Science Center was what made me so willing to come back. My last year with YES was spent interning with the team in GROW, and it's a very dynamic job. To put it plainly, it's fun. It's fun going on explorations and finding creative workarounds to new problems.

**Q: When did you graduate from YES? How has the program helped prepare you for this role?**

**A:** I graduated from YES in May of 2021. The YES Program helped me develop soft skills and taught me how to interact with members of the community. I'm an engineering major, and a common saying in the industry is that the job isn't just about being smart or knowing a lot, but you must also be able to communicate that knowledge in an effective and easy to understand way.



Whether it was teaching Summertime Science or being with the other teens, YES taught me how to communicate complex concepts in simple ways. Science can be daunting for some, so being able to be excited about it and communicate it well is a gift. Those skills aren't just useful when interacting with the public here at the Science Center—they're skills for life.

**Q: What's your favorite part of the Science Center?**

**A:** I think my favorite part of the Science Center by far is the T-rex animatronic. When I first saw it as a kid, I was completely mortified and scared. But after being around it, watching it move and hearing my parents talk about it, I thought it was the absolute coolest thing ever. I've always had an interest in paleontology and fossils, and I attribute that to my first experience with the T-rex.

# FIRST FRIDAY

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

Visit [slsc.org/first-fridays](https://slsc.org/first-fridays) for updates and schedules.



## SEPTEMBER 2 Magic: The Gathering

Prepare your Planeswalkers for Magic: The Gathering First Friday on September 2. Join us for Friday Night Magic and learn about the real science behind your favorite card game. Test your knowledge at trivia, hear from local game creators and end the evening with a free screening of a favorite fantasy film.



## OCTOBER 7 The Addams Family

"They're creepy and they're kooky, mysterious and spooky..." Ring in spooky season with The Addams Family First Friday on October 7! The evening will feature trivia, special presentations, a graveyard game and more. End the evening with a free screening of *The Addams Family* (1991) or catch an episode of the original *Addams Family* TV series (1964).



## NOVEMBER 4 E.T. – The Extra Terrestrial

E.T., phone the Saint Louis Science Center – it's time to celebrate 40 years of this iconic film! Explore worlds beyond our own and find out what planet E.T. may live on. Hear from popular culture historian Caseen Gaines, author of the newly released book *E.T.: the Extra Terrestrial: The Ultimate Visual History*. End the evening with a screening of *E.T.* in the OMNIMAX® Theater.

# Science Spooktacular Comes Screaming Back

Get ready for science thrills at our annual Science Spooktacular. This is a free event packed with Halloween-themed festivities for the entire family. Enjoy a themed experience at the Science Center as you navigate your way through the different galleries. Make sure to experience a chilling science demonstration down at the Energy Stage. Costumes are welcome, but not required.

### EVENTS INCLUDE:

- + Creepy Chemistry demonstrations at the Energy Stage
- + Graveyard Games
- + Early Childhood Preschool Science Series
- + Pumpkin-themed activities throughout our galleries
- + Food and drink specials

### And much more!

Further details can be found at [slsc.org/spooktacular](https://slsc.org/spooktacular).

## SciFest: Health and Safety Expo

SATURDAY, NOVEMBER 19, 2022 | 9:30AM–5:30PM

It's a great time to learn about taking care of ourselves and those around us at the Health and Safety Expo! Visit with health and safety professionals and organizations, get a closer look at human health science, research and technology and even participate in health and safety-related activities and demonstrations for all ages.

See the latest news about SciFest at [slsc.org/scifest](https://slsc.org/scifest).

# SciFest



## A BIRD'S EYE VIEW OF THE PRAIRIE WETLANDS WITH Audubon's Marshall Johnson

Saint Louis Science Center's Director of Membership Vickie Corkhill and Membership Marketing Coordinator Lizzy Shake were honored and excited to have a chance to speak over Zoom with Marshall Johnson, Chief Conservation Officer for Audubon. They had just seen and loved the film *Wings Over Water*, in which Johnson stars, the day before at the Science Center's OMNIMAX® Theater.

"I hope he wears the hat," Corkhill told Shake, and sure enough, when the Zoom call began, there was Johnson, wearing the signature silverbelly cowboy hat he wears throughout the film. Corkhill couldn't resist mentioning it. "I am so happy you are wearing that hat!" Corkhill exclaimed.

Johnson replied, "I have to wear the hat because I'm 30 pounds lighter than I am on film, and people are wondering, 'Is this the [same] guy?'"

Filmed during the COVID-19 pandemic, *Wings Over Water* tells the story of three different types of birds – the sandhill crane, the mallard duck and the yellow warbler – whose migration to the prairie wetlands spanning the north-midwestern region of the United States illustrates why these wetlands are so important to not just these birds, but all types of wildlife, as well as the farmers and ranchers who work and steward these lands. Johnson graciously took the time to tell us a bit about his job, his foray into film stardom, and his passions for birds, prairie wetland ecology and sustainability.

Shake and Corkhill were curious about the day-to-day life of a Chief Conservation Officer, and Johnson, who has worked for Audubon his entire adult life, was happy to explain that no typical day exists for him, and he wouldn't want it any other way.

"I can wake up on an island off the coast of Maine where we are working on Atlantic puffins; I can wake up in a blind deep in

the prairies watching prairie chickens and meeting landowner partners; or I can be high in the Andes mountains of Colombia, chasing warblers and working with government officials that we have partnered with there through our Conserva Aves partnership."

A less typical sort of day for Johnson recently has been spent in a movie theater with hundreds of people watching him onscreen, which he says he's done at least six times while attending premieres of the film in different cities. "I couldn't imagine that in a million years," he laughed.

The film itself even presented Johnson with unexpected content. "My goddaughter put flowers in my ear, and I look on film and I'm thinking, 'What is this?' I didn't take [them] out because [the filmmakers] said, 'This will be background information that we won't use and so you don't have to worry about it.'"

Now he's known by theatergoers for not just the hat, but the wildflowers tucked behind his ear, too. But that's not all viewers are taking away from this fantastic film.

"The most amazing thing is that I feel the film is doing what we intended to do, which is to raise awareness, to educate, to bring to life a region that's so special ecologically and so special to wildlife and to the people that live here, but there's not a lot of us that live here, and so this film really brings to life as much as you can the wonders of the prairie wetland ecosystem, and to be a part of that has been really special."

Shake's reaction to the film was unexpectedly emotional, due to the migration of one tiny, lone yellow warbler, weighing about the same as three pieces of paper, across the Gulf of Mexico in a storm. While the ducks and cranes traveled in a group, in a V formation, the warbler's journey was a solitary one. Why, she asked Johnson, did the tiniest bird travel alone?

Johnson explained that ducks and mallards have evolved to travel in groups, due to dangers they face as water birds in the air or on land, but that the warblers face different threats and have not evolved to fly in groups – which makes their migration seem that much more impressive. "They take this perilous journey over 17-24 hours across the Gulf in one shot, and as the film shows, sometimes in pouring rain, and they just basically fall out of the sky when they see land," Johnson says, having spent time on Galveston Island in Texas studying the warblers earlier this spring.

Back in the prairie wetlands, Johnson estimates that 70-80% of farmers in the prairie wetland areas use some form of sustainability practice, such as rotational grazing. Meanwhile, 20-30% are doing more than their peers and are "on the cutting edge of regenerative practices, practices that sort of mimic nature in a way that we have learned in the past from indigenous and Native Americans here across the plains." That means nearly all the region's ranchers are working to sustain the wetlands where they farm and live.

But what about the wetlands in our own area? Might we spot the warbler or the crane in this region? "The greater St. Louis area, the Ozarks of Missouri, the Osage prairie and everything in between is very special for migratory birds, there's no doubt about that," Johnson reflected. When it comes to many species of warblers and whippoorwills, "the Ozarks are sort of 'the place,' and we have to protect the Ozarks. It's just an amazing ecosystem, and the river systems throughout the state are really important to mallards and other migratory duck species as well."

Asked about whether we should visit our area's wetlands, Johnson enthused, "I'm such an encourager of people getting out into nature. I think humans will fail to appreciate nature if they're not frequently immersed in it, whether it's a local park or a local preserve. The Missouri Department of Conservation is really one of the crown jewels of state conservation in the country; I mean that."

But how can we ensure we don't hurt the wetlands when we visit? "I think it's really important to utilize the information available to you, whether it's the state park system or the Missouri Department of Conservation websites, and it takes 30 seconds to find out, 'Where should I park when I get there? What do I bring? What don't I bring?' Those type of things, so that we are taking care of the resource. And above all, when you're in nature, leave nothing behind. Take your memories and your trash and everything with you when you go."

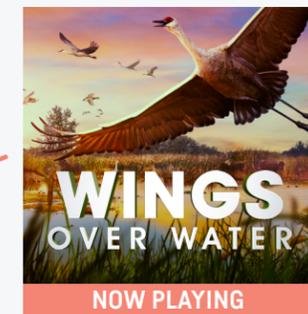
Lastly, Johnson explained a few ways that we can make changes in our daily lives that will improve the natural habitats of these birds.

"I think more and more people are thinking about aligning their habits during the day with what's best for nature, and it could be choosing this protein over that protein, this rancher that you know is carrying on sustainable practices versus maybe the unknown. It seems small – our everyday decisions and choices seem like a drop in the bucket – but there are 47 million birders in the United States, right? So that's an incredibly powerful group of people that care about birds. I think aligning our everyday choices to what's best for birds and what's best for wildlife can have an enormous impact. And in terms of ducks,"

Johnson added, "go out and buy a duck stamp. They're \$25, and the money goes directly to habitats across the country including Missouri."

Very special thanks to Marshall Johnson for the opportunity to chat, and for the perspective he offered on understanding the epic journeys these birds undertake each year. We can't help but hope that SK Films will make *Wings Over Water 2: The Ozarks* and premiere it to the world at the Saint Louis Science Center! In the meantime, make sure to visit and see the original *Wings Over Water* at the OMNIMAX® Theater.

### Now Playing at the OMNIMAX® Theater





# Carina Nebula

Photo Credit: NASA, ESA, CSA, STScI



## Will Snyder on James Webb Telescope First Images

When there's space news, St. Louis turns to McDonnell Planetarium manager Will Snyder, and huge space news broke over the summer as the world got its first glimpses of images from the James Webb Space Telescope.

Speaking to Angela Hutti from FOX 2 News, Snyder explained that thanks to these first images, "we were able to see galaxies, nebulae, atmospheres of planets, and we've been able to look back to the almost-very-beginning of the universe as we think of it." Snyder added, "[The pictures allow] us to start to answer questions that before, we didn't even know to ask."

"With each of these pictures that come back, we're the first people to get these looks at things that no one has ever seen before, and I think that's an amazing concept – that without ever leaving the earth, we all are exploring space together."

### Fall Astronomy Dates

SEPTEMBER 23

#### Autumnal Equinox

The autumnal equinox marks the first day of fall in St. Louis. Contrary to popular belief, we do not experience equal amounts of daylight and darkness on the equinox. Equilux, which means "equal light," will occur in St. Louis on September 26.

OCTOBER 21-22

#### Orionids Meteor Shower

The annual Orionids will peak in St. Louis the night of October 21st into the morning of the 22nd. This meteor shower is one of two each year created by debris left in space from Halley's Comet. In 2022, the thin crescent moon will leave mostly dark skies for better viewing.

NOVEMBER 8

#### Total Lunar Eclipse

The second total lunar eclipse of 2022 will occur in the early morning of November 8. Partial eclipse will begin shortly after 3:00am with maximum eclipse at 5:00am. The moon will set in St. Louis while still partially eclipsed at 6:44am.



## STEAM-Powered

# STL

### WASHINGTON UNIVERSITY

St. Louis is a home for STEAM, and one shining example of this is St. Louis' own Washington University. Founded in 1853, Washington University serves as a world-class education, healthcare and research institution.

As part of a STEAM-powered St. Louis, Washington University's research efforts comprise fields like medicine, the environment and energy, plant science and more; and Washington University employs over 19,600 local workers.

In St. Louis' growing biomedical and health services sector, institutions like Washington University play an important connection between hospitals, local companies like Pfizer, GlaxoSmithKline, Bayer and more, as well as STEAM groups and organizations like BioSTL, the Cortex innovation district and the Science Center.

In fact, Barnes-Jewish Hospital, located in the Central West End neighborhood and the largest hospital in the state of Missouri, serves as an adult teaching hospital for the Washington University School of Medicine and a major component of the Washington University Medical Center.

Turn to [page 8](#) to read about glia and the research into these unsung heroes of the nervous system from Katie Lefton, a PhD candidate at Washington University School of Medicine.



**19,600+**  
Local employees

**Ranked #2**

in the *St. Louis Business Journal's*  
Largest Employers list

**\$ 3.8 billion**  
Annual Revenue



**\$ 879.27 million**  
Research funding received in 2021

More than **3,000 research projects**  
conducted each year in fields including:

- + Medical
- + Life sciences
- + Engineering
- + Public health
- + Environmental



Read about how Washington University's Institute for School Partnership helped the YES Teens prepare for this summer's STEMtastic Camp in the Summer 2022 issue of *NewScience* at [slsc.org/newscience](https://slsc.org/newscience).

## YES Teen Networking

### Innovative Professionals Meet the YES Teens at the Youth Exploring Science Networking Extravaganza

On Thursday, July 21, the Youth Exploring Science (YES) Program hosted the YES Networking Extravaganza, a special event at the Taylor Community Science Resource Center providing teens in the YES Program the opportunity to meet and learn from innovative local STEAM professionals in short one-on-one networking sessions.

FOX2 news anchor Elliott Davis served as the event's keynote speaker and emcee, and the morning event drew a number of professionals from a wide range of STEAM industries and fields, allowing the YES Teens the unique opportunity to connect with real professionals and practice important networking skills.

**Thank you to everyone who participated in this year's YES Networking Extravaganza!**

Learn more about the YES Program at [slsc.org/yes](https://slsc.org/yes) or make a gift in support of YES at [donations.slsc.org/yes](https://donations.slsc.org/yes).



# STEMtastic Fun Takes Flight Thanks to Boeing

The YES Program's STEMtastic Camps Ignite Curiosity for Aerospace and Engineering

This summer the YES Teens from the Aerospace and Engineering components helped ignite curiosity through the YES Program's new STEMtastic Camps. These off-site summer camps, made possible thanks to a generous donation by Boeing, took place in the University City and Riverview Gardens school districts, where the YES Teens engaged kids in fun, hands-on STEAM activities.

The Aerospace component focused on designing gliders and learning about space. For designing the gliders, the STEMtastic Camp curriculum used inquiry-based methods to allow children to take ownership of their learning and to emphasize the importance of asking questions and experimenting. Utilizing flight simulators, the YES Teens taught the children how to fly airplanes, and they discussed pursuing a career as a pilot. In late June, students enjoyed a special day with Boeing employees including Pratyush Kumar, president of Boeing India and vice president of Boeing International, who spoke about his childhood in India and his career with Boeing.

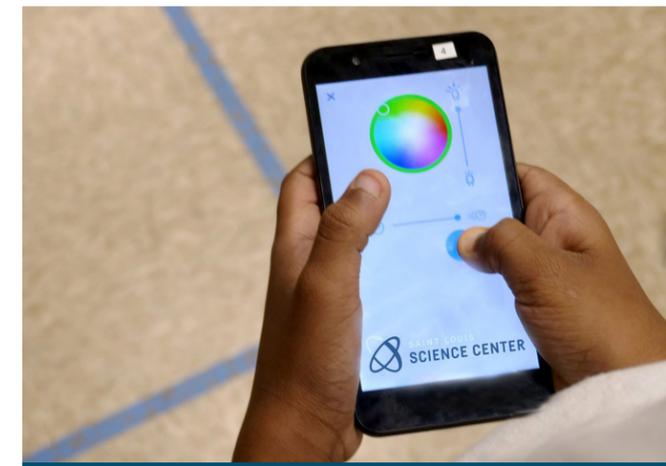
The program's curriculum also introduced the children to space and astronomy. Here, in addition to creating pinhole planetariums and building satellites, the students learned about the scale of the solar system and the phases of the moon. The YES Teens supplemented the activities using hands-on experiences with drones and iPads equipped with a constellation-finding app.

In the Engineering component, the YES Teens explored robots and coding with the children. The YES Teens introduced the students to Sphero robots and—with a space-themed mat that allowed the students to take their robots on a space adventure, an 8-foot by 8-foot portable floor maze (designed and built by the YES Teens), and a roster of fun games—led them in fun activities dedicated to the excitement of coding, racing and even battling interactive robots.

The STEMtastic campers explored coding through a Scratch-based block programming language, allowing them to learn the elements of coding through hands-on play. By interspersing art-themed lessons—including designing custom armor for a Sphero battle—the program also engaged the students' right-brain development. At the end of the program, the students demonstrated their skills in how to use block code to take their robots on game-based galactic quests, space adventures, maze races and more.

A Measurable Impact 🧑🏽@🧑🏽🚀

This summer's STEMtastic Camp reached **320 students**.





## Exploring Health and Nutrition with the St. Louis Community at Summertime Science

Each year the Saint Louis Science Center's Youth Exploring Science (YES) Program connects thousands of community members with STEAM through Summertime Science, an educational program at the Taylor Community Science Resource Center led by the YES Program's youngest teen employees.

After developing their teaching skills over the prior months—skills the teens will utilize and continue to build over the course of the four-year YES Program—the newest cohort of YES Teens lead Summertime Science programs. These free classes focus on science, technology, engineering, the arts and math with children from the Science Center's network of over 60 community partner organizations.

This year's theme was Health and Nutrition, and the YES Teens put their teaching skills to use leading classes that introduced the community to STEAM topics including health and anatomy; gardening, recycling and composting; and meal planning and how to prepare healthy recipes.

Learn more about YES at [slsc.org/yes](http://slsc.org/yes).

### Thank you!

The Summertime Science team would like to thank our partners and sponsors, Cigna, Del Monte, and GrowingGreat, as well as the Illinois Farm Bureau and the Gateway Regional Advertising Group for their support of the YES Program and helping Summertime Science connect our community with STEAM!

## With Pop-Up Science at the World Wide Technology Raceway, The Race is On

Over two sunny days this past June, eight teens from the Youth Exploring Science (YES) Program's Engineering component invited the public to play a game: racing Sphero robots through an 8-foot, custom-built maze using a smartphone app. At World Wide Technology Raceway's STEM Lanes the teens connected with approximately 100 local NASCAR fans and attendees, demonstrating how to use the app to aim, drive and strategize with the baseball-sized robots and compete for bragging rights as to who would be the first to cross the finish line.

The maze, designed and built by the YES Teens using materials like wood and PVC, and the remote-controlled robots served as the centerpiece activity, allowing the YES Teens to guide kids, fellow teens, families and more through a thrilling 20-second race that introduced them to STEAM concepts including programming and block coding.

Part of the World Wide Technology Raceway Gives Foundation, the STEM Lanes provide local STEAM-focused programs like YES a platform for connecting with the community.



For the YES Program, sparking curiosity for STEAM today and unlocking the opportunities of tomorrow has been a guiding goal since the program began over 22 years ago, and one that's even more important as STEAM- and 21st century-skilled jobs become increasingly part of our region's future.

That's just one of the reasons why the YES Teens are excited to show that to connect with curiosity, sometimes all you need is 20 seconds.

### A Measurable Impact

The YES Teens connected approximately **100 community members** with STEAM education at World Wide Technology Raceway's STEM Lanes in June!



THE SAINT LOUIS SCIENCE CENTER'S

## ROAR Esports Team

### Continues to Level Up

Fresh off its inception in the spring of 2022, the Saint Louis Science Center's ROAR esports team has continued to grow over the past months. The ROAR program focuses on providing competitive esports opportunities to individuals without a school esports program and those looking to further their gaming skills.

Most recently, the Science Center created the ROAR Select team. Focused on the RIOT Games title *Valorant*, the team comprises competitive gamers from a variety of local high schools interested in getting recruited to a university for their gaming skills.

The ROAR Select program has allowed these students to receive in-game training from the Science Center's own Andrew Goewert and Alex Brown, supervisors for the Esports Program who have deep knowledge and understanding of the *Valorant* game title. Additionally, their history of playing competitively and managing teams at the collegiate level has provided guidance and leadership to the ROAR Select team.

The ROAR Select team has found competitive practices throughout the summer against teams from across the country. As the summer wraps up, they continue to better their skills and look forward to bringing their talents back to their respective high schools this fall, as they pursue a state championship in the spring.



“

Both our ROAR and ROAR Select programs are incredible opportunities for local youth to collaborate and share their love for gaming while continuing to bolster and develop their competitive spirits,” said Brown. “Our unique program allows opportunities to meet with industry professionals providing advice and the chance for students to connect outside of their school programs.

”

Interested in learning more about the Science Center's Esports Program or joining the ROAR esports team? Visit [slsc.org/esports](https://slsc.org/esports) to learn more.



## The Science Center's Esports Program Gets in the Game at the Gateway Legends Competition

In early July the Saint Louis Science Center was excited to participate in the 2nd annual Gateway Legends competition hosted by Maryville University. In its second year, the competition incorporated eight collegiate teams and eight high school teams and provided an opportunity for local high school students to display their talents in an incredible venue at Ballpark Village.

For many of the students, it was their first glimpse at a highly produced event and the first chance to play competitively in person against their opponents. The Science Center provided equipment for the event, as well as a professionally produced second broadcast stream to showcase those teams not on the main stage. With the help of local partner University of Health Sciences and Pharmacy in St. Louis, the Science Center continued to showcase its esports program, providing quality content and tournament assistance.

“We're grateful for Maryville University and Fair St. Louis trusting our program to provide quality experiences and content for their 2nd annual event,” said Doug Stanze, director of guest services at the Science Center. “Being a part of an event such as this is a tremendous opportunity for our esports program. We've made a lot of great impressions with key members of the industry and look forward to future partnerships with this competition.”

“We could not have been successful at this event without the help from our friends at the University of Health Sciences and Pharmacy in St. Louis. They've shown tremendous commitment to not only our program, but the general growth of the esports community in St. Louis. We are excited to continue working with them and growing our esports programs together,” Stanze added.



#### FOUNDING PARTNERS:



#### OFFICIAL SPONSORS:





Support science for  
our future. Make a gift  
for Giving Tuesday.

This Giving Tuesday, join a global generosity movement and show your support for the Science Center and help make an impact on STEAM—science, technology, engineering, the arts and mathematics—education for the St. Louis region.

Make a gift to our Annual Fund to help support open, accessible science galleries like GROW and GameXPloration; free, public events like SciFest and First Friday; and our daily operation, connecting hundreds of thousands of St. Louis community members with STEAM. Or make a gift supporting our nationally recognized Youth Exploring Science (YES) Program, which has provided a pathway to success in STEAM for local teens for over 22 years.

Learn more or make your gift at [slsc.org/givingtuesday](https://slsc.org/givingtuesday).

GI VING  
TUESDAY

### EI.BO Supports the Esports Program with a \$3,000 Donation

On June 17, special guests from EI.BO (Empowering Ideas–Building Opportunities) visited the Science Center to make a generous gift of \$3,000 in support of the Esports Program’s summer enrichment programs.

EI.BO, also known as Laclede’s LAN, is a St. Louis LAN party group dedicated to building a charity-oriented LAN party community. Their events raise funds for STEM education for K–12 students in the greater St. Louis area. Since they started throwing public LAN parties in 2004, they’ve raised over \$75,000 for local charities and nonprofits.

Thank you to EI.BO for their generous support of the Science Center’s Esports Program! Learn more about Laclede’s LAN at [lacledeslan.com](https://lacledeslan.com).



From left: Melanie Molina, Stacy Henning, Adam Kruger, Mike Harris, Doug Stanze, and Patrick Byrne



SUPPORT MAKES  
OUR MISSION  
POSSIBLE

Thank you!

Thank you to all of our philanthropic partners and sponsors for your support and making our mission to ignite and sustain lifelong science and technology learning possible. Here are just some of the recent gifts that are making an impact on STEAM education through the mission of the Saint Louis Science Center.

**\$ 1,000** 

FOR: GROW  
FROM: St. Louis County Farm Bureau  
RECEIVED: May 26, 2022

**\$ 20,000** 

FOR: GROW  
FROM: Illinois Farm Bureau  
PLEGGED: June 28, 2022

**\$ 15,000** 

FOR: YES Program  
FROM: Anonymous  
RECEIVED: July 5, 2022



SAVE THE DATE

### The Saint Louis Science Center’s 9th Annual Golf Tournament

THURSDAY, OCTOBER 6, 2022  
Benefiting Aviation & Aerospace Programs  
Norman K. Probstain Golf Course in Forest Park

The Science Center is excited to welcome back golfers for our annual golf tournament benefiting our aviation and aerospace programs.

Get involved and support the Science Center’s STEAM education programs and enjoy exclusive sponsorship benefits and recognition. **Sponsorship opportunities are available through Thursday, September 29, 2022.**

Visit [slsc.org/event/saint-louis-science-center-golf-tournament](https://slsc.org/event/saint-louis-science-center-golf-tournament) to learn more.

Special thanks to our returning sponsors\* for this year’s tournament:

- + Ackerman Toyota
- + ADgraphix
- + CASE IH
- + Electrical Connection
- + Haimer
- + Heartland Coca-Cola
- + Kirkwood Pop Co.
- + KMOV
- + Maestro Screen Printing
- + Starrag

Miss the registration deadline?  
Learn more about how you can help support the mission of the Science Center at [slsc.org/support](https://slsc.org/support).

\*List current as of August 1

## **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](http://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](mailto: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



Smithsonian Affiliate  
Membership Program



## **Send a tribute. Make an impact.**

A tribute gift offers a meaningful way to honor or remember a special person or celebrate an important occasion in a way that supports science and technology learning in the St. Louis community.

Whether you're honoring someone close to you who geeks out for dinosaurs, astronomy or technology, commemorating a special occasion like a birthday or holiday, or remembering the life of a loved one, a tribute gift can be a unique way to celebrate a science supporter in your life while making a positive impact through the mission of the Science Center.

Learn more or make a tribute gift at [slsc.org/tribute](http://slsc.org/tribute).