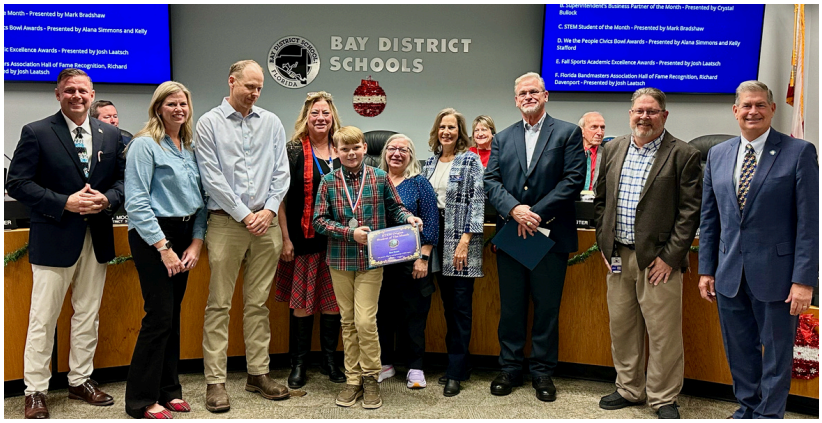
ISSUE #9

ORIGINS

STEM Origins Foundation

January 2026



Ben Ennis: Student of the Month

Congratulations to **Ben Ennis**, our December STEM Origins Foundation Student of the Month. Ben is a 5th grade student from Merriam Cherry Street Elementary School who was chosen from many outstanding candidates. During the school board meeting on December 16, Ben was presented with a STEM Origins medal, an award certificate, and a gift card for Texas Roadhouse. He was nominated by his teacher, **Laura Murrell**. She was presented with a copy of Ben's award and also received a Texas Roadhouse gift card to acknowledge her dedication and enthusiasm for teaching.

Ben exemplifies STEM Origins' core values in the following ways:

Passion: Ben loves all things Science and Technology. During Science Day, he dressed up like a Mad Scientist and ensured the fun continued by sharing his crazy wig, mustaches, and lab coats with other students.

Diligence: Ben is hard-working, curious, and serves as a fine example of the caliber our future scientists need to keep science moving forward.

Aptitude for STEM: Ben is a future Scientist in the making. A deep thinker, he is always asking questions that cause teachers and students to engage in rich discussions and research.

Cooperation/Collaboration: During Science Day, Ben worked with teachers and staff members to ensure experiment stations were set up, operational, and cleaned up. He led his team of seven students through four stations. Using humor and personality, he ensured each member could objectively consider the events taking place by asking thoughtful and focused questions. Rotations were fast-moving, but he was patient with struggling learners and ensured they were able to complete their experiments successfully.

In this issue:

Meet a Volunteer: Mike McManus, Aquatic Ecologist

Salamanders are really cool, and they were Mike's "gateway organism" that made him decide to become an ecologist. Most recently, he was an aquatic ecologist at the United States Environmental Protection Agency (USEPA), and he retired in April 2025. In his spatial ecological research, Mike studied how land use and water pollution influences the distribution and abundance of aquatic organisms. Depending on the animals found in a lake, stream, or estuary, we can tell how clean or polluted a waterbody is.

Mike uses the tools of geographic information system (GIS) data and spatial statistical analyses in his research. His work on the USEPA Report "Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence" received a national Science and Technological Achievement Award in 2024, and focused his research on spatial predictions of nutrients, conductivity, and biota in stream networks through collaborations with federal and state agency scientists. Mike has also studied greenhouse gas emissions from lakes and reservoirs. He uses open-source tools, such as R statistical software and QGIS, so his research is transparent and reproducible.

Prior to the USEPA, Mike worked as a senior aquatic ecologist, biometrician, and fisheries biologist for The Nature Conservancy, Missouri Department of Conservation, and South Carolina Department of Natural Resources, respectively. Mike has a B.S. in biology from The College of William and Mary and a Ph.D. in aquatic ecology from Florida State University, and he has taught college classes in ecology, evolution, and marine biology. Locally, Mike continues designing, collecting, and analyzing water quality data by volunteering with the Nokuse Land Conservancy and St. Andrews and St. Joseph Bays Estuary Program.

Stephanie Kwolek—Her Curiosity Saved Thousands

In 1965, at DuPont's lab, chemist Stephanie Kwolek faced a cloudy, watery polymer solution—unlike the usual thick, clear ones. Her supervisor said to discard it. But Kwolek insisted on testing it.

Against advice, she spun it into fiber. The result: a material five times stronger than steel by weight, yet lightweight and heat-resistant. She had invented Kevlar.

Originally for tires, Kevlar soon revolutionized safety. Starting in the 1970s, it became the core of bulletproof vests for police and military.

Kevlar body armor has saved over 3,000 law enforcement lives alone, with countless more among soldiers and first responders.

A working-class daughter of immigrants, Kwolek turned a "failed" experiment into a breakthrough through persistence and curiosity—proving that questioning the obvious can change the world.

In STEM, one quiet "what if?" can protect thousands. Stephanie Kwolek (1923–2014): Inventor, pioneer, lifesaver.

How One Inventor Solved a Messy Problem

After a big holiday meal, the food is gone—but the dishes seem to multiply. Plates, cups, and pans pile up fast. Today, dishwashers make cleanup easy. But that helpful machine exists because one inventor decided she'd had enough of broken dishes and tiring chores.

Her name was **Josephine Garis Cochran**, and she didn't wait for permission to invent.

Born in Ohio in 1841, Josephine loved solving problems. At a time when women were rarely taught engineering, she learned by experimenting on her own. She grew frustrated with washing dishes by hand, especially when her fine plates chipped. So she made a bold promise to herself: if no one else built a better dishwashing machine, she would.

With help from a mechanic named George Butters, Josephine created a brand-new design. Her machine held dishes in wire racks and cleaned them using strong water pressure instead of scrubbing. In 1886, she earned a patent, an impressive achievement in her era.

Josephine started her own company and sold her dishwashers to hotels, hospitals, and colleges. One model could clean 240 dishes in just two minutes! Her invention even won an award at the 1893 World's Fair in Chicago.

Homes lacked enough hot water then. But as technology improved, her idea took off. Her company later became part of **KitchenAid**, and modern dishwashers still use her core ideas.

Thanks to Josephine's curiosity and courage, science now quietly helps clean kitchens everywhere.

U.S. Patent No. 355,139
Inducted in 2006
Born March 8, 1841 - Died Aug. 3, 1913

Attribution: https://www.invent.org/inductees

Upcoming Events

- **19 January**: STEM Origins leaders visit the Biophilia Center in Freeport
- **27 January**: Career Expo 2026 hosted by Bay District Schools Career and Technical Education at GCSC provides opportunities for our students exploring career paths and connect with local businesses.
- **27 January**: Student of the Month Presentation at the Bay District Schools Board Meeting
- **4 February**: STEM Origins Senior Advisory Board - GCSC Student Union Building, Room 302
- **12 April**: Thunderbirds Air Show STEM Origins will host interactive demos
- **26 April**: Top Golf Spring Fun(d)raiser

Our 2025 Annual Report

It was a great year for STEM Origins and we are very grateful to all of our sponsors and volunteers who made this possible. Review our **2025 Annual Report** for an overview of our significant impacts to STEM education in Bay County. We look forward to many future years supporting the growth of STEM education.

Activities and News

The STEM Origins Foundation was recently featured in the *Bay County Coastal* newspaper in an article written by **Whitney Nieves**. She discussed our mission, how we are providing access to opportunities, creating future leaders, and ended with an invitation to join us in our community outreach programs to Bay County schools. We sure hope you will join us! Whether you have experience in education or have an interest in the fields of Science, Technology, Engineering, and Math, we welcome you to have a conversation with us using the contact form on our website at stemorigins.org

Fun(d)raising

A very gracious thank you to the **Rodenfels Family Foundation** for their recent $4,000 donation to the STEM Origins Foundation. Clint Rodenfels, a director of the foundation, says, "We are strong believers in local action for local causes. Both your mission and operational methodology align with our funding objectives." We are so appreciative of your support!

Thank you to everyone who placed bids in the **Online Holiday Raffle**. We raised enough to fund six scholarships for our Rising Star Scholarship Program, where selected 5th grade students who show aptitude for STEM are set up with a $500 college scholarship for use at Gulf Coast State College (GCSC), which will be waiting for them when they graduate high school. The underlying objective of these advanced scholarships is to promote and sustain interest in STEM as these students climb the academic ladder from elementary school through high school. The GCSC Foundation has done this sort of thing in the past, and it has proven to be an incredibly powerful way of encouraging students to pursue college education as they mature and move upward in the academic grades. It also gives the student a 6-year goal to strive for and a destination to reach after high school. Our long-term goal is to provide one for each elementary school in the Bay District.

Spring Top Golf Fundraiser - Mark your calendars now, and purchase your early bird tickets for just $65 now through Feb 14th! The 3 hr experience of unique golf games and fun with friends will include a food buffet, soft drinks, and tips. On Feb 15th, ticket prices will go to our regular rate of $78, which is still ½ the price of what it would be than if you went to Top Golf on your own! (The standard retail rate for 3 hours at Top Golf on a Sunday afternoon is $156.) Tickets can be purchased at our website: https://www.zeffy.com/en-US/ticketing/spring-topgolf-event--2025

Community Fun at Local STEAM Nights

The **Merriam Cherry St. Elementary School** community buzzed with energy during its STEAM Night on December 11, 2025, as curiosity and excitement filled the halls. Guests were welcomed by **Cortney Adcock**, the school's dedicated STEAM teacher, who champions a curriculum that blends Art with Science, Technology, Engineering, and Math.

The STEM Origins room was already alive with motion and chatter, packed with students of all ages eagerly rotating through hands-on stations. At one table, volunteer mentor **Steve Pavelitz** engaged two siblings in a lively game of "Magnetic Chess" while their mother looked on. The deceptively simple challenge—placing magnets without triggering an unwanted magnetic pull that could knock a player out—had the children completely hooked.

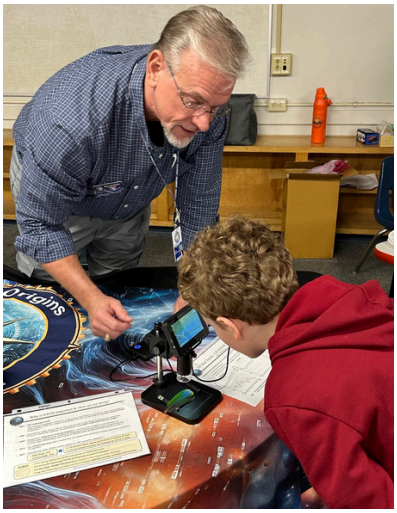
Nearby, a kindergartner concentrated intently as she connected magnetic pieces to build a structure, pausing occasionally to accept gentle guidance from her father. Nearby, laughter erupted as two friends launched magnetic stick figures into the air using a springboard, hoping to make them snap together mid-flight. Smiles were everywhere, and the joy of discovery was infectious.

As the room filled, volunteer mentor **Brian Maxwell** captivated the crowd with a demo of a Van de Graaff generator. With equal parts daring and delight, students egged one another on to experience the small "shock," erupting in laughter as they watched science quite literally raise the hair on their heads. The station quickly became a favorite, with students rushing off to recruit friends to join the fun.

Adding to the experience, STEM Origins founder **Mark Bradshaw** ensured every participant received a stamp in their STEAM Night Passport while introducing students to a digital microscope. Gasps of amazement followed as children discovered details invisible to the naked eye—Abraham Lincoln's image hidden within the Lincoln Memorial on a penny, and the intricate, hairline patterns of a brilliantly colored parrot feather.

The celebration of STEM learning extended beyond Cherry St. Elementary. On December 8, support was also provided for STEAM Night at **Mowat Middle School**, sparking follow-up conversations about developing outdoor STEM labs on their campus. Volunteers **Pam McCarthy** and **Mare Malone** enthusiastically engaged with students and added to the excitement by raffling off three unique t-shirts.

Heartfelt thanks go out to both Cherry St. Elementary, Mowat Middle School, and the dedicated STEM Origins volunteers whose time, passion, and creativity transformed these evenings into unforgettable experiences—proving once again that science, when shared, is both powerful and fun.



The Physics Behind *Stranger Things*

Netflix's Stranger Things isn't just a nostalgic sci-fi thriller—it's also a playful showcase of big ideas from modern physics. While the show takes creative liberties, it borrows concepts from real scientific theories to ground its supernatural events in something that feels plausible.

One of the most prominent ideas is the Many-Worlds Interpretation of quantum mechanics. In this theory, every possible outcome of a quantum event branches into a separate universe. The show's "Upside Down" echoes this notion: a parallel world that coexists with our own, diverging at some point yet remaining closely linked. While physicists debate whether many worlds are physically real or simply a mathematical interpretation, the concept offers a compelling framework for imagining parallel realities.

The series also nods to string theory, which proposes that the fundamental particles of the universe are tiny vibrating strings existing in higher-dimensional space. Some versions of string theory allow for extra spatial dimensions beyond the familiar three. In Stranger Things, the ability to open portals between worlds resembles the idea that hidden dimensions could be folded close to our own, separated by barriers that require enormous energy—or unusual conditions—to cross.

Elements of quantum entanglement appear as well. Entanglement occurs when particles become so deeply linked that the state of one instantly affects the other, regardless of distance. The eerie connections between the show's characters, locations, and events across dimensions mirror this concept of nonlocal influence, though the show scales it up far beyond what physics currently allows.

Ultimately, Stranger Things uses physics less as a rulebook and more as inspiration. By weaving real theories into its storytelling, the show invites viewers to engage with complex scientific ideas—proving that even monsters and alternate dimensions can spark curiosity about how our universe really works.

Attribution: Paul M. Sutter, Scientific American, "The Real Physics Behind Stranger Things"

About Us

Our mission is to support local education in science, technology, engineering, and mathematics (STEM) with projects that inspire students and teachers at every level of the academic ladder from kindergarten through college.

We seek to increase the quantity, quality, and diversity of high school and college STEM graduates. Our approach involves engaging students early (K-5) to foster interest in STEM subjects and maintaining engagement throughout middle school, high school, and college with progressively advanced activities.

Programs include providing hands-on experiences, classroom equipment, and access to STEM professionals through visits, virtual presentations, and coaching on innovation and long-term goals. We plan to offer scholarships for college STEM fields and STEM camps for all grade levels overtime. Additionally, we support STEM teachers through grants for career development, professional growth, and innovative classroom experiments to enhance student learning experiences.

The STEM Origins Foundation is a 501(c)(3) nonprofit organization in Bay County, Florida. IRS Certification, Articles of Incorporation, and By-Laws are available on our website. Also visit us on Facebook.