

May 2023

GEORGIA PATHWAYS

M A G A Z I N E



**Georgia Tech
Semiconductor Collaboration**
Joint Research and Workforce Development

Summer Camps

Future Business Leaders of America
June convention in Atlanta

Geology; Hands On STEM

The Technology Association of Georgia Education Collaborative (TAG-Ed) strengthens the future workforce by providing students with relevant, hands-on STEAM learning opportunities and connecting them to Technology Association of Georgia (TAG) resources. Formerly the TAG Foundation, TAG-Ed is a 501(C)(3) non-profit organization formed by TAG in 2000. Later, the organization's name was re-branded to TAG Education Collaborative to facilitate our role as the leaders for K-12 STEAM education in Georgia.

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Welcome to the May 2023 edition of Georgia Pathways Magazine.



Although the school year is coming to a close, learning does not have to stop. Now is the perfect time for children to continue their education in a fun environment through summer camps. Not only are they a way for students to explore different concepts outside of the classroom, but they can even ignite their passion for learning and encourage them to pursue a career path of their interest in the future.

Research shows that summer learning has numerous advantages, including reduced anxiety from the pressures of a full class schedule, homework and grades. With a more relaxed environment, students feel safer taking chances and making mistakes, which become opportunities for learning. And, students can explore and experience hands-on activities and real-time scenarios that are not always available in a traditional classroom setting. In a nutshell, summer camps offer more than just academic benefits; they also offer a crucial respite from the usual routine, leading to reduced stress and improved physical health.

Focusing on STEAM education has a tremendous effect on student motivation and achievement. By coupling the arts with science, math and engineering, children can play, create and learn in ways that emphasize individual expression as well as real-world collaboration skills.

These specialized camps aim to help children retain knowledge that can be applied to everyday life, even as they pursue higher learning. Much like any muscle in the body, the brain requires exercise to stay strong.

STEAM activities are designed to encourage brain development, helping students become fantastic problem solvers and critical thinkers.

TAG-Ed recommends a variety of regional summer camps to keep Georgia's kids innovating. From computer science and coding to engineering, robotics, rocketry and mathematics challenges, participants will continue to expand their knowledge as they take time off from school. By attending a supplementary STEAM program, children will learn new skills from positive role models and make life-long connections with like-minded peers. Check our website regularly to find the perfect program for your family as camp information continues to become available: <https://www.tagedonline.org/summer-camps/>.

Larry K. Williams
President
TAG / TAG-Ed

Larry K. Williams serves as the President and CEO of the Technology Association of Georgia (TAG) and President of the TAG Education Collaborative (TAG-Ed). TAG-Ed's mission is to strengthen Georgia's future workforce by providing students with relevant, hands-on STEM learning opportunities by connecting Technology Association of Georgia (TAG) resources with leading STEM education initiatives.

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Technology Association of Georgia (TAG) joined IBM and ThisWay's partnership to provide all TAG members with an **EXCLUSIVE** digital assistant offer.

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EXPAND YOUR RESOURCE POOL
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USE FAIR RECRUITMENT PRACTICES
Reduce bias and increase organizational diversity.



ASSESS CANDIDATES
Quickly surface qualified candidates for your open jobs based on your criteria.





Summer Camps

Jump in *now* while there is still room.

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FBLA's National Leadership Conference

Offers Competitions, Workshops, and Networking

Atlanta, June 2023



*F*uture Business Leaders of America, Inc. (FBLA) is bringing our National Leadership Conference (NLC) to Atlanta in June. Whatever your interest is in business and technology, you'll find something there for you.

If you're not familiar with FBLA, we are the nation's largest business career and technical student organization, with more than 200,000 middle school, high school, and college students and

educators. Founded in 1942 by Columbia University Professor Hamden Forkner, FBLA inspires and prepares community-minded business leaders in a global society through relevant career preparation and leadership experiences.

Our annual NLC for Collegiate members will take place June 22-25 at the Hilton Atlanta, while the NLC for Middle School and High School members will be held June 27-30 at the Georgia



World Congress Center.

What Happens at the NLC, and Why Should I Attend?

The NLC brings together more than 14,000 students and teachers for national competitions with cash prizes in more than 100 business and technology events. Students taking part in these competitions have already placed at the local, district/regional, and state levels. Some complete objective tests; others give a presentation or answer give-and-take questions from judges in a role-play scenario. Topics run the gamut from accounting to journalism to network design (see sidebar), and

the winners are recognized on stage at the closing session.

Students not taking part in competitions will also find tremendous value in attending the NLC, with a host of opportunities for developing leadership and business skills and networking with like-minded students from 50 states and territories and seven countries. Our opening and closing general sessions will include fun and exciting pre-show experiences and inspiring featured speakers. CliftonLarsonAllen (CLA) CEO Jen Leary and Chief Culture Officer Cathy Clarke will share their expertise as leaders of the nation's eighth-largest accounting firm at the

Collegiate NLC. Jordan Davis, an FBLA alumnus and motivational speaker who seeks to improve the K-20 educational experience, will provide his insights at the Middle School & High School NLC.

Registrants can also attend more than 50 professional development workshops to improve their business skills, develop their leadership abilities, and exchange ideas and best practices with other attendees. Workshops for students will cover topics such as career exploration, effective communication, and promoting your personal brand. Teachers and advisers can get in on the action, too, with workshops focused on advocacy, lesson planning, and integrating FBLA programming into the classroom.

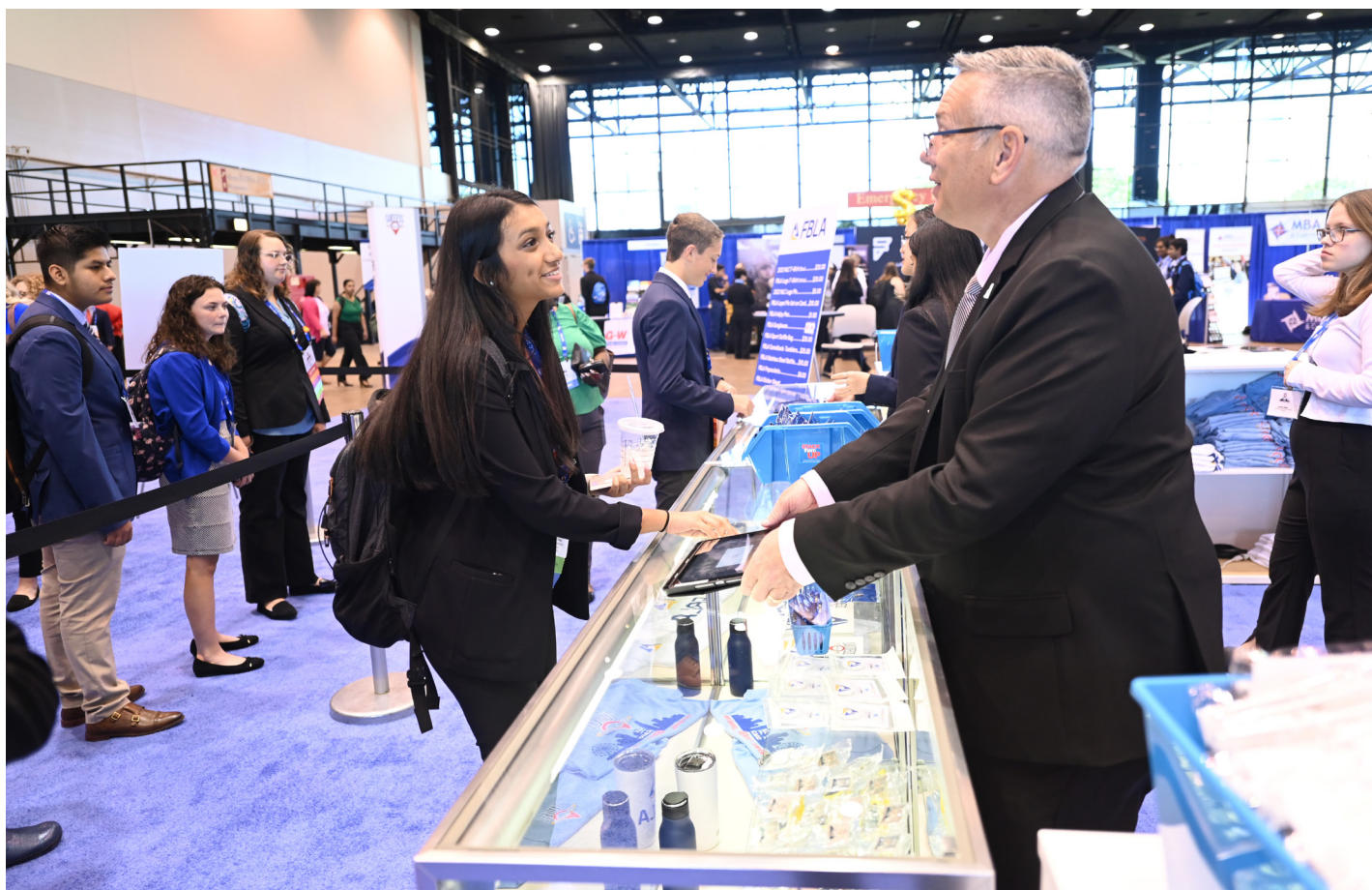
One of the best takeaways from the NLC is the sense of camaraderie among attendees. Regional meet-ups allow members to connect in a relaxed setting with other attendees from their part of the country, while the frenzy of pin trading offers the perfect excuse to just walk up and say hello to another member from across the United States. The NLC is a great opportunity for students to make lifelong friendships and build the network that will help them succeed now and in the future.

They can also create those connections directly in the Future Leaders Expo Hall, which features admissions representatives from colleges and universities, potential employers, and innovative businesses. A small selection of the companies exhibiting include BETA Camp, BusinessU, CLA, Equedi, Fidelity Investments, the Institute of Real Estate Management, Kendra Scott, the National Retail Federation, the U.S. Army, and TKS Worldwide.

It's not all business, however. The NLC takes full advantage of a central location in downtown Atlanta, with many attractions within walking distance. Registrants are welcome to explore sites such as the World of Coca-Cola, the Georgia Aquarium, and the National Center for Civil and Human Rights in their spare time, just steps away from conference venues and major downtown hotels.

I Am Interested in Attending. What Do I Do Next?

FBLA advisers can get started registering dues-paying FBLA members by visiting the 2023 NLC Registration page. As part of the conference registration process, advisers will also register members for their competitive events and make payments, all in Blue Panda.



Once you've made your plans, be sure to check the NLC website. You'll also receive several 'Know Before You Go' email reminders with tips and checklists to help you plan your schedule and make the most of your time at the NLC.

I Am Not an FBLA Member or Adviser. How Can I Get Involved?

One way to get involved is by volunteering. All adults are welcome to judge events for all three divisions. In addition, college students or business interns can judge High School events. Judging can be done both in-person and virtually. Pre-conference virtual judges can help by scoring student

materials prior to the conference. Pre-judging can be done at your own pace between May 22 and June 2. In-person judging for student presentations will have varying dates and time slots throughout the conference.

Another way to volunteer is by reviewing resumes. Engage students in 20-minute sessions where you help them polish their resume or LinkedIn profile. FBLA will provide tips on giving constructive feedback to make the most of this experience for you and the student.

If you are interested in signing up to volunteer, or if you just want more information, [*click here*](#).

What if I Can't Make It?

The opening and closing sessions will be streamed live, so if you can't make it, you can still experience some of the excitement from home.

If you're not an FBLA member, now is a great time to reach out to a teacher at your school and ask them to become an adviser in the 2023-24 program year. FBLA offers activities throughout the year to educate students on financial literacy, help them develop leadership skills, and inspire them to complete community-service projects. We also offer thousands of dollars in financial aid, scholarships, and prize money from our partner programs.

Also, start planning ahead now to join us in Orlando, Florida, next year! The 2024 Collegiate NLC will be held June 24-27, and the Middle School & High School NLC will take place June 29-July 2.

For more information, visit fbla.org.

Sidebar: Competitive Events Relating to Science and Technology

Technology is a vital part of doing business, especially for future business leaders. FBLA offers a wide variety of competitions in science and technology in all divisions.

Competitive Event Guidelines for Middle School, High School, and Collegiate members can be found online. These documents go into detail about participant requirements for each competitive event.

Here are our current science and technology competition offerings:

Middle School

- Digital Citizenship
- Exploring Computer Science
- Exploring Technology
- Multimedia & Website Development
- Video Game Challenge

High School

- Coding & Programming
- Computer Applications
- Computer Game & Simulation Programming
- Computer Problem Solving
- Cyber Security
- Data Analysis
- E-Business
- Introduction to Information Technology
- Mobile Application Development
- Network Design
- Networking Infrastructures
- UX Design
- Website Design

Collegiate

- Computer Concepts
- Cyber Security
- Information Management
- Network Design
- Networking Concepts
- Programming Concepts
- Website Design



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POTENTIAL,
THEY BELIEVE IN THEIR
FUTURE.

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SIGN UP TO LEARN WHAT IT TAKES TO MENTOR A
CHILD IN YOUR COMMUNITY.

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*If you are interested in additional
volunteer opportunities, please
contact us using this code:*





Some STEM careers covered in this issue:

- Geology
- Computer technology
- Neuroscience / Brain science research
- Summer education opportunities / teaching STEM and STEAM
- Aerospace / astronomy
- STEAM applications
- Internships / on the job training
- Writer / author

Georgia Tech and GlobalFoundries to Collaborate on Joint Semiconductor Research and Workforce Development

New partnership to include educational opportunities for Georgia Tech students and faculty, STEM outreach, and joint R&D programs on GF technology

The Georgia Institute of Technology, one of the top public research universities in the U.S., and GlobalFoundries (Nasdaq: GFS) (GF), one of the world's leading semiconductor manufacturers, today announced a new partnership to expand collaboration on semiconductor research, education, talent, and workforce development.

By jointly creating and implementing new educational, engagement, and research opportunities for students and faculty, Georgia Tech and GF are advancing semiconductor innovation, while helping prepare and train a new generation of talented young people for careers in the semiconductor industry. The new partnership includes collaborating on proposals for support from the U.S. government through the CHIPS and Science Act funding.

“Semiconductor research is a top priority for Georgia Tech and the nation,

as we develop innovative solutions that improve manufacturing and support our national and state economies,” said Chaouki Abdallah, executive vice president for Research at Georgia Tech. “Deepening our partnership with GlobalFoundries allows us to leverage our complementary technology and talent resources to benefit this vital industry, and to improve the human condition.”

“At GF, we recognize the tremendous potential of semiconductors to drive innovation, and ultimately enable the inventions and technologies that create meaningful societal change,” said Gregg Bartlett, chief technology officer of GF. “By partnering with top-tier universities like Georgia Tech on research and development, we can tap into a deep pool of academic talent and technical expertise and bring new ideas and insights to the forefront of our work.

Through this collaboration, we aim to push the boundaries of what is possible in feature-rich semiconductor technology, as well as inspire students to pursue a career in the exciting field of chip design and manufacturing.”

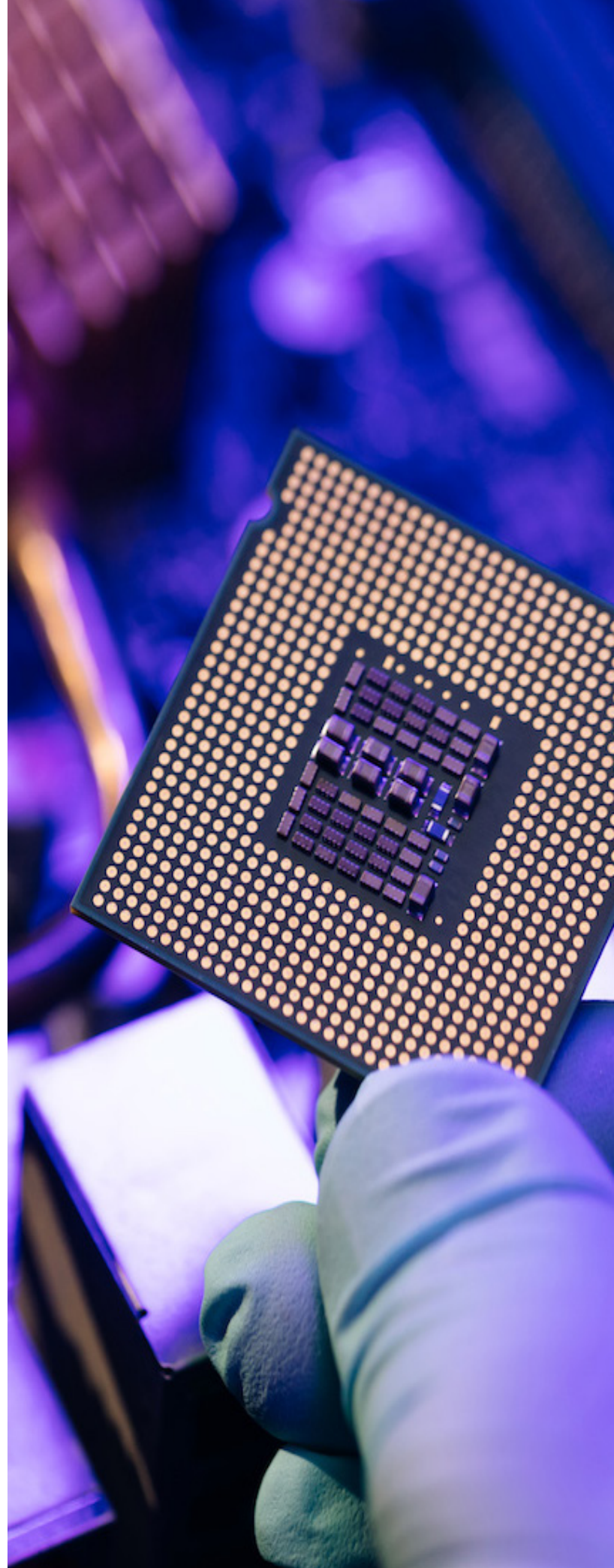
The strategic agreement outlines a framework of collaboration between GF and Georgia Tech to expand research and development opportunities on GF semiconductor technology, curriculum development, training programs, internships, and joint faculty/engineering exchanges.

Additionally, the agreement calls for Georgia Tech and GF to partner on outreach to inspire interest in semiconductors and highlight career opportunities in microelectronics. GF and Georgia Tech will also explore programs to enhance diversity and inclusion within the semiconductor workforce.

For GF, the partnership with Georgia Tech will be overseen by GF Labs, which leads the company’s research and development efforts to advance GF’s differentiated technology portfolio in partnership with leading academic, government, and industry collaborators.

About Georgia Tech

The Georgia Institute of Technology, or



Georgia Tech, is one of the top public research universities in the U.S., developing leaders who advance technology and improve the human condition. The Institute offers business, computing, design, engineering, liberal arts, and sciences degrees. Its more than 46,000 students, representing 50 states and more than 150 countries, study at the main campus in Atlanta, at campuses in France and China, and through distance and online learning. As a leading technological university, Georgia Tech is an engine of economic development for Georgia, the Southeast, and the nation, conducting more than \$1 billion in research annually for government, industry, and society.

About GF

GlobalFoundries (GF) is one of the world's leading semiconductor manufacturers. GF is redefining innovation and semiconductor manufacturing by developing and delivering feature-rich process technology solutions that provide leadership performance in pervasive high growth markets. GF offers a unique mix of design, development and fabrication services. With a talented and diverse workforce and an at-scale manufacturing footprint spanning the U.S., Europe and Asia, GF is a trusted technology source to its worldwide customers. For more information, visit www.gf.com.

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This news release may contain forward-looking statements, which involve risks and uncertainties. Readers are cautioned not to place undue reliance on any of these forward-looking statements. These forward-looking statements speak only as of the date hereof. GF undertakes no obligation to update any of these forward-looking statements to reflect events or circumstances after the date of this news release or to reflect actual outcomes, unless require by law.

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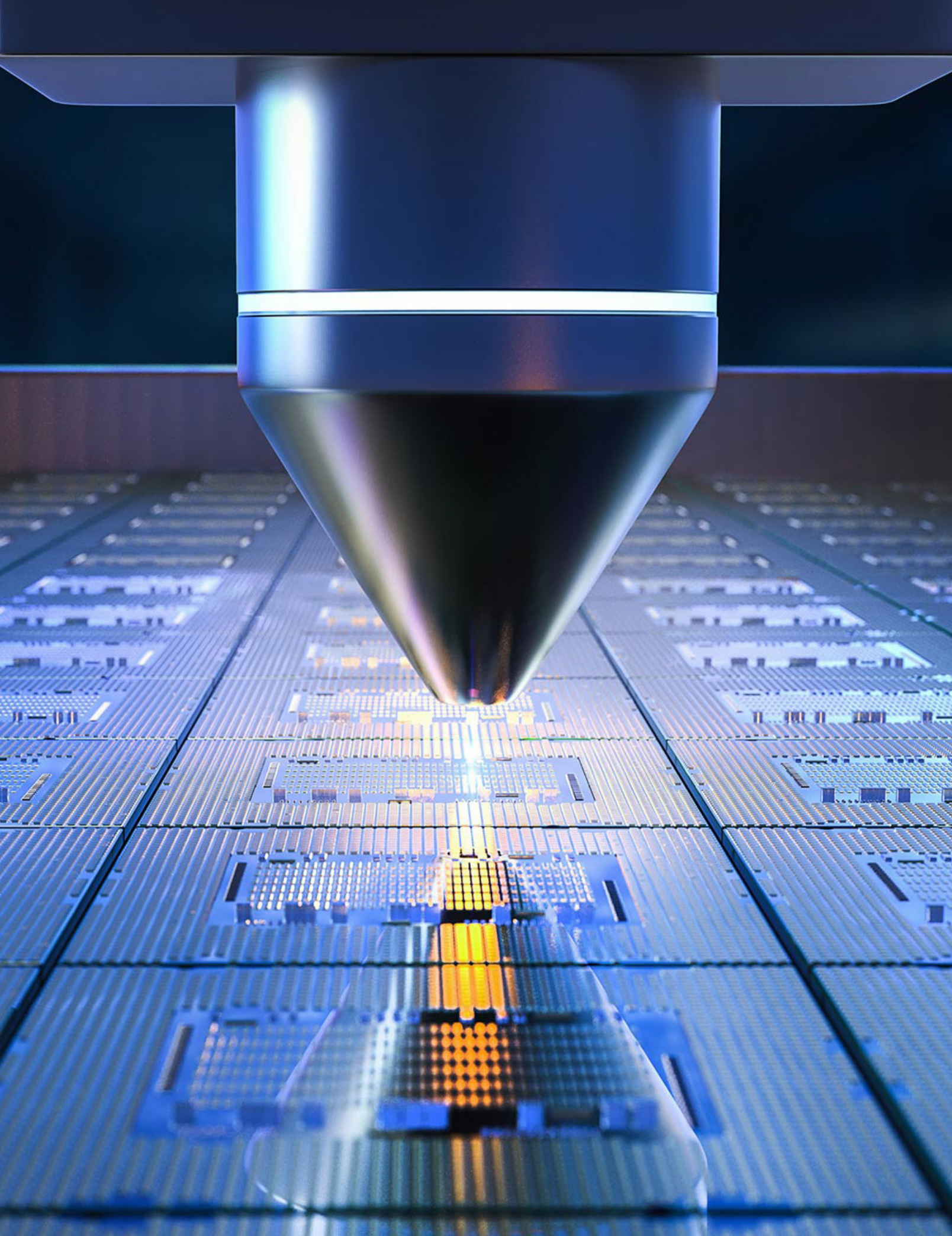
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Geology Students Investigate Ancient Volcano System

By Valbone “Vali” Memeti



Georgia has 7 volcanoes which may surprise you, making it a geologically interesting place to explore careers in geology. Many Georgia universities offer degrees in geology which is far broader than the study of volcanoes.

Geology students and their faculty mentor spent a month this summer hiking to an elevation of 9,500 feet into the rugged and picturesque Ansel Adams Wilderness to investigate an inactive volcanic magma chamber.

The magma chamber — once filled with molten rock and crystals, called magma, used to be about 7 miles below the surface. This magma chamber fed ancient volcanic eruptions roughly 98 to 97 million years ago at the same time when dinosaurs lived.

Unrupted magma remained in this magma chamber and resulted in intrusive rock, which is now the Jackass Lakes pluton in the northern Sierra National Forest, south of Yosemite National Park.

“Our research involved mapping a section of the Jackass Lakes pluton to examine the emplacement style and physical and chemical evolution of magmas over time. Our goal is to bring a greater understanding about magma systems underlying volcanoes,” said first-year graduate student Samantha Dunn.

Dunn was among six Cal State Fullerton students — two graduate students and four undergraduates — who participated in the summer research experience,



Students Samantha Dunn and Edgar Villasano identify a mineral while conducting fieldwork at Jackass Lakes pluton.

led by Valbone “Vali” Memeti, associate professor of geological sciences.

Memeti studies the connection between volcanoes and the underlying magma plumbing system. She organized the field research trip last spring while on sabbatical to work on her research to better understand volcanic eruptions and the evolution of underlying magma plumbing systems.

Studying Magma Plumbing Systems
Magma travels upward to the volcano through a system of chambers, which together form a magma plumbing system. Magma chambers hold magma until a volcanic eruption occurs, which can be anywhere from hundreds of years to a few million years.

While volcanic eruptions have fascinated people for as long as humans have lived, and most notably, have taken lives and destroyed livelihoods, magma plumbing systems play a large role in past and future volcanic activity.

“This is why we geologically remapped the Jackass Lakes pluton and will conduct lab analyses to investigate what the rocks are telling us about the scales of magma chamber sizes and volumes, and types of magma processes that occurred here,” Memeti said.

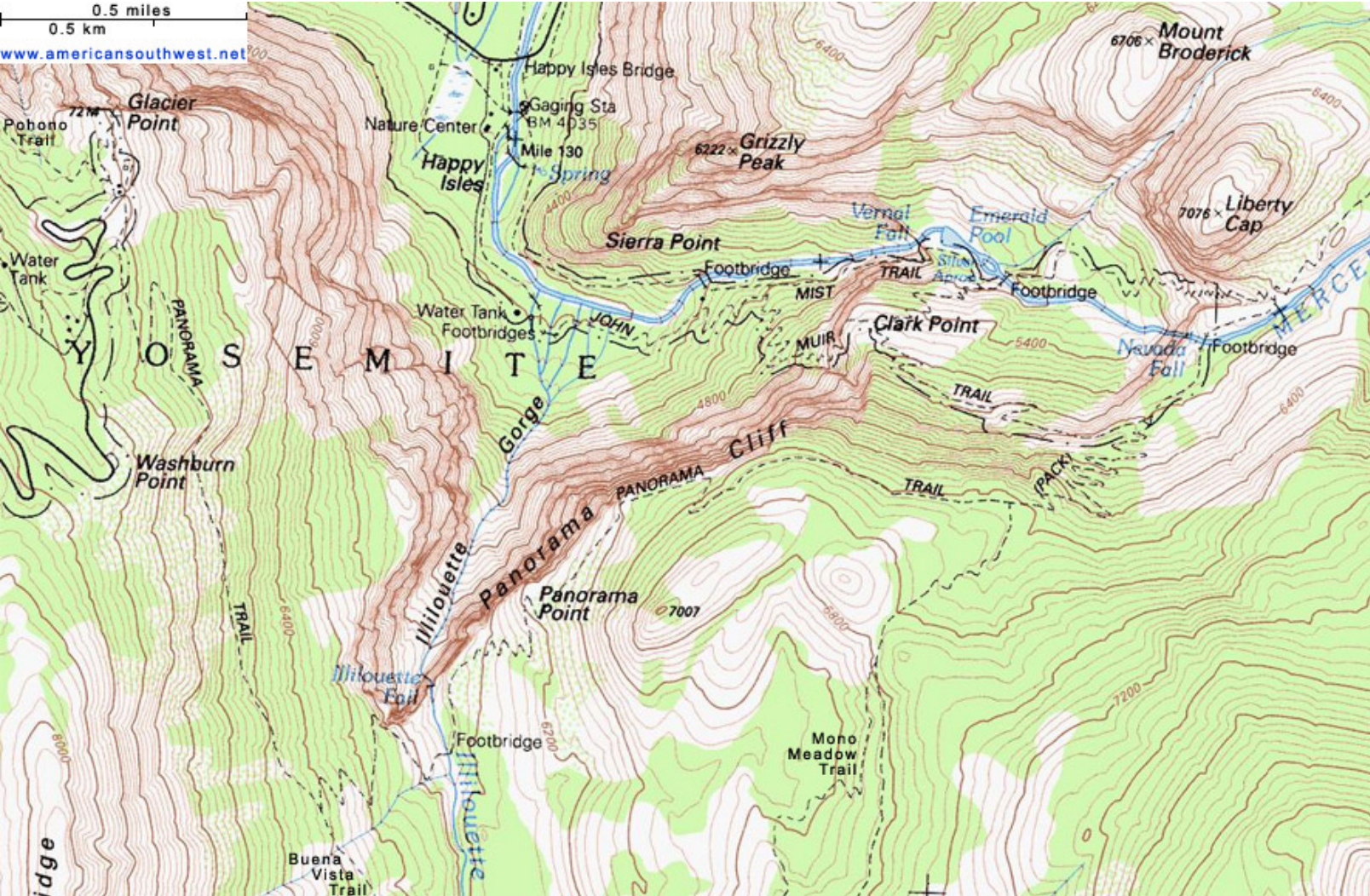
“We hope that this study gives us insight into how magmatic systems at depth grow and mature over time, the specific styles of eruption they feed, and how many eruptions might have taken place.”

This academic year, Dunn and fellow students are working on analyzing the rock samples they collected for types of minerals and chemical analyses to determine the various magma processes that occurred millions of years ago. For instance, volcanic and plutonic rocks will be dated to determine exact ages and geochemical analyses will be used to understand how magmas of both erupted and intrusive rocks are related to one another, Dunn explained.

“Minerals record information about what was going on in the magma chambers,” Memeti noted. “A lot of this type of information has not been unlocked yet, so it is a very exciting time to be studying these kinds of systems.”

Training the Next Generation of Geologic Mappers (a STEM Career)

The students’ fieldwork at Jackass Lakes pluton is supported by a nearly \$60,000 U.S. Geological Survey EDMAP grant for Memeti to train students in geologic field mapping. A geologic map shows the distribution of different rock types and structures, such as faults on a



topographic map. The map identifies geological information of an area and how to find a certain rock type or a fault.

From mid-July to mid-August, the researchers hiked 5 to 12 miles a day in the wilderness with spectacular rock outcroppings and granite cliffs. They worked up to 10 hours in hot summer weather mapping the pluton and collecting rock samples. One week, heavy monsoon rains, thunder and lightning interrupted their fieldwork and forced them to huddle in their tents.

In the field, students mapped on paper topographic maps. In the lab, they are

now using cloud-based mapping and analysis software to digitize the maps. Graduates with geologic mapping and field skills are sought-after by employers hiring geologists, Memeti added.

“Fieldwork is never easy. It includes long arduous days. It’s both physically and mentally draining some days, but it is also the most exhilarating, rewarding and wonderful experience,” Dunn relayed. “Geologic mapping is an important skill in geosciences,” Memeti said.

“I incorporate it in my projects because my research requires detailed geologic maps. It is an excellent way to combine my research with my teaching.”

Dunn, who earned a bachelor's degree in geology from Cal Poly Humboldt in 2020, plans to pursue a doctorate and a teaching and research career at the university level. She shared that the fieldwork reinforced her passion for geology and learning more about volcanoes and volcanic systems.

“Understanding magmatic systems by mapping and studying plutons gives us a glimpse into the processes that could be currently occurring underneath volcanoes worldwide,” Dunn said. “Our study can help scientists and people prepare for future volcanic eruptions.”

Geology students participated in a summer field research experience in the Sierra National Forest, led by Valbone “Vali” Memeti, associate professor of geological sciences. Through the project, the students are learning geological field and lab methods, and how to create a thesis project and write a scientific paper. They will present their research at the May 2023 Geological Society of America conference in Reno, Nevada.

This academic year, students are working on various parts of the project, ranging from digitizing the field maps to analyzing rocks in Memeti's campus lab. The students' maps will be used for ongoing U.S. Geological Survey and California Geological Survey efforts to

digitally map the geology of the country and state, respectively.

Graduate students are:

- Brandon Cugini '21 (B.S. geology-CSUF) mapped in the field and is now analyzing structures in the Jackass Lakes pluton to determine how the magma chamber was constructed over time.
- Samantha Dunn '20 (B.S. geology-Cal Poly Humboldt) mapped rock compositions and structures in the field and is now producing a geographic information system (GIS) map from the field map and analyzing rocks for geochemical data and dating. She is working on understanding how the volcanic rocks are chemically related to the plutonic rocks.

Undergraduate students are:

- Sadie Durning mapped rock compositions in the field and is now producing a geographic information system (GIS) from the geologic field mapping. She will complete geochemical analyses and dating of the rocks from her fieldwork to determine the size of different magma chambers.
- Ashleigh Quiroz is performing geochronologic (dating) analyses of both volcanic and plutonic rocks.

What does a Geologist do?

Geology is a study that encompasses all the materials that make up the earth, the forces that act upon the earth, as well as the biology of ancestral inhabitants based on fossil records. It plays a vital role behind the success of many other different disciplines, such as climatology, civil engineering, and evolutionary biology. Overall, geology is concerned with the changes of the earth over time, such as climate change and land formation.

Geologists study earth processes such as earthquakes, landslides, floods, and volcanic eruptions. When geologists investigate earth materials, they not only investigate metals and minerals, but also look for oil, natural gas, water, and methods to extract these. There are many fields of Geology:

- Environmental Geologist
- Engineering Geologist
- Marine Geologist
- Planetary Geologist
- Economic Geologist
- Petroleum Geologist
- Geomorphologist
- Geophysicist
- Geohydrologist
- Paleontologist

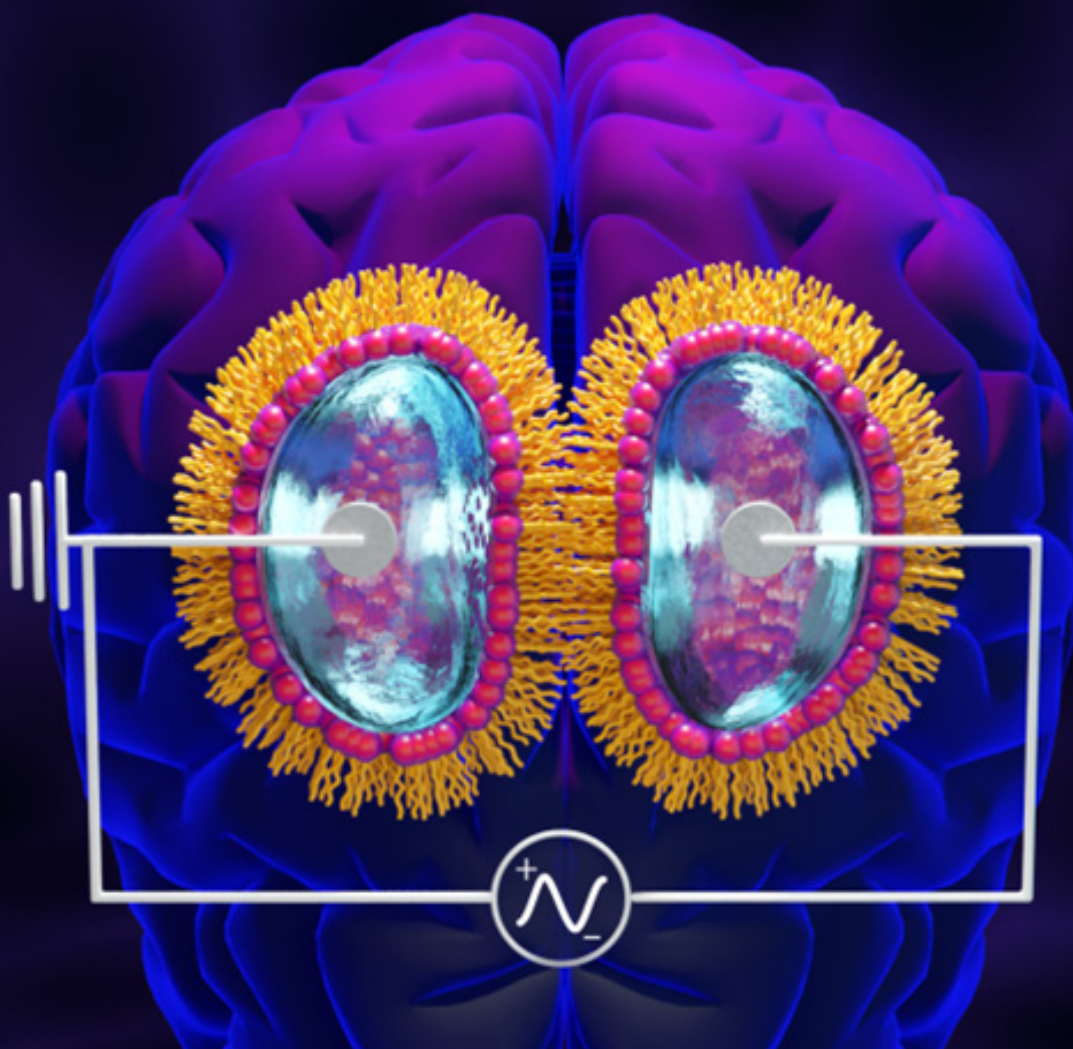
On a daily basis, Geologists travel for on-site work, develop research proposals, and fulfill contracts. They spend time both outdoors and indoors in laboratories observing, sampling, and testing liquid, mineral, soil, and rock samples.

Check it out online.



Biomembrane research findings could advance understanding of computing and human memory

By Emily Tomlin / ORNL



A pure lipid membrane formed using lipid-coated water droplets exhibits long-term potentiation, or LTP, associated with learning and memory, emulating hippocampal LTP observed in the brains of mammals and birds. Credit: Jill Hemman/ORNL, U.S. Dept. of Energy

While studying how bio-inspired materials might inform the design of next-generation computers, scientists at the Department of Energy's Oak Ridge National Laboratory achieved a first-of-its-kind result that could have big implications for both edge computing and human health.

Results published in Proceedings of the National Academy of Sciences show that an artificial cell membrane is capable of long-term potentiation, or LTP, a hallmark of biological learning and memory. This is the first evidence that a cell membrane alone – without proteins or other biomolecules embedded within it – is capable of LTP that persists for many hours. It is also the first identified nanoscale structure in which memory can be encoded.

“When facilities were shut down as a result of COVID, this led us to pivot away from our usual membrane research,” said John Katsaras, a biophysicist in ORNL's Neutron Sciences Directorate specializing in neutron scattering and the study of biological membranes at ORNL. “Together with postdoc Haden Scott, we decided to revisit a system previously studied by Pat Collier and co-workers, this time with an entirely different electrical stimulation protocol that we termed ‘training.’” This eventually led to data that are practically indistinguishable from the LTP signal observed in human brains.

Encoding memory in nanoscale systems has the potential to advance the development of next-generation computing materials and architectures that seek to match the efficiency and flexibility of human cognition — known as neuromorphic computing. While the implications for artificial intelligence may be obvious, brain-like computation will also dramatically alter the energy efficiency and computing capabilities of next-generation devices.

“Memory and logic in the brain are intertwined,” said Collier, staff research scientist at the Center for Nanophase Materials Sciences, a DOE Office of Science user facility at ORNL where the research was performed. “But in modern computers, these functions happen in different locations — a bottleneck the brain does not have.”

Even today's supercomputers have separate locations for processing and memory. By merging these functions, neuromorphic computers could help keep pace with exponentially growing data sets that are becoming more complex as the Internet of Things, or IoT, and the interconnectivity of devices become commonplace in homes and workspaces. It would also greatly advance edge computing, the ability of a device to do its own logic at the site of data collection, without having to send information to a central server or cloud.

Also, scientists have not yet identified a nanoscale structure in the brain where memory is stored. Large sections of the brain, such as the hippocampus, are known to store memory, but much remains unknown about where memory is stored in the hippocampus and the molecular mechanisms responsible for it. Importantly, cellular membranes have been overlooked as structures in which information could be encoded, even though lipids, a major component of membranes, make up most of the brain's mass.

The unexpected result of achieving LTP in a pure lipid membrane will initiate a re-examination of where and how memory is stored in a living brain. If neural cell membranes are found to be a critical feature in human memory, this could lead to novel treatments for the more than a billion people worldwide that are living with neurological disorders.

"If neurobiologists can find evidence of this in the brain, it could have dramatic impacts on how we understand dementia and learning," said Katsaras. "Importantly, the membrane can offer a novel therapeutic target for brain diseases that do not respond to drugs targeting proteins."

The nanoscale systems used in this study create an artificial membrane by

bringing together two micron-sized lipid-coated water droplets within an oil suspension. At the interface between the two droplets, a lipid bilayer forms that mimics the cell membranes of neuronal synapses in the human brain.

Previous ORNL research showed that this biomembrane system is capable of storing an electric charge, but only for short periods of time. In the new study, the presence of LTP means that there are new avenues for how this soft material system could be used in neuromorphic devices or how it could serve as a model for the construction of solid-state devices with similar features.

"Now that we've begun to define the electrical protocols to induce LTP in lipid bilayer membranes, we are preparing to make two-terminal crossbar architectures in which multiple nanoscale membranes interact, allowing for active logic to be performed, not just passive storage," said Collier. "Right now, we're using single systems; going forward, we need to learn how to wire them together."

In addition to partnering with neurobiologists to explore the biomedical implications of this finding, future neuromorphic computing work on the biomembrane system will involve simulations and use of ORNL's leadership facilities in neutrons and computing.

“What we’re seeing are serendipitous discoveries that came from somewhat curiosity-driven research conducted during the pandemic,” said Collier. “But it’s a significant finding for neuromorphic computing. We don’t know exactly how this is going to work, but that’s the fun part.”

The journal article is published as “Evidence for long-term potentiation in phospholipid membranes.”

The research was supported by the DOE Office of Science. Data collection and analysis were performed at the CNMS, while all samples were prepared at The University of Tennessee Shull Wollan Center, co-located at ORNL.

UT-Battelle manages ORNL for the DOE Office of Science. The single largest supporter of basic research in the physical sciences in the United States, the Office of Science is working to address some of the most pressing challenges of our time.

For more information, please visit <https://www.energy.gov/science>.



Emily R Tomlin
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Future City

Warwick Middle School Wins 2023 Prestigious Middle School STEM Competition– Future City



Odesa- engineered by students from Warwick Middle School, Pennsylvania, has won the Grand Prize at the 31st year of the prestigious international DiscoverE 2023 Future City® Competition. The students – Aaron, Aliyah, Auguste, Axel, Ben C., Ben W., Camryn, Capri, Carly, Carter, Charlie, Cody, Daniel, Henry, Ian, Izzy, Jack M., Jack T., Kayla S., Kayla G., Kensi, Leah B., Leah T., Liam, Lilly, Maya, Norah, Nula, Oliver, Reese, Reid, Reilly, Rivers, Ronan, Sam, Soren, Stephen, Travis, Tristan – teamed with educator Michael Smith as well as volunteer mentor Connor Henry, to earn this year's top honors.

Since last fall, middle school students in 37 U.S. regions, as well as teams from China, have imagined, designed, and built cities for DiscoverE's 2022-2023 Future City® Competition. This year's theme, Climate Change, challenged students to choose a climate

change impact and design one innovative and futuristic climate change adaptation, and one mitigation strategy to keep their residents healthy and safe.

Warwick Middle School, Lititz, Pennsylvania, representing the Pennsylvania Central region, takes home the Grand Prize of a trip to U.S. Space Camp and \$7,500 for its school's STEM program provided by Finals sponsor Bentley Systems, Inc.

Second place went to Lionville Middle School in Exton, Pennsylvania. Representing the Pennsylvania Philadelphia region, Lionville Middle School earned honors for its city Kiyarah city. The organization receives a \$5,000 scholarship for its STEM program, sponsored by Shell.

Teiraki Karawa – engineered by the Texas Houston region's Al-hadi School of Accelerated Learning in Houston, Texas, took third place honors. The group receives a \$2,000 scholarship for its STEM program, sponsored by Bechtel.

Fourth place went to St. Hugh Catholic School from Coconut Grove, Florida, for their project Imperium Aqua city. Liberatum – engineered by students from West Ridge Middle in Austin, Texas, from the Texas North region took fifth place. Both schools receive \$750 for their organization's STEM

programs, sponsored by NCEES (National Council of Examiners for Engineering and Surveying).



Working as a team with an educator and STEM mentor, students present their vision of the future through a 1,500 word essay, a scale model of their city--built with recycled materials, a project plan to help keep their project on track, a presentation and Q&A session with a panel of judges. Keeping the engineering design process and project management front and center, students are asked to address an authentic, real-world question: How can we make the world a better place?

Future City has ongoing opportunities for engineering and technical professionals to volunteer in several different roles, including team mentors, competition judges, and regional coordinators. For more information about Future City and volunteer opportunities, visit www.futurecity.org.

One of the nation's leading engineering education programs and among the most popular, Future City is accessible to every student. The Future City competition recognizes the importance of inclusion and emphasizes participation from all students, male and female, all races and ethnicities and all economic levels. Participants come from middle schools, both public and private, can be home-schooled and can also be members of a nationally, regionally, or state-recognized youth-focused organization, such as the Boy and Girl Scouts, Boys and Girls Clubs, or 4-H Clubs. Last year, 48 percent of the students were female, 39 percent of the students were minority, and 43 percent were low-income students from Title I schools, meaning schools which are federally funded based on the number of students at that school who qualify for free or reduced cost lunch.

Students apply math and science to real world problems and 85% of students reported that Future City helped them see math and science as important to their future.

Major funding for DiscoverE's Future City Competition comes from the Bechtel Corporation, Bentley Systems Inc., PMIEF, and the Overdeck Family Foundation. Additional program sup-

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About DiscoverE

DiscoverE is leading a growing volunteer movement that inspires and informs present and future generations to discover engineering. Our network of volunteers in the U.S. and abroad is drawn from the DiscoverE coalition of more than 100 professional societies, major corporations and government agencies. Together we meet a vital need: introducing students, parents, and educators to engineering, engaging them in hands-on engineering experiences and making science and math relevant. For more information, visit www.discovere.org

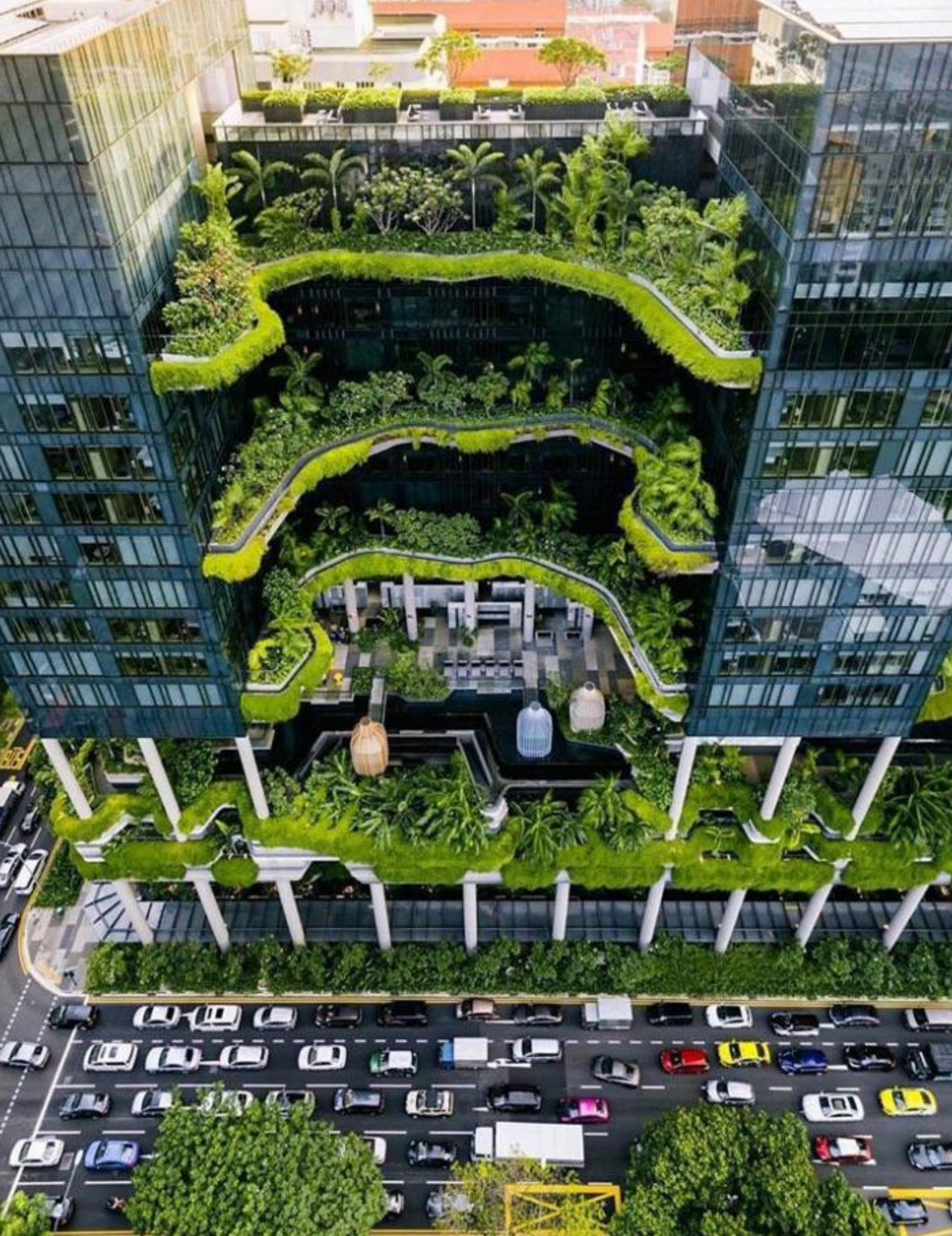
FutureCity.org

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It Takes a History of Education

to Guide the Future of Education

By Danny Dahms



Dr. Kenya Walker

Atlanta's Dr. Kenya Walker is taking her passion for education and serving diverse communities in a new direction as a franchisee of Engineering for Kids.

Prior to purchasing her franchise two years ago, Dr. Walker devoted herself to educating the next generation of learners as a teacher, administrator, and as an assistant VP at the University of Texas where she also received her PhD in educational administration. As you might guess, educating students during the formative years of their educational careers is where Dr. Walker's passion has always been. However, it was during her time working at the University of Texas where she became hyper-focused in her pursuit to improve upon STEM education.

While at Texas, she oversaw statewide college readiness programs that were focused on diversity and community engagement. These programs included many courses in math and science, where Dr. Walker was able to witness what the typical demographics of applicants for these fields. She recognized a glaring lack of representation for minorities and women. As a successful, well-educated Black woman herself, Dr. Walker quickly took it upon herself to address the deficiencies that currently plagued the world of STEM education.

“My background personally made it very easy for me to recognize issues within the field that most others might not,” says Dr. Walker. “Where many other educators have their focus on the work in front of them, I wanted to keep my eyes and ears open to the trends that could impact how future generations of learners perceive STEM and the people in the field.”

After leaving her position at the University of Texas, Dr. Walker relocated to a job as principal of an elementary and middle school in Georgia. Here, she was able to make an immediate impact on current STEM curriculum. In her very first year as principal, she was implementing a refined syllabus recognized nationally as a top option for STEM educators and her campus was

rewarded with STEM certification through Cognia, one of the nation’s most prestigious, research-based accrediting agencies. Despite her quick success however, Dr. Walker still wanted to spread her reach even further.

Only two years after starting as a principal, Dr. Walker looked to venture into the world of business ownership. Behind the scenes, she was also quietly following in the footsteps of her mother, who previously blazed a similar trail as a teacher, principal, and proud business owner. Her mother raised Dr. Walker on the belief that education is paramount. It was her mother’s guidance and encouragement that helped reassure her along the way and helped her to choose the best business ownership opportunity that was also most well-aligned with her goal of diversifying and educating the next generation of STEM professionals.

Dr. Walker landed on buying her own STEM-focused education provider in the heart of Atlanta, Engineering for Kids of East Atlanta. Here, she could not only continue to utilize her expertise in education within the STEM fields, but she would also get the chance to directly interact with young children, who she became partial to thanks to her time spent leading her own elementary and middle school.

Dr. Walker had an additional passion – allowing young girls, from underrepresented minorities including the Black community, to showcase STEM and the ability to thrive there. Dr. Walker created the “Three P’s,” passion, pursuit, and pride.

“STEM is one of the broadest educational topics, and is filled with a plethora of potential career options these young ladies may not have been previously exposed to,” states Dr. Walker. *“Children should never feel like they have to settle, but instead, they should be pushed towards enjoying thorough exploration until they discover something that they actually enjoy doing.”*

With so many different options to explore in STEM, there’s no reason for children to feel pigeonholed into something they aren’t passionate about.

Dr. Walker’s second value of the “three p’s,” pertains to a key life lesson: it takes work to make a dream into reality. Once she ignites the curiosity or passion in her students for a particular field, she helps teach them exactly what it takes to pursue that goal. STEM is full of fun activities and opportunities, but just like everything else in life, you need to apply yourself in order to unlock your full potential.

Dr. Walker puts emphasis on the

importance of pride, particularly in her female students. She makes it very clear that she never wants her students to feel like they need to fit into a specific mold if they want to succeed in STEM.

Every one of her students comes from a unique background with their own distinct personalities, and Dr. Walker does her best to teach her students that their backgrounds are an important part of who they are.

A current challenge facing the world of STEM is a lack of representation, and Dr. Walker believes that by introducing children of all backgrounds to STEM, she opens a door so that they can one eventually make it a more diverse and inclusive industries.

Dr. Walker has already helped nearly 2000 students from local Atlanta public schools, many of whom were young minorities from severely underrepresented communities. She has collaborated with a number of local centers, educational institutions, and parents alike, to provide fun-filled activities and curriculum that serve as children’s first glimpses into the world of science, technology, engineering, and mathematics.

She remains passionate about the prospect of inspiring students and introducing them to the world of possibilities that lie ahead. Every time a child finds a spark of inspiration from her programming, it justifies all of the challenges and moments of doubt that Dr. Walker had to face on her path to becoming a successful Black woman in the STEM industry. Although her journey was a long one, she still won't hesitate to encourage every young girl she meets to follow a similar path.

About Engineering for Kids:

Engineering for Kids aims to be the gateway into the world of STEM for young children across the globe. Originally founded in 2011, the brand and its educators have since changed the lives of over 350,000 students across more than 35 different countries.

Through the use of fun-focused activities, kids get their first impression of the STEM fields and the many possibilities within them.



Lt. j.g. Madeline Swegle, a Virginia native, made history in July 2020 as the US Navy's first Black female fighter pilot; a high flying STEM career.

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Georgia Pathways™ STEM Magazine requests the privilege of including your content or the content of your students in upcoming issues. This is a great opportunity for students to be published and for educators and industry professionals to share their insights and wisdom regarding careers across Georgia.

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