



# 2020 Annual Report





## **Mission**

The mission of Girls 4 Science is to enrich the lives of girls through early exposure to the study of science, technology, engineering and math (STEM) and women of color practicing in STEM fields, hands-on problem-based learning and mentorship for careers in STEM fields.

## **Vision**

Girls 4 Science endeavors to create a sustainable pipeline for women of color in STEM careers.

## **Saturday STEM Academy**

Girls 4 Science fulfills its mission through its Saturday STEM Academy, which provides hands-on experiential learning and professional mentorship in STEM for girls age 10-18 years from Chicago and its surrounding communities. The Saturday STEM Academy's innovative program model is based on evidence that science exposure and increased science literacy will equip young girls with the knowledge and confidence needed to pursue study in the sciences and careers in STEM.



**Jackie Lomax**  
*Founder & Executive Director*  
*Girls 4 Science*

## Message from the Executive Director

The year 2020 was one of grace and mercy. The year made everyone stop, look and listen. The immediate need to breathe was no longer taken for granted. The COVID-19 pandemic challenged how Girls 4 Science (G4S) conducted its Saturday STEM Academy. We were confined to our homes during the spring, summer and fall programs. For the first time in history, G4S offered the Saturday STEM Academy online and developed and packaged its signature hands-on learning activities to be completed at home.

Due to the pandemic, G4S had to cancel its annual Women in History fundraising event but replaced it with a very successful online popcorn fundraiser. Although we had to cancel the Spring Saturday STEM Academy, we successfully conducted online programs in the Summer and Fall. The virtual Student Recognition and Awards Ceremony featured a keynote speaker, awarding of scholarships and issuing of certificates to the 2020 Girls 4 Science program participants. With the strength of the G4S team members and volunteers we “left no girl behind.”

The conscientious work of G4S pro bono consultants Janice Feinberg and Barb Pasulka led G4S into a sustainable operational outlook for 2020 and beyond and helped create a strategy that kept G4S fully operating during the times of uncertainty. We learned that the success of a nonprofit organization lies within its people. The skills and talents of team members, volunteers and the Board of Directors is the reason G4S was able to quickly pivot to avoid disaster and thrive under the adverse circumstances brought on by the pandemic. Girls 4 Science is very fortunate to continue to live its mission through the support of our donors.

Sincerely,

*Jackie Lomax*



## 2020 By The Numbers

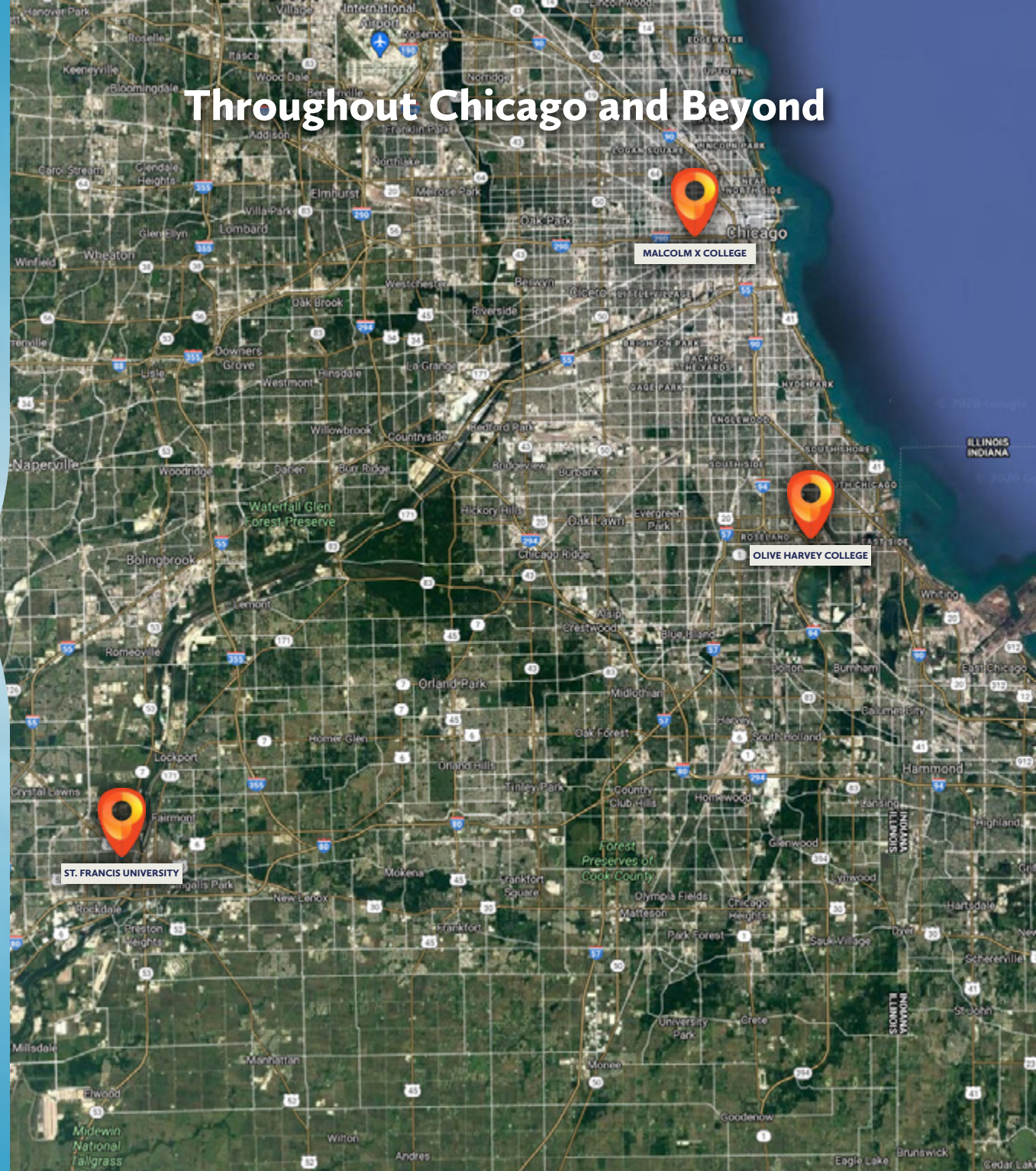
Participants . . . . .	189
New Registrants . . . . .	50
Elementary/Middle School (grades 4-8) . . . . .	96 (72%)
High School (grades 9-12) . . . . .	37 (28%)
Zip Codes represented . . . . .	59 + 4 INDIANA
African American/Black . . . . .	71%
White . . . . .	14%
Hispanic/Latino . . . . .	8%
Asian . . . . .	5%
Biracial . . . . .	4%

*Special guest Raven Johnson, President of Crystal Clear Tutoring, speaks with G4S students about the use of math in the everyday world.*



# Throughout Chicago and Beyond

G4S participants represent more than 60 zip codes in Chicago and its surrounding communities.





***Inger Burnett-Zeigler, PhD***  
*Keynote Speaker*  
*Associate Professor,*  
*Department of Psychiatry*  
*and Behavioral Sciences*  
*Northwestern University*  
*Feinberg School of Medicine*

## **Student Recognition & Awards Ceremony**

Girls 4 Science held its annual Student Recognition & Awards Ceremony on August 14 on the Zoom Platform. More than 87 students, family members and alumni gathered virtually to celebrate the accomplishments of the participants, staff, volunteers and mentors. Three G4S high school seniors received Linda McGill Boasmond Scholarships.

The keynote speaker was Dr. Inger Burnett-Zeigler, a licensed clinical psychologist and Associate Professor in the Department of Psychiatry and Behavioral Sciences at Northwestern University Feinberg School of Medicine. As a proud south-side Chicagoan, she delivered a passionate and compelling message to the students, families, staff, volunteers and guests in attendance.

Dr. Burnett-Zeigler is a fierce advocate for eliminating mental illness stigma and normalizing participation in mental health care, is actively involved in the community and serves on several non-profit boards. She is a prolific contributor to the public discourse on mental health and wellness, with op-eds featured in The New York Times, TIME magazine, The Hill and Chicago Tribune. She has also been seen on CNN, WGN-TV and WTTW Chicago Tonight. Her remarks to the Girls 4 Science students, families, volunteers and staff were not only inspirational, informative and topical, but clearly personal. She identified the STEM behind psychology and introduced many young girls to psychology as a career opportunity.

The Student Recognition & Awards Ceremony was sponsored by Cedar Concepts Corporation and The Joseph & Bessie Feinberg Foundation.

Student  
Recognition  
& Awards  
Ceremony

Linda McGill Boasmond Scholarship Recipient

**Becky Harris**



**Becky Harris**  
Joliet Junior College  
Major: Biology

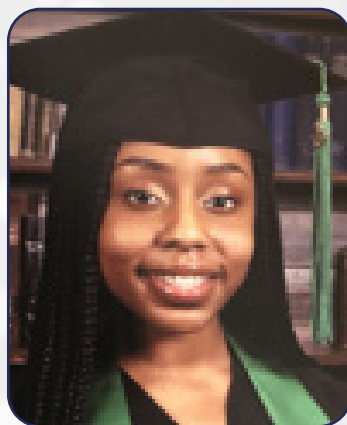
*I first learned about Girls for Science in sixth grade. My sixth-grade teacher at Joliet's Dirksen Junior High School informed me about the program. I was told it was a great way for girls to learn more about science and a way to make friends who had the same interests as me. The first time I went to the Saturday program I found it fun and exciting. There were a lot of great people; many now are close friends who have helped shape me to be the person I am today. They introduced me into the world of science and gave me opportunities I never got in school. I met women in different fields of STEM, which opened my mind to different ideas about what I could dream about and accomplish.*

*I learned things that helped me in school and will help me later in life. I will be going to Joliet Junior College majoring in biology. I will get a job one day as a forensic analyst specializing in human DNA. Girls for Science has helped me in so many ways and has shaped my future. For instance, I learned there are a lot more opportunities in the STEM field, such as my future career in Biology. Girls for Science also helped my self-esteem by building my confidence in the labs and by giving me a chance to discuss our lab success and failures equally. The labs were interesting and made my critical thinking skills better. As a forensic analyst I will have to think and make critical decisions needed to properly interpret lab and test results.*

**Student  
Recognition  
& Awards  
Ceremony**

**Linda McGill Boasmond Scholarship Recipient**

***Ramaya Johnson***



*Ramaya Johnson  
Augustana College  
Major: Pre-Medicine*

*Participating in Girls 4 Science at a young age built a strong foundation and yearning to learn more about science, technology, engineering and math (STEM) and STEM-based careers. Girls 4 Science surrounded me with knowledgeable individuals that allowed me to explore the world of STEM. I enjoyed the hands-on activities held at Olive Harvey College in the science labs, as well as the once-in-a-lifetime field trips to Fermilab, a Ford factory and Ingredion. I met amazing and smart young ladies my age and was mentored by older participants who also shared a passion for STEM. Because of Girls 4 Science, I was able to participate in other STEM-based opportunities like The Ice Box Derby*

*and various internships at top hospitals in the Greater Chicagoland area. Girls 4 Science was instrumental in my decision to continue my journey in STEM. This fall, I will be attending Augustana College on a Pre-Med track to one day become a dermatologist.*



Student  
Recognition  
& Awards  
Ceremony

Linda McGill Boasmond Scholarship Recipient

**Summer Smith**



**Summer Smith**  
New York University  
Major: Biochemistry

*I started as a participant in Girls 4 Science in the sixth grade and was exposed to the breadth of STEM fields, which not only fueled my love for science, but also pushed me to aspire to enter a career in medicine as an obstetrician-gynecologist. As I entered my freshman year of high school and expanded my knowledge of the sciences, I was allowed to provide input on some of the lessons the other G4S participants would learn. Girls 4 Science is one of my favorite activities because it allows me to have a tangible effect on my community. I love being able to participate in the lessons that get young women of color excited about science because these Saturdays create potential for*

*more women of color to join STEM fields to change the face of medicine, research, and science. Ensuring that STEM fields in the future are filled with more people of color would be beneficial to these communities. I believe that having Black and Brown people in positions of power would not only enact change in our own communities, but hopefully change the way we are treated in the rest of the nation.*



*Linda McGill-Boasmond was the founding Chair of the Board of Directors for Girls 4 Science. She is owner, President and CEO of Cedar Concepts, a manufacturer of chemicals for the personal care, home, agriculture and aerospace industries, among others. McGill-Boasmond runs the country's first and only African American, woman-owned chemical manufacturing plant.*

*Since 2013 Girls 4 Science has provided \$21,000 in scholarships for high school seniors who have completed at least 12 weeks of the G4S program. Many thanks to Linda McGill-Boasmond for funding the scholarship opportunities through Girls 4 Science since 2018.*

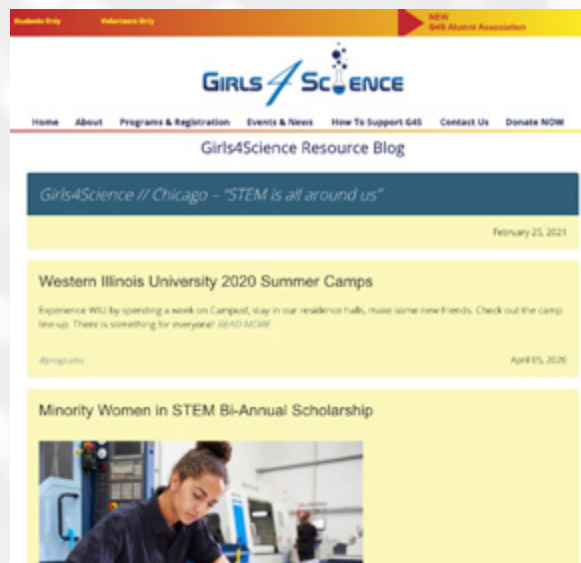
## Previous Girls 4 Science Scholarship Recipients

- 2013 Darcell Creswell, Western Illinois University – Graphic Communications
- 2013 Leona Barnes, Alma College – Art, Anthropology
- 2014 Brooklyn Payne, Wilmington College – Biology
- 2016 Sairyia Jemison, Northern Illinois University – Engineering/Industrial Management
- 2016 Kenyana Tyiska, University of Illinois at Urbana-Champaign – Biochemistry
- 2016 Lauren Lomax, Central Michigan University – Recreational Therapy
- 2017 Sydney Shaffer, Milwaukee School of Engineering – Civil Engineering/Environmental and Water Resources Engineering
- 2017 Nakia Chappell, Marquette University – Neuroscience
- 2017 Deasiah McIntosh, Eastern Illinois University – Criminal Justice
- 2017 Isabella Baumann, University of St. Thomas – Neuroscience
- 2018 Nia Autman, Northern Illinois University – Biological Sciences
- 2018 Eryn Brazil, University of Michigan – Movement Science/Public Health
- 2018 Sofia Santamaria, Joliet Junior College – Communications
- 2018 Erika Jones, University of Michigan – Aerospace Engineering
- 2018 Aerial Shaffer, Washington University in St. Louis – Biology
- 2019 Samaree Ames, Richard J. Daley City College of Chicago – Computer Technology
- 2019 Ariana McCray, University of Kentucky – Biopharmaceutical Engineering
- 2019 Morgan Pratt, University of Illinois at Chicago – Biology

# New Resources On Girls 4 Science Web Site



[www.girls4science.org/G4SA](http://www.girls4science.org/G4SA)



[www.girls4science.org/resource-blog.html](http://www.girls4science.org/resource-blog.html)

Girls 4 Science has two additions to its website. The Resource Blog, which includes programs, scholarship and internship opportunities and the G4S Alumni Association page, to engage alumni with current Girls 4 Science students and programs.

The G4S Alumni Association page provides professional development resources including video tutorials on interview help, professional networking, resume writing and self-assessment tools, and volunteer opportunities with Girls 4 Science. G4S Alumni can stay connected by joining the Girls 4 Science Alumni

Group on Facebook and Instagram, and subscribing to the G4S Alumni Newsletter, which will feature alumni spotlights, news and achievements related to women in STEM, and updates from current Girls 4 Science programs. The newsletter will also include information about local networking opportunities and provide tips to help G4S alum succeed in college, careers, and beyond.

*Girls 4 Science is grateful to Horizon Therapeutics for assigning its summer college interns to set up the new web resources.*

Nearly  
\$10,000  
Raised



A Double Good

# Popcorn Fundraiser

The G4S Advisory Board Double Good Popcorn fundraiser, August 13-17, was a smashing success, raising nearly \$10,000 to keep the Saturday STEM Academy free for all girls who want to attend. Many thanks to Advisory Board members – Yaqui Benson, Donna Jones, Mary Love, Dawn Milhouse, Joy Nunn, Riva Trivedi, Shervon Vaulx and Chistin Zollicoffer – for their active participation in the event. G4S students, alumni, parents, volunteers, Program Coordinators and Board members also contributed to the success of the fundraiser. Prizes based on dollar value of sales were awarded to students and alumni at Student Recognition and Awards Ceremony.



## Winter Saturday STEM Academy MATHEMATICS

**Calling All Girls  
10 – 18 Years  
of Age ...**

**6 Weeks of FREE**  
Science exploration, field trips,  
mentorship & scholarships

Saturdays:  
January 18 – February 22, 2020  
10:00 a.m. – 12:00 p.m.

**10<sup>th</sup> Anniversary**  
**GIRLS 4 SCIENCE**

Winter 2020 Session will explore  
**MATHEMATICS**

**3 Locations**

- Olive Harvey Community College - Chicago, IL
- Malcolm X Community College - Chicago, IL
- University of St. Francis - Joliet, IL

**REGISTRATION STARTS**

**NOVEMBER 17, 2019** (Returning Students)  
**NOVEMBER 24, 2019** (New Students)

All NEW and RETURNING Students Must Register @  
[www.girls4science.org](http://www.girls4science.org) click on the REGISTER TAB

*A Program Coordinator will contact you with the classroom number via email and phone message.*

Olive Harvey Program Coordinator -  
Natalya Carter ([nacarter@ohcc.edu](mailto:nacarter@ohcc.edu))

Malcolm X Program Coordinator -  
Dezarae Brooks ([dezarabrooks@mgcc.edu](mailto:dezarabrooks@mgcc.edu))

University of St. Francis Program Coordinator -  
Sandra Diaz ([sandrafdiaz@yahoo.com](mailto:sandrafdiaz@yahoo.com))

**or CALL (773) 401-6685**

math4science  
I can't do it!  
the abstract science of  
number, quantity, and space.  
Mathematics may be studied in  
its own right (pure mathematics),  
or as it is applied to other  
disciplines such as physics  
and engineering (applied  
mathematics).

Certified Instructors • State-of-the-art science laboratories • Increased self-esteem • Peer-to-peer mentoring

# Winter Saturday STEM Academy January 18 – February 22, 2020

The Winter session was the last Saturday STEM Academy conducted in person in 2020. Under the supervision of Crystal Clear Tutoring, students assessed their proficiency in core areas of mathematics: Fractions, Geometry, Basic Math Operations, and Algebra. Through game play, students learned about the importance of financial awareness, credit and the positive and negative impact events for credit scores.

On a field trip to ArtReach Chicago students learned glassblowing and created art pieces using the principles of symmetry and temperature.

The Junior Achievement Economics Kit provided the basis for instruction on micro- and macro-economics. Students explored the basic characteristics of the U.S. economic system and how economic principles influence business decisions. The program also introduced students to career opportunities and helped reinforce important academic and leadership skills, including research and data analysis, problem solving and critical thinking.

Students presented their business plans and budgets to their peers and parents with feedback from G4S team members. Special guests included entrepreneurs in various STEM and business professions who shared their stories of success. Special thanks to David Stampley, Brian Crag, Raven Smith, Shelia Black, Timothy Miller, and staff from Banner Witcoff.



## Career Day

Thank you to our Career Day Sponsor Banner Witcoff for its participation in our Career Day activities, which took place on February 22 at the three Saturday STEM Academy locations.

Spring  
Saturday STEM Academy  
FOOD CHEMISTRY



**Calling All Girls 10 – 18 Years of Age ...**

6 Weeks of **FREE** Science exploration, field trips, mentorship & scholarships

Saturdays:  
April 18 – May 23, 2020  
10:00 a.m. – 12:00 p.m.

**10<sup>th</sup> Anniversary**

**GIRLS 4 SCIENCE**

Spring 2020 Session will explore **FOOD CHEMISTRY**

Our module sponsors are:

**3 Locations**

- Olive Harvey Community College - Chicago, IL
- Malcolm X Community College - Chicago, IL
- University of St. Francis - Joliet, IL

**REGISTRATION STARTS**

**FEBRUARY 23, 2020** (Returning Students)  
**MARCH 1, 2020** (New Students)

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Olive Harvey Program Coordinator - [Nasrula Garver \(oliveharvey.edu\)](mailto:Nasrula.Garver@oliveharvey.edu)  
Malcolm X Program Coordinator - [Dezarae Brooks \(dezarabrooks@ingredion.com\)](mailto:Dezarae.Brooks@ingredion.com)  
University of St. Francis Program Coordinator - [Senaitse Davis \(senaitse@stfrancis.edu\)](mailto:Senaitse.Davis@stfrancis.edu)

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# Spring Saturday STEM Academy

April 18 – May 23, 2020



The Spring session of the Saturday STEM Academy was canceled due to the Covid-19 pandemic.

When the stay-at-home order was issued, Girls 4 Science staff began planning for a transition to an online program while retaining the hands-on, experiential component of the Saturday STEM Academy. The three-location structure was maintained (Olive Harvey, Malcolm X, University of St. Francis) and participants registered for a specific “site.” Classes were conducted on the Zoom platform and participants were capped at 25 per site. Family members were required to attend a virtual orientation prior to the session and “STEM Kits” with the materials necessary for the hands-on laboratory portion of the session were distributed at each college site.

## Summer Saturday STEM Academy FOOD CHEMISTRY



Candy Chromatography

# Summer Saturday STEM Academy July 25 – August 29, 2020

The Summer Saturday STEM Academy on Food Chemistry kicked off with a class on the science of ice cream making, followed by candy chromatography, building lava lamps, kitchen density experiments to demonstrate the concepts of the scientific process, and a discussion of data reliability and ethics. There was a virtual field trip to Merieux NutriSciences, a world leader in food safety and quality. Following the virtual tour, students met with staff scientists to learn about their career paths and what their current job entails. G4S staff and volunteer mentors facilitated class on the Zoom platform with a total of 75 students at three “sites.”

**Calling All Girls 10 – 18 Years of Age ...**

**6 Weeks of FREE** Science exploration, field trips, mentorship & scholarships

Saturdays:  
April 18 – May 23, 2020  
10:00 a.m. – 12:00 p.m.

**10<sup>th</sup> Anniversary**

**GIRLS 4 SCIENCE**

Spring 2020 Session will explore **FOOD CHEMISTRY**

Our module sponsors are:

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*A Program Coordinator will contact you with the classroom number via email and phone message.*

Olive Harvey Program Coordinator - [Nasaha Garver](mailto:Nasaha_Garver@oliveharvy.edu) ([nasaha.garver@oliveharvy.edu](mailto:Nasaha_Garver@oliveharvy.edu))

Malcolm X Program Coordinator - [Dezarae Brooks](mailto:Dezarae_Brooks@malcolmxcoll.edu) ([dezarabrooks@malcolmxcoll.edu](mailto:dezarabrooks@malcolmxcoll.edu))

University of St. Francis Program Coordinator - [Sanjivine Davis](mailto:Sanjivine_Davis@stfrancis.edu) ([sanjivine@stfrancis.edu](mailto:sanjivine@stfrancis.edu))

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## THE CHEMISTRY OF ICE CREAM

### Flavors and Colors



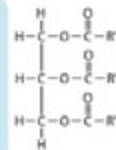
While natural ice cream has a number of compounds, deeper flavor is accomplished through artificial flavoring. Vanilla flavoring is simply Vanillin, while other flavor compounds can be much more complex. Anthocyanins are used to color strawberry ice cream.

### Fats and Proteins

The fat in ice cream is what makes it creamy!

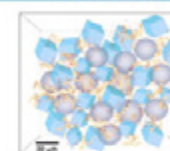
The proteins in milk form a membrane around the fat droplets, making it hard for them to come in contact with each other.

When ice cream is made, some of the fat in the droplets solidifies. This causes fat 'beadles' to form, which helps droplets cluster and creates air bubbles.



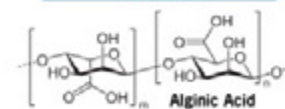
Fat (Triglyceride)

### The Structure



Beating and aeration occur at the same time, creating small air bubbles (stabilized by de-emulsified fat.) Air makes up 30 - 50% of ice cream's volume. During freezing, water becomes ice crystals.

### Stabilisers



Stabilizers are carefully added to ice cream. This prevents ice cream from melting too quickly, provides a smoother texture, and increases the viscosity of the liquid phase of the ice cream.



**Fall  
Saturday STEM Academy  
ANTHROPOLOGY**



**Calling All Girls 10 – 18 Years of Age ...**

**6 Weeks of FREE**  
Science exploration, field trips,  
mentorship & scholarships

**Saturdays:**  
October 3 – November 7, 2020  
10:00 a.m. - 12:00 p.m.

**GIRLS 4 SCIENCE**

Virtual Fall 2020 Session will explore  
**ANTHROPOLOGY**

- Computer and internet are needed for remote access to the class.
- 25 students per location first-come-first-serve.

**3 Locations**

- Olive Harvey Community College - Chicago, IL.
- Malcolm X Community College - Chicago, IL.
- University of St. Francis - Joliet, IL.

**REGISTRATION:**  
Open to all August 16th, 2020

All NEW and RETURNING Students Must Register @ [www.girls4science.org](http://www.girls4science.org) click on the REGISTER TAB

*A Program Coordinator will contact you with the classroom number via email and phone message.*

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Natacha Carter ([natascacarter@ohc.edu](mailto:natascacarter@ohc.edu))

Malcolm X Program Coordinator –  
Dezarae Brooks ([dezarae.brooks@mgcc.edu](mailto:dezarae.brooks@mgcc.edu))

University of St. Francis Program Coordinator –  
Sandrine Davis ([sandrinedavis@yahoo.com](mailto:sandrinedavis@yahoo.com))

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# Fall Saturday STEM Academy

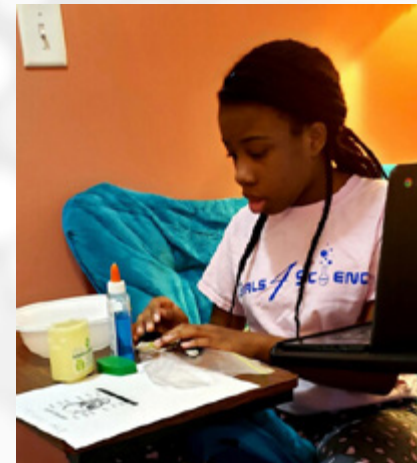
## October 3 – November 7, 2020

The Girls 4 Science Fall Saturday STEM Academy focused on Anthropology, the study of human societies and their development. Students learned about the four main subfields of anthropology: cultural, language (linguistics), archaeology and biological/physical.

Students discussed how language is used in different social settings and in social media, why people from different regions in the U.S. speak so differently and how the language we use differs by race and age. Guest speaker Dr. Allison Mickel, Assistant Professor of Anthropology at Lehigh University, showed the students how artifacts are researched and recorded and led an activity where the girls had to organize artifacts in sequence of time. Dr. Mickel talked about her career, shared her insights as a woman in archeology, and expressed the need for more girls to explore the field.

The Fall session included a virtual field trip to the Cahokia Mounds State Historic Site, Museum and Interpretive Center in Collinsville, Illinois, where the remains of the largest and most sophisticated prehistoric native civilization north of Mexico are preserved. After the field trip, the students created their own fossils using clay and learned how forensic anthropologists determine the ancestry of a skeleton by examining the shape of the skull.

*Below: Noa Levi (left) and Presleigh Hilson (right) making fossils.*



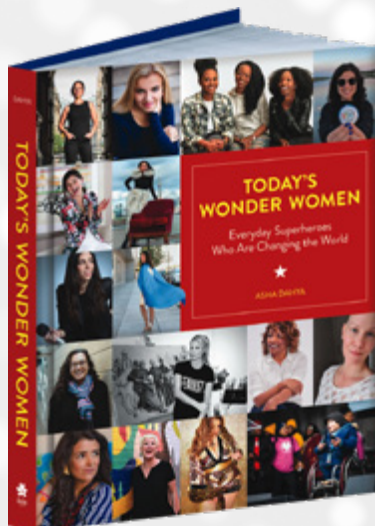
Tour guide, historian and activist, Beatrice Hardy, presented the Anthropology of Race. Students went on a virtual tour of Chicago to learn about the “great migration” of African-Americans to the city. The final class looked at the difference between beliefs and knowledge and how beliefs are shaped by opinion.



## Girls 4 Science In The News



*G4S participant Symone Edwards presents her business plan and budget for her Foldable Strap and Carrier business proposal during the Winter 2020 Mathematics session.*

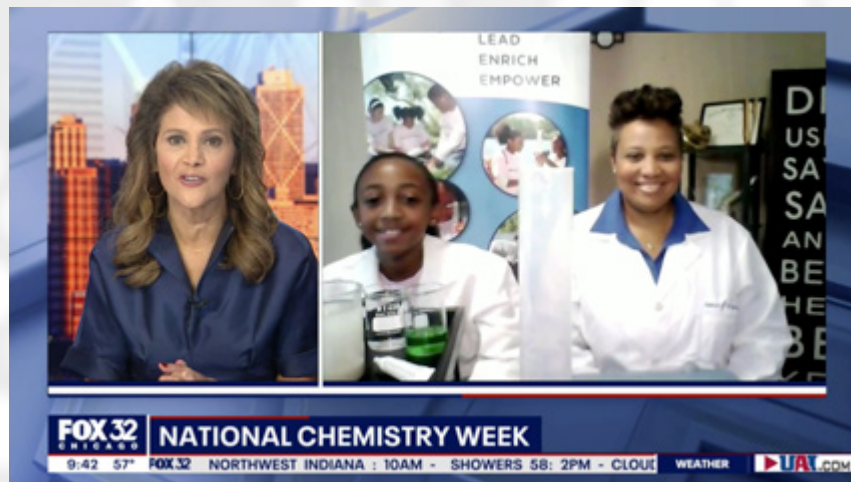


Girls 4 Science Founder & Executive Director Jackie Lomax is featured in *Today's Wonder Women: Everyday Superheroes Who Are Changing the World*, by Asha Dahya, which was published in March, 2020. This collection of stories, essays, and interviews celebrates a diverse set of inspiring women across the globe who are leveling the playing field for future generations of women and girls.



*Elephant Toothpaste*

G4S was featured on the Fox32 Good Day Chicago morning show during National Chemistry Week. Jackie Lomax, G4S Executive Director and her daughter Logan talked about what Girls 4 Science is doing to get young girls engaged and active in the fields of STEM. Logan conducted an on-air science demonstration of how to make Elephant Toothpaste.





*“Going on several field trips, I discovered a passion for science. Entering college next year I want to major in Forensic Science. Thank you G4S!”*

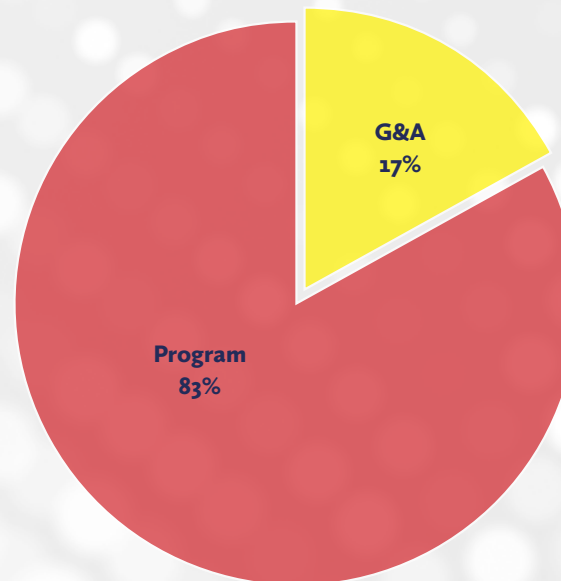
– Kierson Dee Rickmon

*“My name is Robert Rickmon, Kierson Rickmon’s father. Kierson has been with Girls4Science since 2014. Kierson attends Lane Technical High School and will graduate in 2022. G4S has inspired her to major in Forensic Science.*

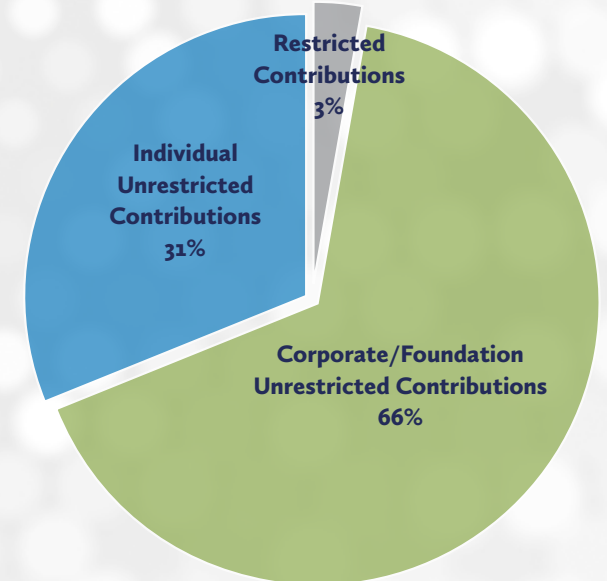
– Robert Rickmon

## 2020 FINANCIAL SUMMARY

**Expenses**  
**\$78,422**



**Revenue**  
**\$101,599**





*G4S students on field trip to ArtReach Chicago learning math concepts through the practice of glassblowing.*

## WHY STEM?

In an ever-changing, increasingly complex world, it is more important than ever that youth are prepared to bring knowledge and skills to solve problems, make sense of information, and know how to gather and evaluate evidence to make decisions. These are the kinds of skills that students develop in science, technology, engineering, and math—disciplines collectively known as STEM. Science, technology, engineering, and mathematics have always been the foundation for inspirational discovery and transformative technological innovation.

STEM education helps students gain the skills required to succeed in today's challenging world, including the ability to think critically and solve complex problems along with soft skills such as cooperation and adaptability. STEM education creates critical thinkers, increases science literacy, and enables the next generation of innovators.

STEM literacy and STEM skills are increasingly important for all people to succeed in the workplace and in their everyday lives. To simply function as an informed consumer and citizen in a world of increasingly sophisticated technology requires the ability to use digital devices and STEM skills such as evidence-based reasoning.

STEM employment in the U.S. continues to grow at a faster pace than employment in other occupations, and STEM workers command higher wages than their non-STEM counterparts. STEM degree holders enjoy higher earnings, regardless of whether they work in STEM or non-STEM occupations.<sup>4</sup>



*G4S middle school participant Logan Lomax uses a leaf to create a fossil image.*

## WHY GIRLS?

Women comprise 50% of the US population and more than 50% of the college-bound population, yet they remain underrepresented in the STEM fields, especially women of color. While nearly as many women hold undergraduate degrees as men, they make up only about 30% of all STEM degree holders.

The gender gap in STEM begins with education. In childhood and adolescence, girls' interest in STEM is dampened by stereotypes and cultural norms that consistently portray ideal scientists, engineers and technology innovators as male. Girls participate in high level math and science courses at similar rates as males as they move into high school, and then a gender gap in participation starts as girls take fewer of the more advanced STEM courses as they get closer to college. This gap widens the longer girls are in school and larger gaps exist between students of different racial and ethnic backgrounds or family income.

There are several measures can help build STEM identity and interest among girls -- especially girls of color -- including extra-curricular and single-sex programs, Black and female role models and project-based instruction. Informal STEM experiences are useful to girls, as they provide unique opportunities to engage and connect with science in an inquiry-based manner without the academic requirements of memorization and standardized testing. Such programs can have profound impacts on girls at the time when they are involved, and these impacts relate directly to their confidence, attitudes, and future plans.



*Learning the science behind blown glass on a field trip to ArtReach Chicago.*

## WHY GIRLS 4 SCIENCE?

G4S targets girls age 10-18 years, primarily from low- and moderate-income communities. The Saturday STEM Academy's innovative program model is based on evidence that science exposure and increased science literacy will equip young girls with the knowledge and confidence needed to pursue study in the sciences and careers in STEM.

Early exposure to STEM fields, specifically in an all-girls environment with hands-on, problem-based learning, can combat the negative stereotypes and attitudes that contribute to the under-representation of women in many STEM fields. This is especially true for girls of color. Increasing the opportunities for science exposure for girls will affect change in multiple areas including self-esteem, post-secondary study and increased employment opportunities.

The Girls 4 Science Saturday STEM Academy employs strategies that have proven successful in increasing girls' interest in, positive attitudes toward, and identification with STEM. The evidence-based aspects of the program include:

- Single-sex program.
- Science exploration through project-based instruction with emphasis on creativity, problem-solving, hands-on, small group experiential learning and teamwork, which fosters a growth mindset, self-confidence and collegiality.
- Field trips to corporations, organizations, cultural institutions and other sites that provide opportunities to link the concepts learned in the STEM curriculum to real-world applications, and expose participants to a range of STEM industries, career options and working STEM professionals, especially women, to redefine how they see STEM.
- Mentorships to introduce participants to female role models -- especially women of color -- who are professionals in STEM fields, to help girls see potential futures and develop resilient STEM identities.



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