

GA Sciences Education Foundation Education Outreach Overview

Improving STEM (Science Technology Engineering Mathematics) Education for K-12 Students in San Diego and Beyond

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Outline

- **Brief history**
 - **GA education outreach**
 - **General Atomics Sciences Education Foundation (GASEF)**
- **GASSSS (GA Scientists/Engineers Supporting Science/Engineering for Students)**
- **Chapter One reading tutoring program**
- **Education resources**
- **Supporting regional non-profits**
- **Connecting GA STEM expertise to the K-12 STEM education community**

General Atomics Education Outreach - A Brief History (www.sci-ed-ga.org/about)

- Education outreach initiated by Anne Blue and Pat Winter in 1992
 - Development of educational materials and teacher workshops
- Non-profit GA Sciences Education Foundation (GASEF) started in 1995
 - Support GA K-12 STEM outreach efforts
 - Fund K-12 STEM programs of regional non-profits
- GASSSS program started in 2010
 - Catalyze employee outreach
- Chapter One (formerly TutorMate) program brought to GA in 2017
 - Nationwide non-profit program that connects companies to first graders in need of reading assistance
- Extensive Fusion Education Outreach Program
 - <http://fusioned.gat.com>

The General Atomics Sciences Education Foundation

Actively involved in improving K-12 science and engineering education since 1992

News



The General Atomics Sciences Education Foundation

The General Atomics Sciences Education Foundation has been actively involved in improving K-12 science and engineering education since 1992 by providing outreach support to GA employees, funding STEM non-profit organizations, and developing educational resources.

The Foundation supports employees to engage in education outreach via the GASSSS program, where they can receive a charge number for up to 9 hours as well as reimbursement for up to \$500 in STEM purchases per calendar year. For additional information, see the GASSSS Details

Registration is still open for Chapter One

Registration is still open for the Chapter One tutoring program to help at-risk first grade students learn to read. Registration will close on 12/31/2024. [Register Here](#)

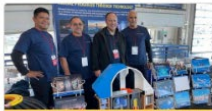
Outreach Materials

The Foundation has created a resource room to support employees involved in education outreach and the GASSSS program. Please visit A20/2008 to see many different types of educational resources available to employees or visit the [Outreach Materials](#) site.

GASEF Funding Awards November 2024

On November 5, 2024, the General Atomics Sciences Education Foundation announced that it has provided \$53,500 in funding for 12 STEM non-profits and programs. Click [here](#), for more information about these recent awards and [here](#) for an archive of previous awards.

The General Atomics Sciences Education Foundation received the [San Diego Section of American Institute of Aeronautics and Astronautics Outstanding Corporate Contribution to the Community Award for 2024](#).



GASSSS

Employees can contribute their science and engineering skills by participating in the GASSSS (GA Scientists/Engineers Supporting Science/Engineering for Students) program. Employees are reimbursed for purchases.

[Learn More](#)



Chapter One

Employees can volunteer as on-line reading tutors to at-risk 1st graders via the Chapter One program. The tutoring is done from your desk for 30 minutes per week, and includes the reading of science stories.

[Learn More](#)



Education Resources

GA scientists have developed education modules, education presentations, hands-on materials, posters, and have published articles.

[Learn More](#)



Funding Guidelines for Non-Profits

The Foundation provides a limited number of grants, mostly to regional science related non-profits. Guidelines for requesting support are provided here.

[Learn More](#)

Welcome to Education Outreach:

[Click Here To Start!](#)

[GASSSS Program](http://www.sci-ed-ga.org/gassss): www.sci-ed-ga.org/gassss

- Open to all GA employees
- GASSSS has 2 components
 - Employee must actively perform K-12 STEM activity
 - GASEF will provide
 - Up to \$500 yearly reimbursement for STEM purchases
 - Charge number for up to 9 hours yearly
- GA employee activity determined by the employee interacting with the teacher/students
 - Assist teacher in science activity
 - Perform demonstration
 - Talk about career
- Also hours support for college/university career mentoring/presentations
- On-line application form on GASSSS site

GASSSS

WELCOME TO EDUCATION
OUTREACH

GA PARTICIPANTS IN GASSSS
PROGRAM

VIDEOS, PHOTOS, WEBSITES
ABOUT GA

GASSSS PRESENTATIONS

EDUCATIONAL MATERIALS AND
EQUIPMENT FOR OUTREACH
USE

CURRICULUM RESOURCES
FOR CLASSROOM ACTIVITIES

SCIENCE EDUCATION
OUTREACH OPPORTUNITIES

EDUCATION OUTREACH
GUIDES

GASSSS

GA Scientists/Engineers Supporting Science/Engineering for Students (GASSSS) Program

Welcome to Education Outreach:

[Click Here To Start!](#)

GA employees can contribute their expertise and enthusiasm for science and engineering by participating in the GASSSS K-12 education outreach program. The Foundation will reimburse the employee for associated material purchases of up to \$500 and provide a charge number for up to 9 hours per calendar year. The GASSSS program will also provide a charge number of up to 9 hours per calendar year for career mentoring of college and university students. For additional information, see the GASSSS Details and Application Form below.

For new GASSSS applications please always use the most recent GASSSS application form, which is shown below.

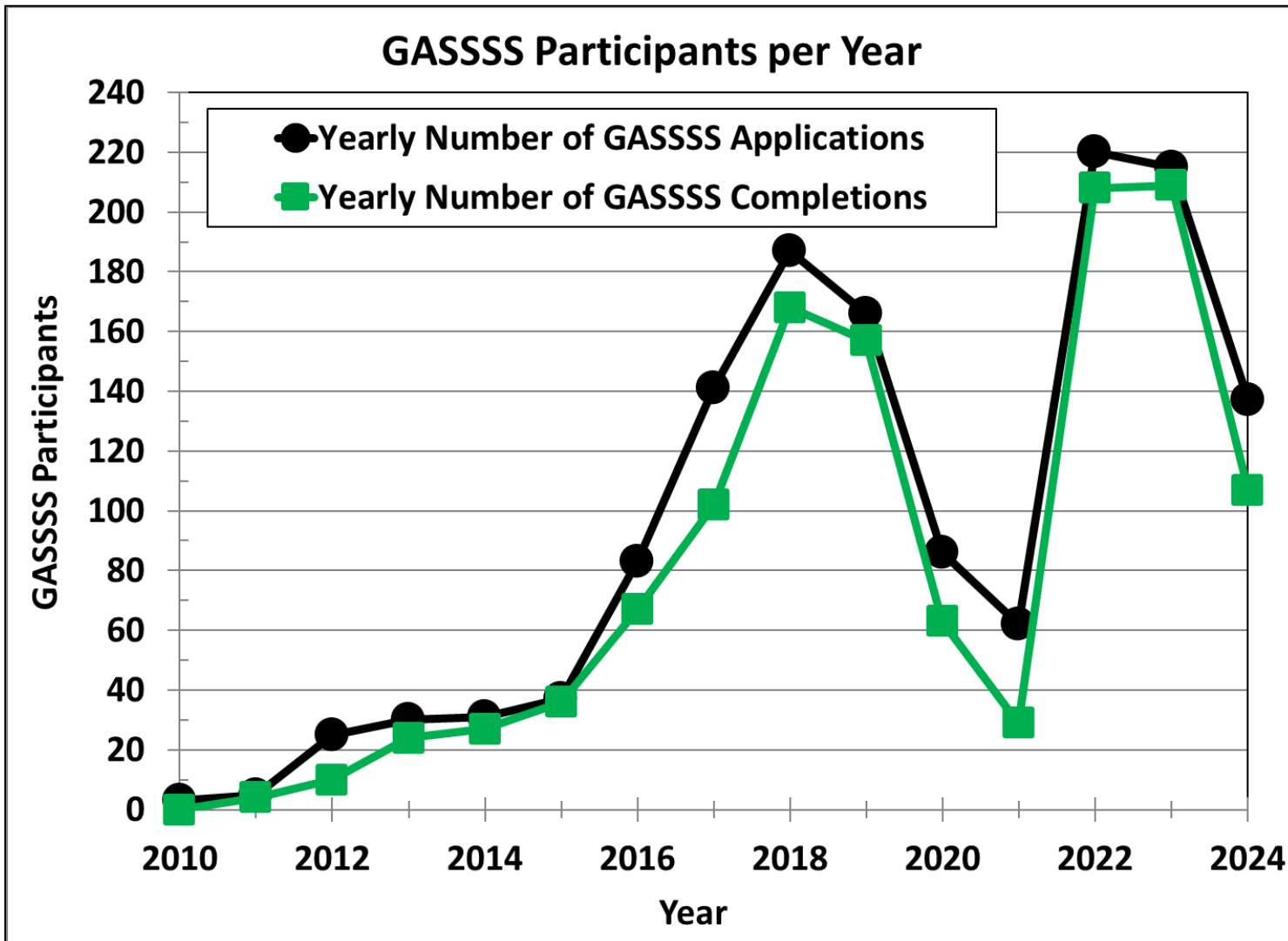
GASSSS

- [***GASSSS Application Form \(Online Form\)](#)
- [Media Consent Form for use of photos](#)
- [GASSSS Matchmaker – Matches GA Employees and Educators \(PDF\)](#)
- [GASEF–GASSSS Introduction \(PDF\)](#)
- [GASSSS-Chapter One poster](#)
- [Yearly GASSSS Participation and Funding \(PDF\)](#)

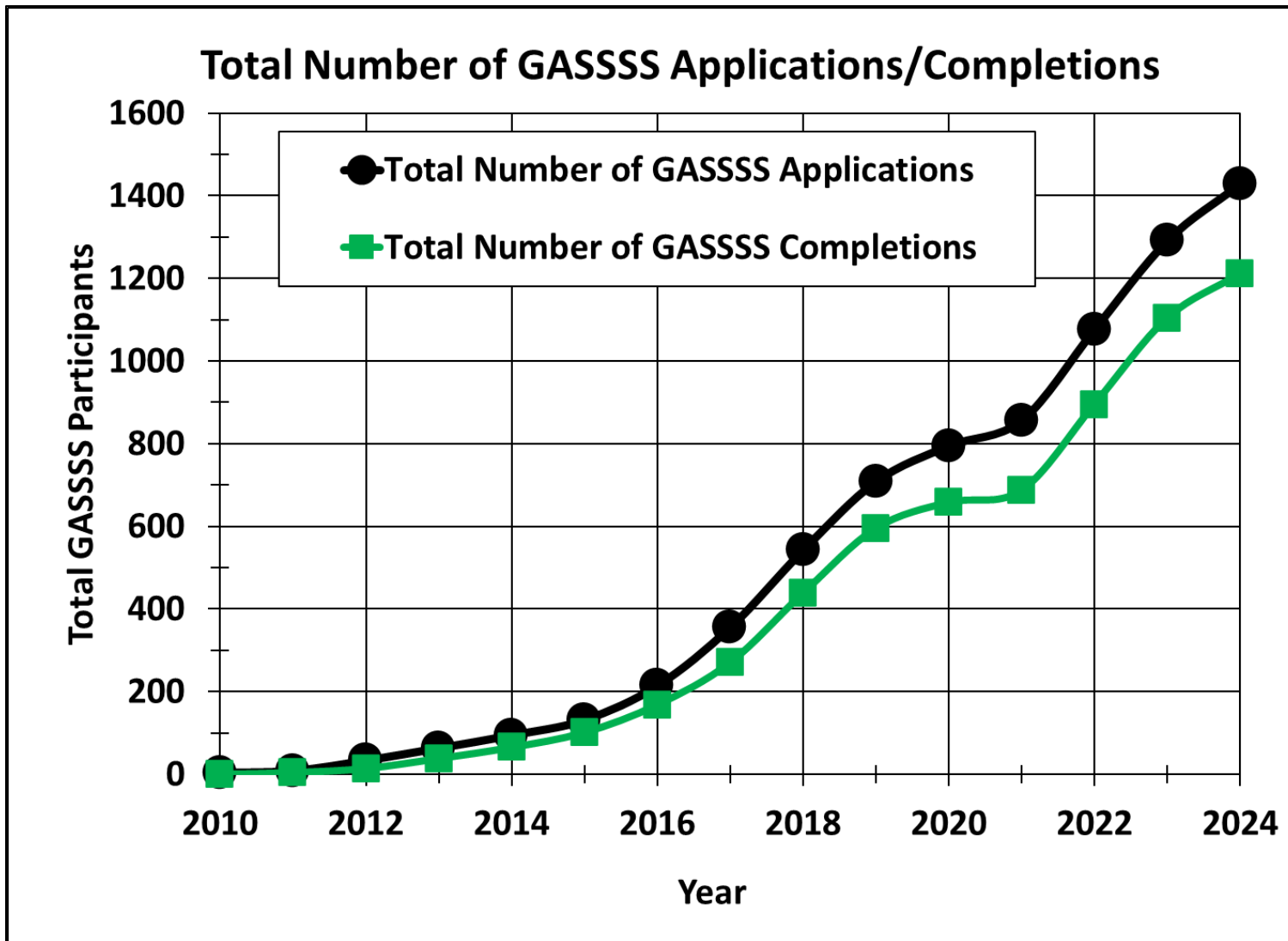
GASSSS Addresses STEM Needs

- **Expose students to scientists and engineers**
 - **Attract students into STEM careers**
- **Create community of interaction between teachers and scientists/engineers**
- **Provide real life examples**
 - **Demonstrate scientific and engineering practices**
- **Improve content knowledge of teachers**
- **Provide a mechanism for GA employees to help their communities**
- **Well-received and supported by GA&A scientists and engineers**

Yearly GASSSS Participants through 12/1/2024



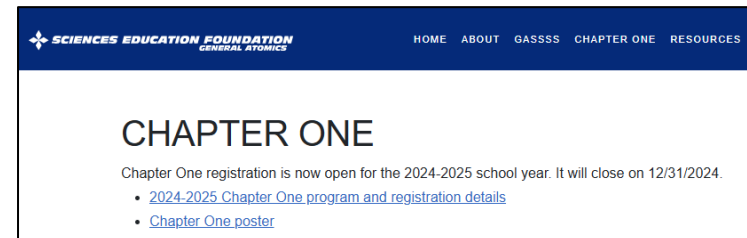
Cumulative GASSSS Participants through 12/1/2024



Chapter One: <https://www.sci-ed-ga.org/chapter-one/> Help a student learn to read by end of first grade

- GASEF partnership with Chapter One, leading on-line non-profit tutoring program
- Focus: fight long-term poverty by improving literacy of at-risk students (first grade); includes STEM stories
- 2017-2025: 157 employees participated
- 2024-2025: 20 employees participating

1. Registration details are announced on internal home pages in ~October
2. Complete online background check
3. Complete training session
4. You are then assigned a student to tutor
5. Spend 30 minutes weekly reading with your student from November – May
6. Flexible scheduling, can be changed on a weekly basis to meet your needs



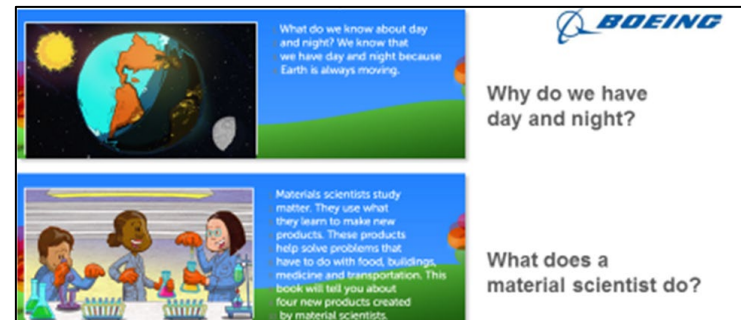
SCIENCE EDUCATION FOUNDATION
GENERAL ATOMICS

HOME ABOUT GASSSS CHAPTER ONE RESOURCES

CHAPTER ONE

Chapter One registration is now open for the 2024-2025 school year. It will close on 12/31/2024.

- [2024-2025 Chapter One program and registration details](#)
- [Chapter One poster](#)



BOEING

What do we know about day and night? We know that we have day and night because Earth is always moving.

Why do we have day and night?

Materials scientists study matter. They use what they learn to make new products. These products help solve problems that have to do with food, buildings, medicine and transportation. This book will tell you about four new products created by material scientists.

What does a material scientist do?

The Line of Resistance

Using a Graphite Pencil to Explore the Electrical Properties of Materials and Circuits

Institute for Chemical Education

RESOURCES

WOOLF PRESENTATIONS

EDUCATION MODULES

SCIENCE EDUCATION POSTERS

FUSION EDUCATION

EDUCATION RESOURCES

Here you will find many resources developed by GA scientists and engineers for science educators, students, and science enthusiasts including:

- Science instruction modules on color, electrical properties of materials, safe driving, among many others
- A wide variety of presentations on these topics as well as on STEM education
- Published articles on STEM topics
- Downloadable posters on color mixing, the interaction of light with matter, and the reasons for the seasons.

Additional education resources are presentations developed by GA scientists and engineers who have participated in the GASSSS program. And a wide range of educational materials related to Fusion Energy are available at the GA Fusion education web site.

MOLECULES AND SMALL PARTICLES SCATTER LIGHT

SCATTERING

All molecules and particles scatter light. The wavelengths of visible light are roughly between 400 nm and 700 nm. The size of molecules and particles is roughly the same size as the wavelength of visible light. This is why they scatter light. The shorter the wavelength, the more light is scattered. This is why the sky is blue.

REFRACTION

When sunlight passes through the atmosphere, the shorter wavelength (violet) light is refracted more than the longer wavelength (red) light. This is why the sun appears red at sunset.

ATMOSPHERE

Scattered light passes through a longer path in atmosphere or water than a direct path. This is why the sun appears red at sunset. The shorter the wavelength, the more it is scattered.

Same molecule and characteristics

- Light waves of different colors have different wavelengths and frequencies.
- The color of an object can be defined by the wavelengths of light that it reflects.
- Light of a single wavelength (monochromatic) is a definite frequency color. Most natural colors are a mixture of different light frequencies.
- The color of an object and the transparency of the object depend on the wavelengths of light that it reflects and transmits.

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LIGHT MATTERS

LIGHT EMISSION

Temperature and color are related. As temperature increases, the color of an object changes from red to white. This is why a candle flame is yellow and a star is white.

HOW COLOR CHANGES WITH INCREASING TEMPERATURE

Increasing temperature of an object causes it to emit light of shorter wavelengths. This is why a candle flame is yellow and a star is white.

Reference

1. "Light in a Glass of Beer," Gray, Robert, John Wiley & Sons, 1987.
2. "The Color of the Sky," Gray, Robert, John Wiley & Sons, 1987.
3. "Color of the Sky," Gray, Robert and A. S. Fung, The Physics Teacher, May 1988, p. 207.
4. "Color of the Sky," Gray, Robert, The Physics Teacher, April 1988, p. 207.
5. "Light in a Glass of Beer," Gray, Robert, John Wiley & Sons, 1987.

ABSORPTION

Water in a glass does not appear colored because the absorption of light is the same for all colors. This is why water appears colorless. The absorption of light by water is the same for all colors.

Reference

1. "Light in a Glass of Beer," Gray, Robert, John Wiley & Sons, 1987.
2. "The Color of the Sky," Gray, Robert, John Wiley & Sons, 1987.
3. "Color of the Sky," Gray, Robert and A. S. Fung, The Physics Teacher, May 1988, p. 207.
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5. "Light in a Glass of Beer," Gray, Robert, John Wiley & Sons, 1987.

BULK MATTER REFLECTS, TRANSMITS, AND ABSORBS LIGHT

REFLECTION

The amount of light reflected by an object depends on the color of the object. This is why a white object reflects more light than a black object.

TRANSMISSION

Light passes through a transparent object. This is why we can see through a window.

ABSORPTION

Light is absorbed by an object. This is why a black object gets hot in the sun.

Reference

1. "Light in a Glass of Beer," Gray, Robert, John Wiley & Sons, 1987.
2. "The Color of the Sky," Gray, Robert, John Wiley & Sons, 1987.
3. "Color of the Sky," Gray, Robert and A. S. Fung, The Physics Teacher, May 1988, p. 207.
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Funding Regional K-12 STEM Non-Profits

- **Since 1999, GASEF has provided over \$1,130,000 to over 80 regional STEM non-profits, most in the San Diego area**
 - Elementary Institute of Science, Expanding Your Horizons, San Diego Children's Discovery Museum, Greater San Diego Science and Engineering Fair, San Diego Natural History Museum, Science Spark, Boys and Girls Clubs of San Diego,...
 - <https://www.sci-ed-ga.org/about/>
- **Funding Guidelines on Foundation web site**
 - <https://www.sci-ed-ga.org/funding>
- **List of awards since 2018 at**
 - <https://www.sci-ed-ga.org/funding-archive/>
 - Awards are made every 2-5 months
- **Funding generally \$1,000 – \$10,000**

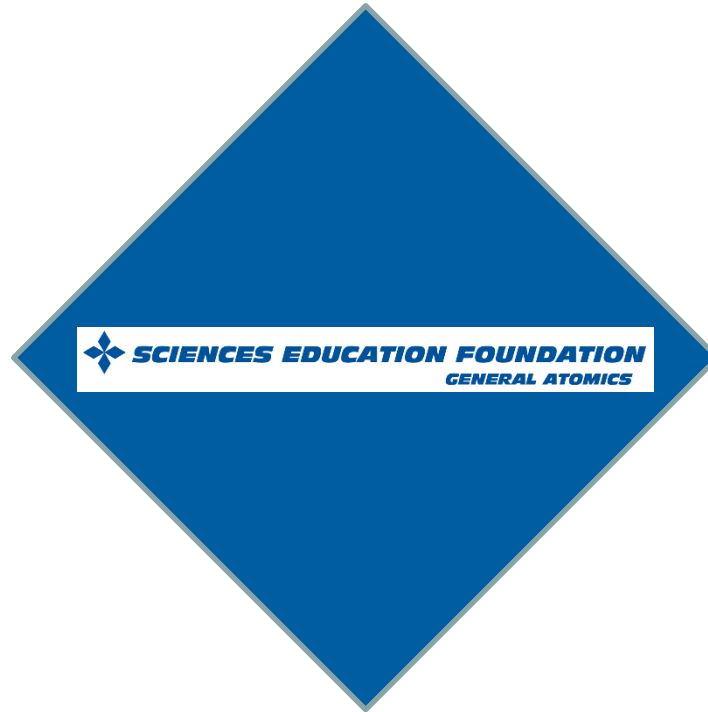
Connecting GA STEM expertise to the K-12 STEM education community

- New Teams GA&A Education Outreach site lists many current opportunities: [GA&A Education Outreach | General | Microsoft Teams](#)
 - Summary calendar of events: [GA&A Outreach Calendar.xlsx](#)
- GA-ASI Calendar on GA-ASI home page
- Specific requests that are informational are placed on GASSSS Matchmaker site
 - http://www.sci-ed-ga.org/Websites/gasef/images/pdf/GASSSS_Matchmaker.pdf
 - GA employees who want to make their interests and expertise known can also post on this site
- Other major outreach opportunities are placed on GASSSS site:
 - <https://www.sci-ed-ga.org/science-education-outreach-opportunities>

Summary

GASSSS

Chapter One



**Funding K-12
STEM Non-Profits**

**Connecting GA to
the K-12 STEM
Community**