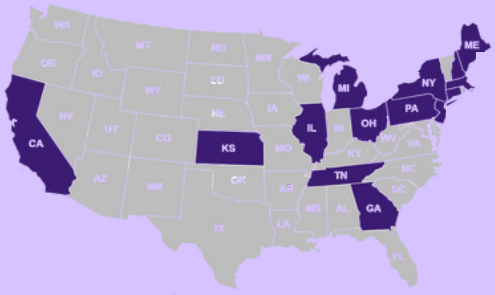
BioBuilderClub

Impact Report
2024-2025

Empowering the next generation to address global challenges with bioscience.

The BioBuilderClub engages high school students around the world who combine engineering principles and biotechnology techniques to design, build, and test their own project ideas using synthetic biology. Within biodesign teams, budding scientists worked at their schools from October to March to develop meaningful projects that address real-world challenges.

- 357 Students
- 190 Hours of Mentorship
- 57 Teams
- 55 Lightning Talks



14 US States and 3 Countries

Teams tackled diverse issues with local and global impact through innovative bioengineering:

- Reducing methane emissions with flavonoid-producing bacteria in livestock feed
- Removing heavy metals from drinking water through biofiltration
- Degrading microplastics using bacterial enzymes
- Biosynthesizing chemotherapy drugs to reduce environmental impact of harvesting yew trees
- Producing biofuel from food waste while promoting a circular bioeconomy
- Developing a bioengineered composite silk-based bone graft with fibroin-producing *E. coli*

ABSTRACT BOOK

Read the virtual Abstract Book and learn more about each team's project.

POSTER GALLERY

Scan this link to see the posters in our Google Photos gallery.

DATA SNAPSHOT

Demographics	• 60% female • 52% first generation raised in the US
Interest in STEM education and careers	• 88% interested in advanced science coursework • 88% interested in life science careers • 70% increased importance of biotech careers
Engagement with scientific community	• 35 teams submitted for publication in BioTreks • 3 teams presented their work in a poster session at the MIT Museum for their DNA Day celebration

The BioBuilderClub empowers students to envision themselves as scientists, engineers, and changemakers.

A 2025 study by Eastern Tennessee State University found that by the end of the BioBuilderClub season, students reported increased engagement, competency, and content knowledge.

- 83% felt **confident in understanding scientific information**
- 75% could **support their scientific opinions** with evidence
- 60% felt **ready to invent solutions** to complex problems

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BIOBUILDERCLUB STUDENT FEEDBACK

"I had an amazing experience with BioBuilderClub and it taught me so many things about how biology is being advanced today."

"BioBuilder was a fun, educational, and interesting experience. "

"It was a really great experience, I think it helped me learn many valuable skills, like reading scientific papers and researching about topics I wouldn't have explored."

"I love researching and presenting. This was a great opportunity to learn and meet similar minded people"

"I loved the experience and the mentors gave me an idea of what my potential field could look like."

"It was great being a part of a community of dedicated individuals."

SEASON HIGHLIGHTS

K2 Scientific generously donated 4 cold storage units to schools

- Haverhill High School
- South Cobb High School
- Upper Merion Area High School
- Hancock County Technical Center

Luminary Lecture given by Dr. Alejandro Murad, Head of Discovery Biology, US at UCB

Dr. Murad shared insight into an educational and career journey in biotechnology. The event gave students the opportunity to ask questions directly to an industry leader.

Final Assembly at the Ragon Institute on 3.13.25

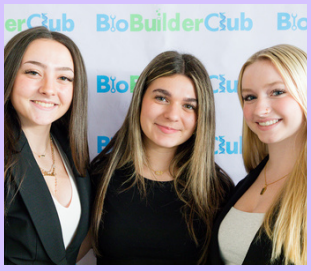
This year's Final Assembly was held at the Ragon Institute with over 200 in-person and virtual attendees. Students were welcomed by Ragon Institute Director Dr. Bruce Walker before giving one-minute Lightning Talks followed by three poster sessions.









BioBuilder gratefully acknowledges our partners for their support of the BioBuilderClub. Together we're growing the future through life science education.

Ragon Institute
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