



BioBuilder
Educational Foundation

EMERGING TALENT DISTINGUISHED ALUMNI

10 MINUTE READ





Shaping the Future of Biotechnology, One Student at a Time



Since 2011, BioBuilder has supported the development of a new generation of bioengineers and researchers who are equipped to **tackle complex problems** and contribute to the ongoing **advancement of biotechnology**.

BioBuilder Provides Students with the Skills and Knowledge to Thrive

In these pages, you will find the inspiring stories of some BioBuilder alumni.

These students have translated their BioBuilder experiences into remarkable accomplishments. Some are advancing scientific research by contributing to biotech startups. Others are excelling in their academic pursuits.

They are all building a better world by pursuing college and careers in science.

And all point to BioBuilder as a pivotal moment in their journey. Our programs provided them with the technical skills and content knowledge to thrive in a future shaped by biotechnology.

It's a joy to share these successes with you.



BioBuilderClub Alumni

The BioBuilderClub engages high school teams around the world who combine engineering principles and scientific know-how to design, built, and test their own project ideas using synthetic biology.

Teams work at their schools from October to March to develop meaningful project that address real-world challenges in areas ranging from agriculture and civil engineering to the environment and medicine.

To date, the BioBuilderClub has engaged:

- **2224 Students on 256 Teams**
- **From 84 schools, 25 states, 6 countries**
- **Published 77 peer reviewed articles about their work**
- **175 mentors paired with teams to mentor and co-develop project ideas**

2011 BioBuilderClub

Tyngsborough High School (Tyngsborough, MA)

● Madison Vigneault

- 2018 graduate of **Saint Anselm College**, focused on Biochemistry
- Principal Associate Scientist in Bioanalytical Assays at **Affinivax**



● Michael Sheets

- 2017 graduate of **Franklin W. Olin College of Engineering**
- Received his PhD in Biomedical Engineering from **Boston University** in 2023
- Scientist at **Sunflower Therapeutics**, working in Strain Engineering and Fermentation with a goal to **make protein medicines and vaccines more affordable and accessible**



BioBuilder...affected the course of my career, education, and overall life. I could not imagine pursuing a career in any other field. BioBuilder was foundational in this for me..."

- Michael Sheets

2019 BioBuilderClub

Westborough High School (Westborough, MA)

● Vignesh Vanchinathan

- Currently studying Biomedical Engineering and Applied Math at **Johns Hopkins University**
- Will graduate in 2025
- Future aspirations: pursue a PhD then develop a research start-up company



“Without exaggeration, BioBuilder was a life-changing experience. It gave me a glimpse into the world of synthetic biology and its community, which launched me into the field of broader biomedical research.

I wouldn't be where I am today without that formative high school experience, and I would highly recommend students participate, at the least for exposure to awesome science!”

- Vignesh Vanchinathan

Summer Research Alums

BioBuilder offers an intensive Summer Research Program to provide high school students an opportunity to engage in independent, hands-on, synthetic biology research. For two weeks each summer, students immerse themselves in biotechnology and molecular biology. The program emphasizes project based learning, college and career development, and professional networking.

Research projects have ranged from the design of a genetic circuit to engineering microorganisms to meet health or environmental challenges. Students from BioBuilder's Summer Research Program most often pursue science and engineering in college.

Since 2017 the program has served:

- **47 students from U.S., China, and Canada**
- **Programs took place at MIT, LabCentral, Ginkgo Bioworks and online**
- **Projects include:**
 - **A genetic circuit so bacteria can absorb carbon dioxide and produce useful organic materials.**
 - **A synthetic detector for a dangerous amounts of cobalt in drinking water.**
 - **An artificial pancreas to measure blood glucose in diabetics.**

Tian Shi

Summer Research Program 2017

Tian attended BioBuilder's Summer Research Program in 2017. Her project that year explored synthetic organisms designed to understand internal neurochemistry, which fueled her interest in work at the intersection of health sciences and society. As a student at **Georgetown University**, she studied both biology and cognitive sciences, and founded a company based on the project she started at BioBuilder. Today she is an analyst at **Industry Ventures**, a venture capital and private equity firm that supports founders, general partners, and institutions.

“Thinking back at that BioBuilder experience, it was the first time my entrepreneurship spirit was awakened.”

- Tian Shi



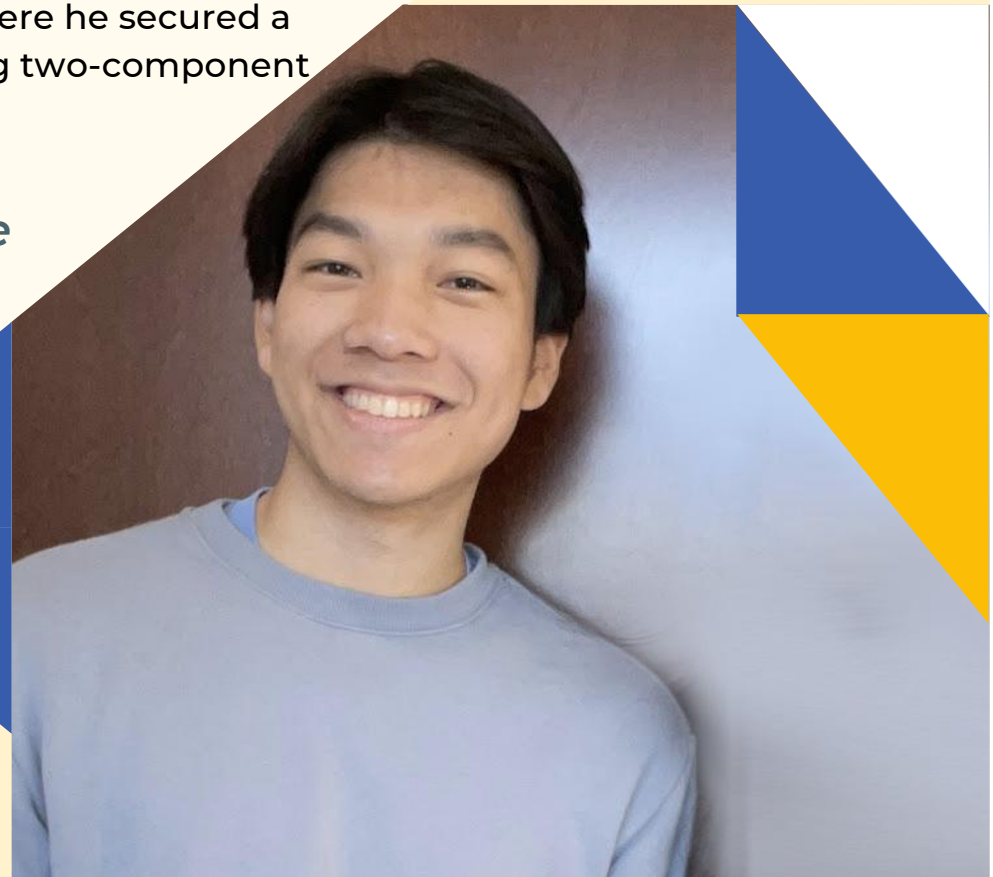
Jacob Lei

Summer Research Program 2020

Jacob was a rising high school junior when he participated in BioBuilder's Summer Research Program. Despite the challenges of online learning, including a 5AM start time for the West Coast students, the program crystalized Jacob's interest in synthetic biology and bioengineering, and influenced his choice of major and university. Jacob is currently a bioengineering student at **Rice University**, where he secured a research position in the **Tabor Lab** engineering two-component bacterial systems.

“BioBuilder was the first experience where I could take all the concepts I had learned and apply them to a project where I could define the problem and also what aspect I wanted to solve.”

- Jacob Lei



Apprenticeship Alums

The BioBuilder High School Apprenticeship Challenge is an eight-week specialized program that prepares high school students in Massachusetts for paid summer internships in the life sciences. Interested students must submit an application reflecting their aspirations and dedication, as well as confirming their attendance at an under-resourced school or as a first-in-their-family to attend school in the U.S.

During the eight-week program Apprentices work in biodesign teams and at the lab bench. They learn fundamentals of life science engineering and industry relevant lab skills and math. Their professional skills are strengthened through their participation in a public poster session, in resume writing workshops, and in mock interviews.

Since the founding of the program in 2016:

- **We have accepted 173 students from 39 schools**
- **Each year five or more student research projects are presented to scientists at professional network events**
- **93% completed our training program**
- **86 students became paid summer interns the summer after completing the Apprenticeship**

2016 High School Apprenticeship Challenge

● Nancy Otaluka

Melrose High School

- Internship at **Gen9** in Cambridge, MA
- Graduated from **University of Massachusetts, Dartmouth** in 2021, with a major in Psychology and a minor in Biochemistry (pre-med)
- Clinical Research Assistant at **Beth Israel Deaconess Medical Center** in the Radiology Department
- Served as a teaching assistant for BioBuilder programming
- Currently pursuing a Masters Degree in Biomedical Sciences at **Tufts University School of Medicine**, with plans to attend medical school after receiving her degree



“This program gave me the space to grow and be comfortable running experiments and interacting with those already working in the industry, as well as preparing me to step into labs in college.”

- Nancy Otaluka

2016 High School Apprenticeship Challenge

● Angela Girodier

Brockton High School

- Internship at **MassBiologics** turned into part time contractor position with **Merck** doing molecular interactions research during her college years
- Graduated from **Emmanuel College** in 2022 with a BS in Biology and a BA in Secondary Education
- She is currently a **science educator** and a cross country/track & field coach at **Brockton High School**



● Tara Peterson

Melrose High School

- Internship at **LabCentral** gave her additional hands-on experience, made her familiar with biotech startup culture, and provided valuable networking opportunities.
- Graduated from **Temple University** in 2019 with a Neuroscience major and a minor in French
- She is currently a Research Scientist at **Novartis Institute for Biomedical Research**



"I had an excellent experience with BioBuilder and it undoubtedly had a large impact on my career trajectory. BioBuilder is what got me interested in the field of biotech that I otherwise would not have gotten exposed to at such a young age. It gave me a lot more confidence going into college in the fall. I am so glad I was a part of this program."

- Tara Peterson

2017 High School Apprenticeship Challenge

Hosted at Worcester Technical High School (Worcester, MA)

● Emmanuel Sekyi

Doherty High School

- Graduated from the **University of Massachusetts, Lowell** in 2023 with a Bachelor of Science Degree in Biomedical Engineering, with a focus on medical device design
- Was a Biomechanics Intern at **Worcester Polytechnic Institute**
- Now a Research and Development Engineer at **Boston Scientific**, where he is part of team developing a new device designed to assist the removal of blood clots from the human body



"BioBuilder was my first real exposure to what synthetic biology was. At the time, my high school didn't have classes or workshops for this topic, so I'm grateful I had this opportunity open for me!"

- Emmanuel Sekyi

● Sophia Puch

Doherty High School

- Graduated from **Worcester Polytechnic Institute** in 2022 with a degree in Biomedical Engineering
- Currently a Quality Engineer at **Boston Scientific**



2017 High School Apprenticeship Challenge

Hosted by the Department of Biological Engineering, MIT

● Jason Gashi

Boston Latin Academy

- Internship at the **Massachusetts General Hospital Department of Neurology** lasted three summers
- Earned a Bachelor of Science Degree in Biomedical Engineering from **Boston University**
- Currently pursuing a **Masters Degree in Biomedical Engineering** from Boston University and hopes to work in tissue engineering and biomaterial drug delivery



- Jason Gashi

● Susana Donkor

Boston Latin Academy

- Internship at **Massbiologics**
- Graduated from **Simmons University** with a degree in Biochemistry
- Presently at **Aurion Biotech** as an Associate Scientist, formerly at **RootPath** as a Research Associate



"...after completing the program, and participating in the internship I completed afterwards, I knew for certain I wanted to combine biology and engineering! And now here I am pursuing a Masters of Science in Biomedical Engineering!"

2018 High School Apprenticeship Challenge

● Christian Laverde

East Boston High School

- Earned a Bachelor's in Computer Science and continuing his education at **Boston University** to pursue a **Masters in Bioinformatics**
- Also working as a technology consultant for **RSM US LLP**

● Melissa Aguirre Pinillos

Melrose High School

- Internship at **BioBuilder**
- Graduated from **Wentworth Institute of Technology** with a major in Biomedical Engineering and a minor in Chemistry
- Currently pursuing her MBA at **Suffolk University** and hopes to become a Product Manager in biotech

● Pamela Shehu

West Roxbury Academy

- Internship at **Codiak BioSciences**
- Bachelor's Degree in Biochemistry from **Northeastern University**
- Currently a pre-doctoral student at **Boston University School of Dental Medicine**
- A member of the general Board of the **American Dental Education Association**



"The BioBuilder experience was extremely valuable to me because it was instrumental in helping me to figure out what I wanted to do. I started with absolutely no experience or knowledge about research and I left the program with an internship opportunity, which led me to other research positions and helped to shape me as a scientist."

- Pamela Shehu

2019 High School Apprenticeship Challenge

● Kevin Fuentes

East Boston High School

- Internship at **BioBuilder**
- Attending **Tufts University**, studying Chemical Engineering and Biochemistry
- Also working at **Takeda** as a Gene Therapy Quality Control Intern



● Romaisa Shahid

West Roxbury Academy

- Internship at **Eikonizo Therapeutics at LabCentral**
- Graduated from **University of Massachusetts, Boston** with a major in Biology and a minor in Cognitive Science minor
- Currently a Clinical Research Coordinator at **Massachusetts General Hospital**



"The BioBuilder High School Apprenticeship Challenge was the pivotal moment that kickstarted my career in research and industry. It gave me the basic skills I needed, introduced me to a supportive community, and opened the door to my first internship ever. It was the solid foundation upon which I built my successful journey in the world of science."

- Romaisa Shahid

2019 High School Apprenticeship Challenge

● Oscar Jimenez

Cambridge Rindge and Latin School

- The High School Apprenticeship Challenge led Oscar to an internship at **Indigo Ag**
- From there, Oscar credits BioBuilder for connecting him with his internship with the RISE program at the **Ragon Institute of Massachusetts General Hospital, MIT and Harvard**
- Currently, Oscar is majoring in Biology with a concentration in Biotechnology at **University of Massachusetts, Lowell**, and is an undergraduate research intern, continuing at the **Ragon Institute**, where he conducts antibody research at the **DeKosky Lab**



"Applying for BioBuilder and being a part of the apprenticeship challenge has opened the door to so many opportunities and has allowed me to grow so much as a scientist. I am very thankful for the guidance and knowledge everyone at BioBuilder has given me."

- Oscar Jimenez

Gina Gawargi

High School Apprenticeship Challenge 2023

Gina was a senior at New Mission High School when she was selected for BioBuilder's 2023 High School Apprenticeship Challenge. As the daughter of recent immigrants, Gina moved from school to school, learning flexibility and developing a deep commitment to doing her best work wherever she goes. These traits and the skills she learned at BioBuilder served her well in her summer internship at **Visterra**, a company that develops antibody-based therapies for patients with unmet needs. Gina is currently attending **Simmons University**, intending to major in Neuroscience with a pre-med track, and looks to pursue a career in the medical field.

"The BioBuilder apprenticeship was a support system I needed during the notoriously difficult college application period. I had just moved to the US and couldn't make many connections but BioBuilder built those connections for me. I am really grateful for my time at BioBuilder!"

- Gina Gawargi



What's ahead

Fostering future talent

As you've seen, BioBuilder fosters talent. The BioBuilder alumni profiled here are but a sampling of the 1000s of talented students we've worked with since 2011.

And as BioBuilder forges into its next decade, it positioned to become the educational leader for the life science revolution. With more programs, more partners, and more impact, there is a bright horizon ahead for the BioBuilder students and the organization that recognizes their potential.

**We are eager for you join us
as we grow the future.**





BioBuilder

Educational Foundation

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