



cornel
iGEM
2024
SPONSORSHIP
PACKET

corne|  **iGEM**

Synthetic Biology Project Team

TABLE OF CONTENTS

- 1 2024 Team Lead Letter
- 2 What is iGEM?
- 3 The Cornell Team
- 4 Team History & Accomplishments
- 5 2024 Project
- 6 Budget
- 7 2023 Project Review
- 8 Sponsorship Benefits
- 9 Your Sponsorship
- 10 Donation Form
- 11 Thank You, Past Sponsors!



2024 Team Lead

TEAM LEAD LETTER

BY MICHAEL CONSTANT

Welcome to the 2024 Cornell International Genetically Engineered Machine (iGEM) project team! Thank you so much for your interest and consideration of sponsoring our team this season. We are composed of over 50 undergraduates from diverse disciplines integrated together to create an impactful project under the theme of synthetic biology. We have the ability to address pressing local and global challenges; by supporting us, you join our mission to innovate and change the world one microbe at a time.

Each year, we showcase our projects at the iGEM Grand Jamboree, the world's premier and largest synthetic biology competition held in Paris, France. It brings together high school, undergraduate, and graduate teams from institutions spanning the globe. With over 8800 participants from 393 teams last year, the event provided an unparalleled platform for teams to present their innovative solutions to environmental, biomedical, biomanufacturing, and industrial applications. Cornell iGEM boasts an impressive track record in this competition, earning eleven gold medal classifications in the past 14 years. Our projects have earned accolades including Best Supporting Entrepreneurship (twice!), Best Applied Design, Best Undergraduate Environmental Project, and Best Integrated Human Practices. But most importantly, we are dedicated to providing a project that helps the public and furthers scientific discovery for years to come.

Beyond the competition, we are committed to educating the public on synthetic biology and fostering a positive impact within the Ithaca community. From leading workshops about synthetic biology in the Syracuse Maker Faire to appearing in various articles within Popular Science and the Daily Sun, Cornell iGEM is finding ways to give back to our community while we reach for our ambitious goals.

Our story continues from the help of our sponsors who without them, we could not have impacted our community at such a large scale. By supporting us, not only are we able to pursue our ambitions, but sponsors also gain access to the quickly growing pool of students, researchers, and industry professionals that are a part of our iGEM community. As a valued partner, your company will be prominently featured on our team apparel, website, presentation materials, and poster. We will also showcase any potential recruiting opportunities offered by you to our team as another way of saying thank you.

Our website offers a comprehensive overview of our past projects and can be found at <https://igem.engineering.cornell.edu>. In addition, this packet contains a detailed breakdown of our budget, team, and accomplishments.

Thank you again for your consideration in sponsoring Cornell iGEM and we hope to work with you soon!

Best,

A handwritten signature in black ink that reads "M. Constant". The signature is stylized and written in a cursive-like font.



WHAT IS iGEM?

SYN BIO COMMUNITY

International Genetically Engineered Machines

iGEM began in 2003, and has since grown into the world's largest synthetic biology competition, now hosting over 390 teams from around the world as of 2023. At the beginning of the season, each team receives a kit distribution plate of synthetic DNA parts from the iGEM headquarters. Using these constructs and parts of their own design, teams use synthetic DNA components, or "BioBricks" to create novel, genetically engineered organisms which tackle various real-world problems. Teams participate each year at the international competition and are judged based on the quality of their biological work, the significance and applicability of their project, human practices and safety components, and the presentation of the work via their website, poster, and a formal oral presentation.



The Parts Registry

One of the iGEM competition's greatest goals is the development and cultivation of the Standard Registry of Biological Parts. This parts registry contains thousands of synthetic DNA components designed to be modular: every part in the registry can be interchanged within common DNA backbones, allowing researchers to easily create novel genetic circuits for important engineering purposes. After every competition season, iGEM teams submit their genetic parts (called "BioBricks") to the parts registry for future teams and researchers to use. This collaboration is essential to the iGEM competition and research in synthetic biology in general, and it ensures that any research done by our team can be utilized by the scientific community as a whole for years to come.



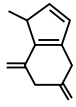
THE CORNELL TEAM

51 STUDENTS, 4 COLLEGES

Cornell iGEM is an undergraduate synthetic biology team and has solidified itself as a perennial contender at iGEM competitions. The team, founded in 2009, is still relatively new, but recent successes have helped the team gain prominence at both the university and the iGEM competition. Our team is composed of 42 undergraduate students from five colleges across the university (Engineering, Arts & Sciences, Agriculture & Life Sciences, and the Nolan School of Hotel Administration). This diverse group of students uses their different expertise to complete a complex and novel project each year. Cornell iGEM provides dedicated students who have a desire to pursue biological research and engineering an opportunity to gain experience in a professional work environment, hone their practical engineering skills, and pursue their own research goals. Our team prides ourselves on sharing our research and promoting safety with regards to the controversial field of synthetic biology. In doing so, we are developing the next generation of responsible scientists with the potential to bring synthetic biology to the forefront of modern engineering solutions.



OUR ACHIEVEMENTS



ENERGEN

Synthetic biology production of mutated enzymes to mass generate 7-methylxanthine out of caffeine cultures for myopia treatments

Gold Medal Classification

2023

MicroMurals

Handheld 3D bioprinter aimed at bridging the gap between the arts and STEM in early interdisciplinary education

Gold Medal Classification

2022



Collatrix

Protein-based hydrogel scaffolds for wound healing research and applications and optimal tissue repair

2021

Lumicure

E. coli engineered to produce fluorescent reporter and a cancer therapeutic for metastatic breast cancer

Gold Medal Classification

2020



Rehab

E. coli engineered to degrade harmful algae bloom toxin in a bioreactor to detoxify drinking water

Gold Medal Classification

2019

Oscillate

A novel frequency-based biological band-pass filter

Bronze Medal Classification

2018



Oxyponics

Detection system for oxidative stress in hydroponic farming

Gold Medal Classification

International winner for Best Supporting Entrepreneurship

2017



Oncurex

Optimizing the sustainable biosynthesis of ursolic acid

Our 2024 Project

Natural products already serve as foundational elements in pharmaceutical development, as many common medications such as aspirin, digoxin, and morphine are made from natural plant scaffolds. Recent scientific research has found that the natural product ursolic acid can have anticancer properties; it has been shown to cause apoptosis in phenotypically distinct bladder cancer cells, target glycolysis in breast cancer tumor cells, and increase cell death in rectal cancer cells. Currently, clinical trials are underway – and they're successful. So, an influx of demand for the product can be expected soon.

While ursolic acid is currently available for purchase and FDA-approved as a dietary supplement, the method of extracting ursolic acid from plants, such as loquats and apples, requires massive land and water resources while delivering a low yield. Furthermore, apples represent a significant part of Ithaca, NY's local agriculture, where Cornell University is based. In 2022, Tompkins County reported nearly 200 acres of apple-bearing land use [[2022 Census](#)]. Current research shows that a biological pathway exists within yeast to produce this compound, but it has only been done at a lab batch scale. Furthermore, because Ursolic Acid is just progressing through phase I trials, it is in the right phase of drug development that large-scale synthetic biology manufacturing does not already exist.

Therefore, Cornell iGEM aims to streamline sustainable, high-yield ursolic acid production and prepare for a potential influx of demand by providing a continuous industrial method to produce the natural product by manipulating the biological pathways in genetically modified yeast. This continuous method will include a team-designed bioreactor that will combat the high energy cost typically found within batch reactors and focus on allowing companies to save money, lower their Process Mass Intensity (PMI), and ultimately maximize the ability to get Ursolic Acid into the hands of patients who need it. This is our 2024 project: Oncurex.

2024 PROJECT BUDGET

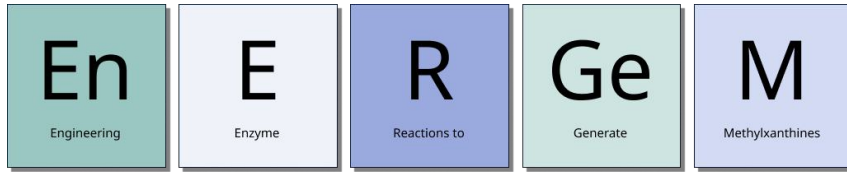
Project Expenses

Expenses	Cost
OligoPrimer and Gene Synthesis	\$2,000
DNA Sequencing	\$500
Molecular Biology Reagents	\$4,000
Plasticware and Lab Supplies	\$3,000
Product Development and Hardware	\$2,500
Software Lincensing	\$1,300
Outreach Supplies	\$200
Training Fee, Printing	\$400
	Total \$14,200

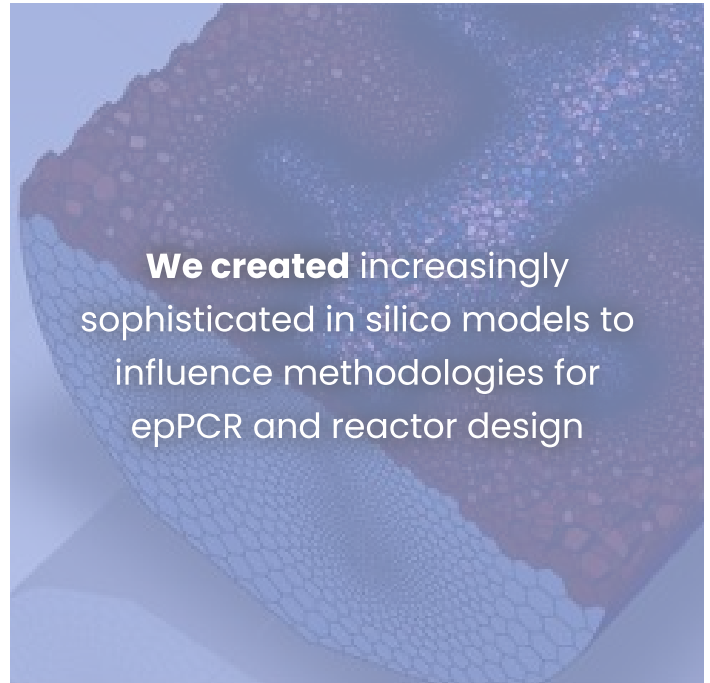
Competition Expenses

Expenses	Cost
Team Registration	\$4,500
Individual Passes	\$6,950
10 passes x \$695/each	
Travel Expenses	\$1,500
Lodging	\$5,000
5 rooms x 4 nights	
	Total \$17,950

Grand Total \$32,150



Our 2023 Project in Review

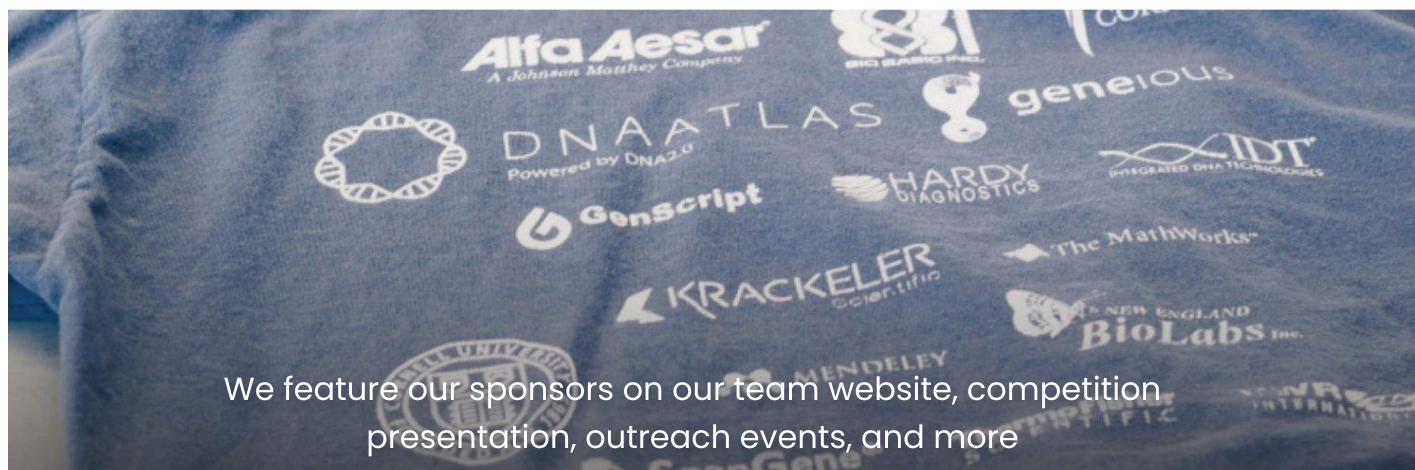


SPONSORSHIP BENEFITS

Competition Visibility

By sponsoring Cornell iGEM, your company will gain unrivaled exposure at the world's largest international synthetic biology competition, which hosts over 393 teams and 8,300 participants annually. Your company logo will be prominently featured on our competition poster, presentation, and project Wiki, showcasing your brand to an elite audience of researchers, students, and industry professionals.

Furthermore, our team's website and Wiki continue to receive significant traffic, averaging around 700 hits per month even after the competition, ensuring ongoing visibility for your brand. Our outstanding performance in recent seasons has led to Cornell iGEM being featured in renowned publications such as Elsevier, the Cornell Chronicle, the Cornell Daily Sun, IDT's Decoded, and Popular Science, as well as newsletters from our past and current sponsors. By supporting Cornell iGEM, your company will be associated with a prestigious and innovative team, gaining invaluable recognition and networking opportunities within the synthetic biology community.



We feature our sponsors on our team website, competition presentation, outreach events, and more

University Networking

As a sponsor of Cornell iGEM, your company will gain access to an extensive network at one of the world's most prestigious research universities. Our team's strong connections with students and research labs across Cornell University create numerous opportunities for sponsors to engage with top-tier talent and cutting-edge research.

Our young and dynamic alumni network, which continuously grows each year, is an invaluable resource for our sponsors. By supporting our team, you will be part of a community where graduating members are eager to pursue careers in biology and engineering, and many of them may consider your company for their next career move. By partnering with Cornell iGEM, you are not only investing in groundbreaking research but also in the future leaders of the synthetic biology industry.

YOUR SPONSORSHIP

Gifts in Kind

- Centrifuge tubes (2 mL, 15 mL, 50 mL) and micropipette tips
- PCR reagents (DNA polymerase, dNTPs, etc.)
- Cloning enzymes (EcoRI, SpeI, PstI, XbaI, NotI, DNA Ligase)
- Antibiotics (Chloramphenicol, Kanamycin, Ampicillin)
- Gel electrophoresis materials (Agarose, TAE Buffer, DNA Ladder, Ethidium Bromide)
- Molecular biology kits (Plasmid minipreparation, DNA clean and concentration)
- Electroporation cuvettes
- Media components (LB Broth, Yeast Extract, Tryptone, various salts)
- Software licenses
- Electrical & mechanical engineering tools

Monetary Support

Our team also accepts any monetary support. Monetary support enables us to acquire essential resources and equipment that cannot be received in kind, ensuring the continued growth and development of our projects. Your contributions will be allocated towards crucial expenses such as custom primers, DNA sequencing, iGEM registration fees, travel and lodging for competition, and establishing a savings fund for future Cornell iGEM teams.

Intellectual Partnership

In addition to receiving donations from sponsors, we have also formed partnerships with businesses in the past. In 2013, Cornell iGEM made great strides in bridging the gap between the iGEM competition and industry. Our collaboration with Ecovative, a leading biomaterials company, proved to be the most meaningful and in-depth partnership between an iGEM team and a corporation to date. Each year, our projects present unique opportunities for collaboration, and we are eager to work with businesses to address challenges using synthetic biology.

DONATION FORM

Supporting Our Efforts

Cornell iGEM provides promising undergraduate scientists and engineers the opportunity to pursue their own research interests in a supportive team environment. While Cornell does provide our team with laboratory space, access to some of its outstanding facilities, and funding for competition fees and travel, funding for individual components of our project must come from generous, outside sponsors. If you are interested in supporting our efforts this year and becoming a part of an exciting and successful synthetic biology team, please fill out the following form and return it to the provided address. Checks can be made payable to "Cornell iGEM" and attached to this form. If you have any questions about our team or specific support we could use, please don't hesitate to contact us. We greatly appreciate support of any kind. Thank you for your time!

Mailing Address

Cornell iGEM
Attn: Michael Constant
391A Thurston Hall
Ithaca, NY 14853

Contact Information

Team Leader: Michael Constant
Phone: 571 375 5345
Email: cornelligem@gmail.com
Website: igem.engineering.cornell.edu

General Information

Name of Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Contact Information

Contact Name: _____ Contact Title: _____

Phone Number: _____ Email Address: _____

Donation Information

Gift in Kind

What is the gift in kind? _____

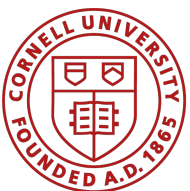
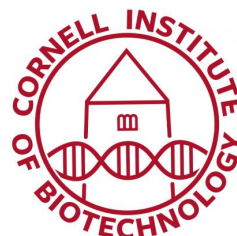
What is the market value of the gift in kind? _____

Monetary Donation

What is the donation amount? _____

Donor Signature: _____ Date: _____

THANK YOU PAST SPONSORS!



Cornell University

CornellEngineering
Alumni Association