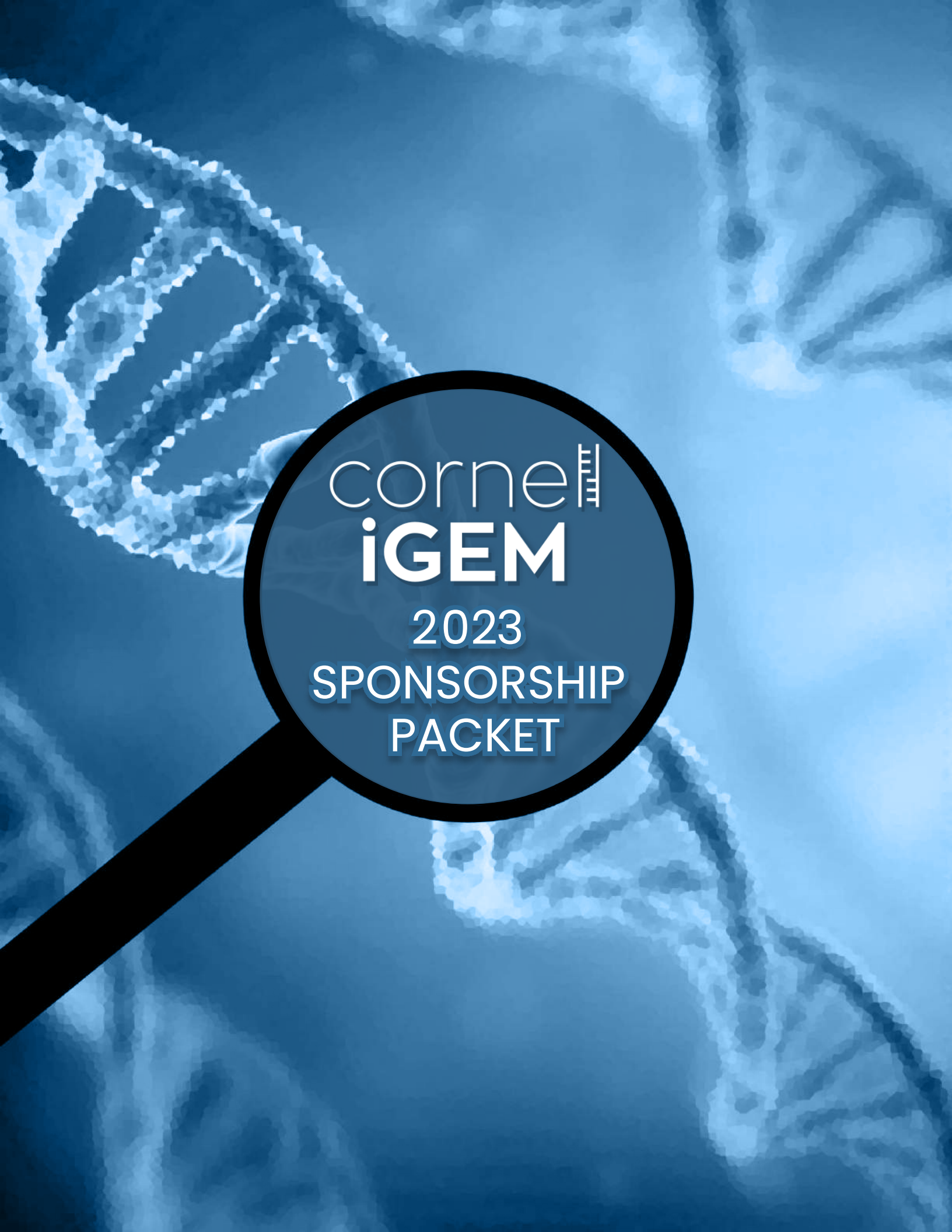
cornell
iGEM
2023
SPONSORSHIP
PACKET

cornell iGEM

Synthetic Biology Project Team

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2023 Team Lead

TEAM LEAD LETTER

BY SID BHATT

Thank you for your interest in sponsoring the 2023 Cornell International Genetically Engineered Machine (iGEM) project team! We are a team of 42 undergraduates from diverse disciplines, unified by our passion for synthetic biology and its potential to address pressing global and regional challenges. By supporting us, you join our mission to innovate and create a lasting impact on the world...

Each year, we showcase our groundbreaking projects at the iGEM Giant Jamboree, the world's premier synthetic biology competition held in Paris that brings together high school, undergraduate, and graduate teams. With over 7500 participants from 356 teams last year, the event provided an unparalleled platform for teams to present their innovative synthetic biology solutions to environmental, biomedical, biomanufacturing, and industrial applications. Cornell IGEM boasts an impressive track record in this competition, earning ten gold medal classifications in the past 13 years. Our projects have earned the prestigious accolades including Best Supporting Entrepreneurship (twice!), Best Applied Design, Best Undergraduate Environmental Project, and Best Human Practices.

Beyond the competition, we are committed to educating the public on synthetic biology and fostering a positive impact within the Ithaca community. From working with Ithaca High School to set up their synthetic biology team to being featured in articles in Popular Science, Cornell iGEM are finding ways to give back to our community while we reach for our ambitious goals.

Our sponsors have helped us in our pursuit of groundbreaking engineering discoveries that positively impact our local community. By supporting us, sponsors gain access to the quickly growing pool of students, researchers, and industry professionals that are a part of our iGEM community and the synthetic biology field as a whole. As a valued partner, your company will be prominently featured on team apparel, our team's website, presentation materials, and our poster.

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 for your generous sponsorship!

Sincerely,

Sid Bhatt

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 350 teams from around the world in 2022. At the beginning of the season, each team receives a kit 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.

2023 Team

THE CORNELL TEAM

42 STUDENTS, 5 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, Industrial & Labor Relations, and Human Ecology). 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

2022

MicroMurals

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

Gold Medal Classification

2021

Collatrix

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

2020

Lumicure

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

Gold Medal Classification

2019

Rehab

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

Gold Medal Classification

2018

Oscillate

A novel frequency-based biological band-pass filter

Bronze Medal Classification

2017

Oxyponics

Detection system for oxidative stress in hydroponic farming

Gold Medal Classification

International winner for Best Supporting Entrepreneurship

2016

Legendairy

A novel bacteriocin treatment for bovine mastitis and customizable milking shell and detection app

Silver Medal Classification

International nominated for Best Human Practices.

ENERGEM

ENgineering Enzyme Reactions to GEnerate Methylxanthines

Our 2023 Project

Synthesizing and altering chemicals is essential in various fields, appearing in everyday products ranging from paper to medicines. Optimized biosynthesis and chemical synthesis techniques are both incredibly powerful for producing vital biomolecules with high-efficiency and low manufacturing costs. However, there are many high-value compounds, such as 7-methylxanthine and paraxanthine (1,7- dimethylxanthine), that remain challenging to produce using traditional methods. These chemicals are commonly used to make medicines for treating asthma and chronic obstructive pulmonary disease (COPD) but are typically produced with low-yield thus leading to expensive prices in the market. Cornell iGEM's 2023 team aims to address these issues by taking advantage of biosynthesis through ENERGEM: ENgineering Enzyme Reactions to GEnerate Methylxanthines.

ENERGEM has two primary focuses: engineering enzymes and producing methylxanthines. The first focus starts with the production of relevant caffeine metabolizing enzymes via E. Coli. After optimization and isolation of these enzymes via directed evolution, we move on to ENERGEM's second focus which is the designing and implementation of a cell-free immobilized-enzyme reactor for the high-efficiency production of 7-methylxanthine and paraxanthine. Through a methodical iterative design process, we aim to develop a strong proof of concept for industrial scale-up.

By offering a cost-effective alternative to conventional production methods, ENERGEM seeks to lower costs, increase return on investment, and improve the availability of methylxanthines to individuals who need them. Sustainability is a core value of our project team, and it remains a cornerstone of ENERGEM. We commit to responsible practices by reusing byproducts and waste, collaborating with Cornell University's Sustainability Series, and upholding clean chemical production standards. Cornell iGEM's 2023 project ENERGEM delivers a sophisticated and responsible approach to producing 7-methylxanthine and paraxanthine for treating chronic respiratory conditions, highlighting the transformative potential of synthetic biology.

2023 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

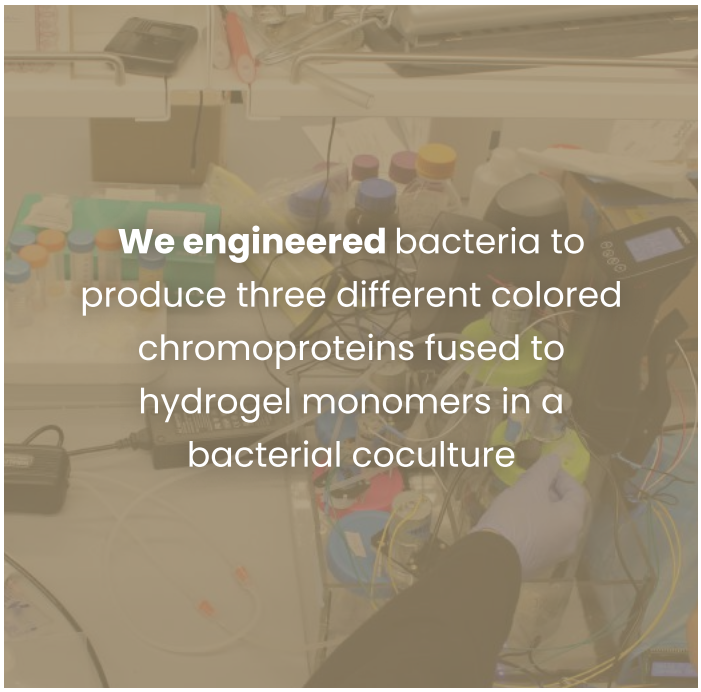
Expenses	Cost
Team Registration	$4,500
Individual Passes 10 passes x $695/each	$6,950
Travel Expenses	$1,500
Lodging 5 rooms x 4 nights	$5,000
Total	$17,950

Grand Total $32,150

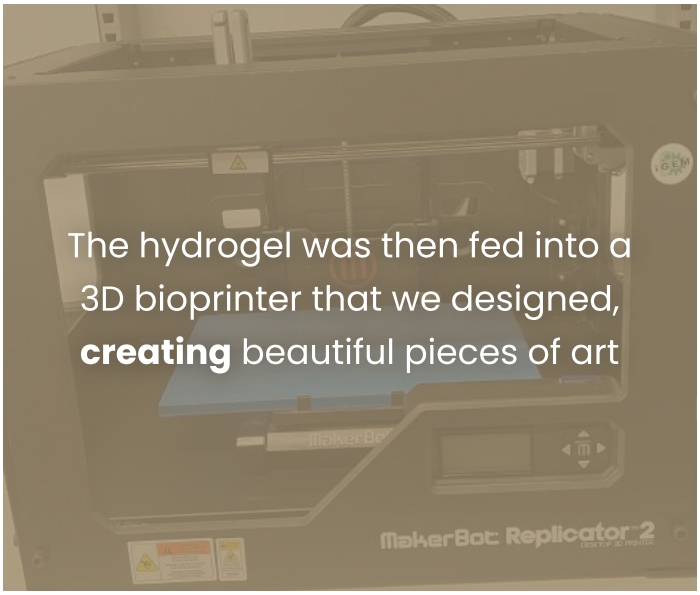
MICROMURALS

Our 2022 Project in Review

Education has been a cornerstone of every Cornell iGEM project. Through our outreach events with children, **we noticed** that they learn best through interactive tutorials



We engineered bacteria to produce three different colored chromoproteins fused to hydrogel monomers in a bacterial coculture



The hydrogel was then fed into a 3D bioprinter that we designed, **creating** beautiful pieces of art

We utilized this project to educate the younger generation on synthetic biology and its incredible potential

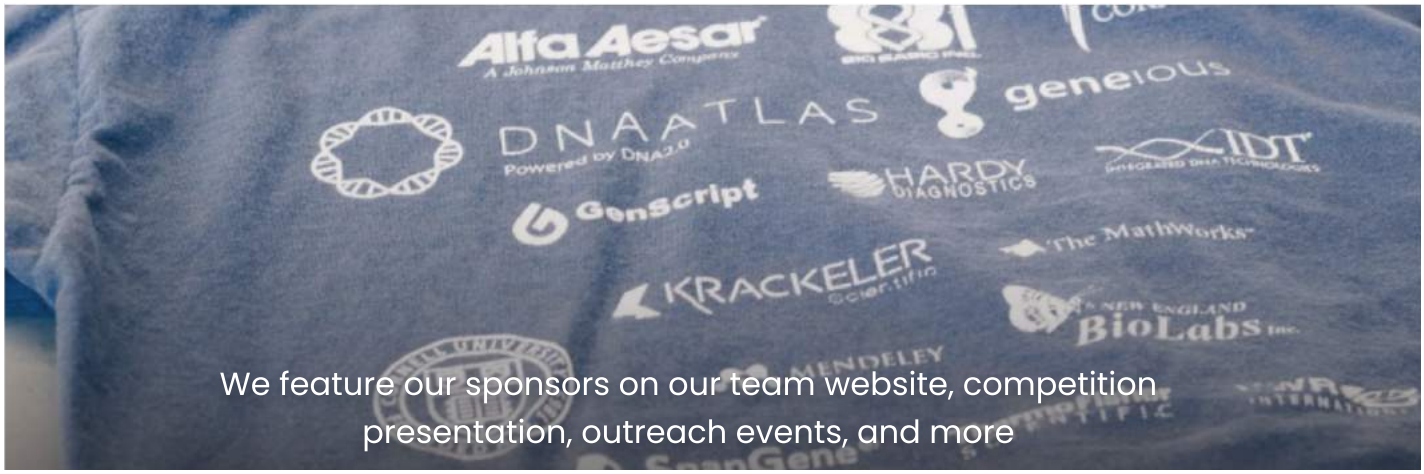
We received gold medal classification at the iGEM Giant Jamboree in October 2022

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 356 teams and 7,500 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 fund ing 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 fol lowing 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!

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Ithaca, NY 14853

Contact Information
Team Leader: Sid Bhatt
Phone: 978 621 7867
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?_____
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