ABOUT iGEM

The International Genetically Engineered Machine (iGEM) Foundation is an independent, non-profit, 501(c)3 organization. The iGEM Competition is the premiere student team competition in **Synthetic Biology**.

For over 12 years, iGEM teams have worked to **solve today's biggest challenges** by building **genetically engineered** biological systems with standard, interchangeable DNA parts.

The iGEM competition **empowers teams** to manage their own projects and advocate for their work. Teams are also challenged to study **Human Practices issues**, fostering responsible research by investigating the consequences of their work outside of the lab.

iGEM encourages teams to actively consider and address ethics, sustainability, safety, security, environmental concerns, and more.

iGEM COMMUNITY: 28,000+ MEMBERS

With over **28,000 members**, iGEM is the largest global community of synthetic biologists representing 42 countries across 6 continents. Primarily a university level competition, each year, over **5,000 students** and instructors, dedicate themselves to iGEM.

THE SYNTHETIC BIOLOGY COMMUNITY IS INVESTING IN iGEM

Over the last 12 years, iGEM teams have raised an estimated **$100,000,000!**

This year alone, teams have raised more than **$15,000,000** and our iGEM sponsors have awarded them nearly **$100,000** in funding. GenScript, Syngenta, Desktop Genetics, Synenergene, and Twist Bioscience gave 35 teams grant funding and Open Philanthropy awarded the iGEM Foundation a **$520,000** grant to support the Safety and Security program.

OUR SPONSORS

IDT Integrated DNA Technologies
GenScript Make Research Easy
Open Philanthropy Project
Agilent Technologies
AUTODESK
MathWorks
PLOS
synbiobeta
synenergene
syngenta
TWIST BIOSCIENCE
Gen9
Google
SGIDNA

iGEM 2016

GIANT JAMBOREE

October 27-31
Hynes Convention Center
Boston, MA

LEARN MORE

igem.org
2016.igem.org
2016.igem.org/Giant_Jamboree

EXPERIENCE iGEM!

The Giant Jamboree is an annual event that showcases work from the iGEM Competition. This year, 300 international teams from 42 countries will present their work in synthetic biology and compete for medals and prizes. Featuring team presentations, poster sessions, workshops, panel discussions, social activities, and more!

Come meet the next generation of synthetic biologists! 3,000 expected attendees!

iGEM MAKES SYNTHETIC BIOLOGY A TEAM SPORT

Synthetic biology combines engineering design principles with molecular biology to create new functions in cells. iGEM teams bring students together from multiple disciplines to design and build novel solutions to everyday problems using this approach.

iGEM has generated over **2,100 projects**, over **20 start-ups** and more than **20,000 documented DNA parts**. This astonishing degree of productivity is possible when science and engineering become a team sport!

BRINGING SYNTHESIS TO STUDENTS

Thanks to the generous support of Integrated DNA Technologies (IDT) and GenScript, iGEM teams are given the technology needed to imagine and engineer solutions to our world's problems.

iGEMers receive **free DNA from IDT**, offering the equivalent of 20 kb of DNA as gBlocks® Gene Fragments to each iGEM team. A collaboration totaling nearly **$1,000,000**.

With unprecedented access to DNA synthesis, iGEMers can now live in the future of synthetic biology, where the focus is on project design and characterization, and not cost.

See what today's brightest young minds have accomplished

Here are a few examples of what iGEMers have created:

TEAM CZECH_REPUBLIC

Health and Medicine Project:
The IOD band
2015.igem.org/Team:Czech_Republic

The IOD band is a general diagnostic test enabling early detection and mapping of tumor mobility. Tumor mobility is incredibly difficult to diagnose due to the rarity of circulating tumor cells (CTCs) and the complexity of surface marker combinations. IODs use antigen recognition and intercellular communication to create a logical network by which even a single cell carrying the desired marker profile can be identified in a background of millions. Affirmative CTC localization triggers a global response manifested by IOD initiated clumping at levels visible to the naked eye. As such, IOD bands do in a test tube what normally requires days to do in the lab.

TEAM BRASIL-USP

Environment Project
RubberBye – Degrading rubber to fuel
2015.igem.org/Team:Brasil-USP

The accumulation of waste tires and rubber products represents a significant environmental problem worldwide. Here we aim to accelerate natural rubber degradation by genetically engineering Escherichia coli expressing two enzymes: RoxA (Rubber oxygenase) and Lcp (Latex clearing protein). For degradation of vulcanized rubber, the project includes a pre-treatment using Acidithiobacillus ferrooxidans, a bacterium that naturally devulcanizes rubber. Both of these processes will be scaled up in bioreactors. Besides enabling faster rubber degradation and decreasing final pollutant emission, our project also grants the final product a considerable economic interest.

TEAM HEIDELBERG

Foundational Advance Project
Catch it if you can
2015.igem.org/Team:Heidelberg

Like Proteins, RNA folds into a unique, functionally relevant 3D structure as a catalytic ribozyme or an aptamer detecting and selectively binding a ligand. To obtain these functional RNAs, simple transcription of a DNA sequence is sufficient. We develop a software that drastically reduces both required resources and effort of directed evolution. We develop a toolbox consisting of easy to use standards for in vitro RNA usage, practical readouts and means for mRNA editing. To reach the end user with our work, we create straightforward tests for the detection of numerous noxious substances.

PLOS iGEM Collection
iGEM projects are now featured online on PLOS! See the PLOS Collection Blog for a collection of iGEM projects submitted for open review.

TEAM STANFORD-BROWN

Manufacturing Project
biOrigami: A New Approach to Reduce the Cost of Space Missions
2015.igem.org/Team:Stanford-Brown

Space exploration lies at the inquisitive core of human nature, yet high costs hinder the advancement of this frontier. We are harnessing the replicative properties of biology to create biOrigamibiological, self-folding origamito reduce the mass, volume, and assembly time of materials needed for space missions. biOrigami consists of two main components: manufacturing substrates biologically and bioengineering folding mechanisms. Our project integrates and improves manufacturing processes for space exploration on both the micro and macro levels.

TEAM TIANJIN

New Application Project
JANUS
2015.igem.org/Team:Tianjin

Janus is the mythical Roman god of beginnings and transitions, who is depicted as having two faces. Our project is focused on another Janus - hydrophobin the protein, who looks to the hydrophilicity and hydrophobicity. Because of this, a sea of new applications are created. Firstly, we re-designed the structures of two classes of hydrophobins, making expression in E. coli possible. Secondly, we use its double-sticky-tape-like ability to make two applications. Thirdly, we use its amphipathicity to achieve protein separation, where they act as a special purification tag, and the system could be as simple as polymer, detergent and water.

TEAM TJU

Energy Project
Power Consortia
2015.igem.org/Team:TJU

MFCs are capable of converting the chemical energy stored in the chemical compounds in organic biomass to electrical energy with the aid of microorganisms. We establish a co-cultured MFC system with an elaborate labor division. Based on our complicated cocultured system, a rational designed relationship of material, information and energy is being explored. We also make riboflavin as the entry point to regulate energy and information relationship. Through reconstruction of the co-cultured MFC, a more efficient and robust system is built up.

Work on WHAT MATTERS most to you:
12 tracks offered to focus your iGEM Project

- Manufacturing
- New Application
- Therapeutics
- Food and Nutrition
- Hardware
- Software
- Diagnostics
- Information Processing
- Environment
- Foundational Advance
- Measurement
- Energy