

# International Genetically Engineered Machine (iGEM) Competition Language Project

An educational initiative to spread the understanding of Synthetic Biology to the common public

Team iGEM-IIT Madras

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Language Project is an initiative by students of Department of Biotechnology at Indian Institute of Technology, Madras participating in the International Genetically Engineered Machine Competition 2018 held at Boston, Massachusetts

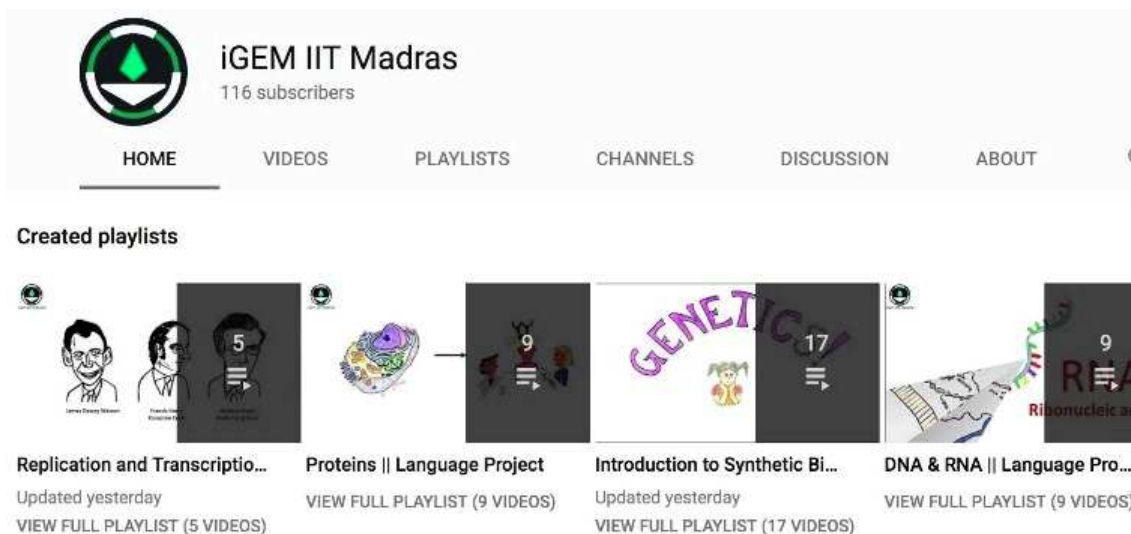
The International Genetically Engineered Machine or 'iGEM' Competition is a worldwide competition in synthetic biology that began in Massachusetts Institute of Technology (MIT) in the year 2004. Within a span of 10 years, it grew from 5 teams to an independent organization in 2012 with more than 200 teams consisting of undergraduate, high school and graduate students. Teams participate in almost 10 different areas of synthetic biology such as Diagnostics, Energy, Environment, Food & Nutrition, Foundational Advance, Information Processing, Manufacturing, New Application and Therapeutics. The basic goal of the organisation is to promote the development of a society of synthetic biologists that aim at open and transparent development of tools to engineer biology for useful applications.

Along with the main research based project that each team works on, they are also required to work on how their research or knowledge can impact the society. This is termed as 'Human Practices' and it forms a key component of the team's judging criteria. While some teams have tried to impact the society with their own scientific research, other teams have educated the people in their country about science, engineering and biology. Some have also attempted into advising the scientific policy making bodies of their countries by creating proposals pertaining to genetic engineering and biology.

Having participated in this competition since 2008, the students from the Department of Biotechnology of Indian Institute of Technology, Madras that form the team known as "Team iGEM-IIT Madras" have won 3 gold medals and 4 silver medals, along with 5 special awards. iGEM-IIT Madras is one of the ten Indian teams participating in the 2018 edition. Last year they got a silver medal for creating a database, called ChassiDex, for quick and easy access to information about microorganisms.

This year as a team of 17 students, 2 Professors, Instructor and advisors, they are working on expanding a genetic toolkit for a microorganism called *Acinetobacter baylyi* which is well-known for its ability to degrade aromatic compounds which are toxic for humans. The team has worked on a number of projects like Antibiotic Resistance and development of tools and systems to aid the study of synthetic biology previously. The team of iGEM-IIT Madras 2008 founded a company called 'Sea6 energy' which is a biofuel company situated in Bangalore inspired by their iGEM project.

With each passing year, students of IIT Madras strive to work on the Human Practices category of iGEM with great enthusiasm. In the year 2013, they received the 'Best Human Practices Asia' award for educating the meat vendors of Chennai about the harmful 'shiga toxins' present in meat. For their participation in 2018, Team iGEM IIT Madras has been working to promote open science and awareness of synthetic biology in general public. So, they have come up with **The Language Project** which is an educational initiative to spread the understanding of Synthetic Biology to the common public.



A screenshot of the YouTube page for the videos

It has been observed that the public does not have a clear purview of the research and findings in biotechnology, so much so that a basic know-how of genetics is also not common and the brunt of the decisions in public domain falls into the hands of lobbyists for example, GMOs. Hence, they have begun to make and spread content about the basics of biotech in a commoner's language. The content is now available in different languages namely Kannada, Tamil, Telugu, Marathi, Hindi, Bengali, Malayalam, Gujarati, Assamese and English on the YouTube channel for viewing. Each video consists of hand drawn images along with subtitles in English. As this initiative grew more popular, it has attracted the attention of iGEM teams outside of India as well. They have contributed by translating the content of the video into their common language. With the growing amount of collaborations, iGEM-IIT Madras has now released videos in international languages like French, Mandarin, Malay, Spanish, Bosnian, Arabic, Catalan and Chinese.



Team iGEM IIT Madras Language Project : Tamil Intro to Synthetic Biology

*A glimpse of the 'Introduction to Synthetic biology' video in Tamil*

The videos have been split into a series with Chapter 1 giving an Introduction to Synthetic Biology, Chapter 2 explaining DNA and RNA, Chapter 3 explaining fundamentals of Proteins and Chapter 4 talking about a the basic phenomenon of Replication and Transcription. They are continuing work on the remaining 4 chapters in the series in the hope of equipping a commoner with the complete knowledge of Synthetic Biology to make knowledgeable decisions on GMOs, etc. Currently, they have received valuable feedback after showing these videos to their family members and friends. Further, they have received a lot of attention due to the rising popularity on twitter after posting these videos. Recently, they received valuable insights about The Language Project from the alumni of their university in an event at the Leela Palace in Chennai. In the future, they hope to contact school that teach basic sciences in regional languages to show the students their videos.

iGEM competition has become the primary driver in undergraduate research at the Department of Biotechnology, IIT Madras and consists of students from all academic years. This has strongly inspired the students in the team to pursue an academic career in the future. Synthetic biology has world-changing applications, which can affect human life and this planet for good, and the team wishes to be at the forefront of innovation and technology through this competition.



*Picture of the team for 2018*

*From left to right: Mousami, Shreya Nema, Karthik, Sahana, Sathvik, Vaibhavi, Sarvesh, Sankalpa, Srinath, Aniket, Sai Guha, Sagarika, Roshni, Nikhita, Burhan, Faidh, Dr. Nitish Mahapatra, Dr. Guhan Jayaraman and Kailash*

This article has been contributed by the Team iGEM, IIT Madras. For more details, pl. contact Ms. Nikhita Damaraju, 4th year UG, Dept. of Biotechnology, IIT Madras at [igem@smail.iitm.ac.in](mailto:igem@smail.iitm.ac.in)