

## What is iGEM?

iGEM stands for „*international Genetically Engineered Machine Competition*“. It is an international competition in the field of Synthetic Biology for bachelor and master students. In this competition the participants try to solve current problems e.g. improving diagnostics for diseases or protecting the environment with methods of the Synthetic Biology.

The idea behind is to design biological systems with new features by standardized components-so called- BioBricks.

## The Competition

Each university that enters the competition builds up a team out of several students and at least one professor. In the beginning a specific project is planned followed by intensive lab working and introduction of the activities to the public. The whole progress is continuously published in an online wiki.

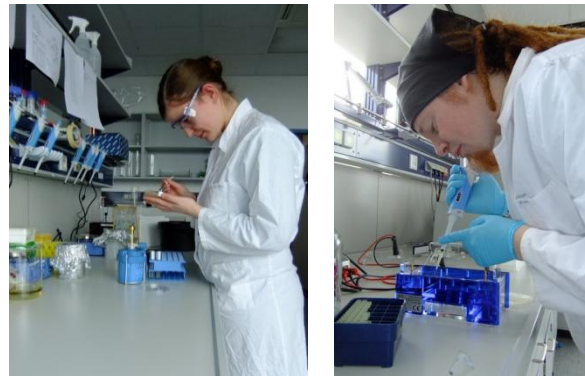
This year the regional jamboree for all European teams takes place in Lyon, France during October 11 – 13. The iGEM project evaluation is organized in more than 20 categories and bronze, silver and gold medals are granted. Then the best teams enter the final round in the world jamboree.

This is going to take place at the Massachusetts Institute of Technology in Boston, USA during November 1 – 4, 2013

## iGEM in Marburg

Since 2003 the iGEM competition takes place every year. In 2012 the Philipps-University Marburg set up its first team. The team members aimed to design a recombination machine that generates a large number of novel proteins by recombinatorial fusion of protein subfragments into a new protein. With this idea the Marburg iGEM team won a bronze medal at the European jamboree in Amsterdam 2012.

In 2013 a new interdisciplinary team was formed by bachelor and master students from the departments of biology, chemistry and medicine.



Working in the iGEM-lab, Philipps-University, Marburg

## The Project

In this year's project we work with the microalgae *Phaeodactylum tricornutum*, which belong to the marine diatoms. One major advantage of algae is that they just need light and seawater for living. In this process carbon dioxide is consumed and

oxygen is produced. Algae and thus also *P. tricornutum*, play an important role in biotechnology, industry and research because amongst other things it can be used to produce biofuel, spider's silk, or biological degradable plastics.

Hence our iGEM team is interested in *P. tricornutum*, which we want to turn into a model organism for Synthetic Biology within the iGEM competition. For this goal we want to design and produce BioBricks for the work with the algae. Furthermore we are going to demonstrate the importance of the system by using it for the production of antibodies against the hepatitis B virus. Therefore we will use the ability of the algae to secrete very pure proteins into the medium. With the established method pharmaceuticals could be produced very cost-efficient, demonstrating that *Phaeodactylum tricornutum* also has a medical relevance.



Tree morphotypes of *P. tricornutum*: oval (above left), fusiform (below) and triradiate (right).

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## Participants



The Marburg iGEM-Team 2013



Working in the iGEM-lab

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**iGEM-Team 2013**  
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