iGEM international synthetic biology student competition as RRI laboratory

What is synthetic biology?

SynBio is an emerging area of research that approaches life from an **engineering perspective**. The aim is to design biological components and systems with enhanced or altogether new-to-nature properties.

SynBio promises huge potential for medicine, green energy and the environment, but also brings with it various **challenges**, ranging from regulatory issues of biosafety, biosecurity and intellectual property to potential environmental and socio-economic risks in developing countries.

iGEM is an international student competition in which a growing community of dedicated young science students is working in the spirit of RRI. At the beginning of the summer, student teams receive a kit from the Registry of Standard Biological Parts. Working at their own schools over the summer, they use these parts and new parts of their own design to build biological systems and operate them in living cells. So-called **policy and practices work** is an inherent part of each iGEM project.

SYNENERGENE is a European network fostering RRI in SynBio by mobilising a wide variety of stakeholders and members of the public, bringing them together and facilitating a sustainable and fruitful dialogue.

Public Science & Participation

Art, Culture & Society

SYNENERGENE PLATFORMS

SynBio Futures

Research & Policy

Collaboration iGEM & SYNENERGENE

To strengthen RRI in the field of SynBio we stimulate collaboration between iGEM teams and partners from SYNENERGENE.

One example is a series of **real-time technology assessments** to explore possible futures for SynBio.

We also seek contributions from iGEM teams to:

- anticipatory and adaptive forms of biosafety assessment
- development of a web-based educational platform introducing potential SynBio applications and implications in a playful way
- development of design ideas for exhibitions exposing the public in imaginative and artistic ways to different dimensions of SynBio.

Application scenarios

offer detailed and realistic descriptions of how SynBio ideas can lead to actual applications in society, including: design criteria for the products proposed, target producers and users of the products, conditions needed for production and marketing, legal issues of patenting, regulatory safety requirements, and available or conceivable (competing) alternatives.

Real-time technology assessment

We have invited iGEM teams to focus their engineering work on antibiotics, energy producing cyanobacteria, or nature conservation, and to contribute in their policy and practices work to a process of real-time TA of these applications by elaborating **application scenarios** and **techno-moral scenarios**.

SYNENERGENE partners will take up the scenarios as a starting point for an interactive TA process, involving a variety of stakeholders and iGEM team members in workshop settings with the aim to develop socially robust agendas for SynBio innovation. Scenarios will also be used by SYNENERGENE partners in public debates of SynBio futures.

Techno-moral scenarios

should stimulate imagination, reflection and debate about ways in which SynBio applications may transform our society through wider impacts, including ethical, legal and social issues.

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