

Synthetic Biology School Workshop Handout

What is synthetic biology?

- The design and construction of **new biological parts, devices and systems**.
- The **re-design** of existing, natural biological systems for **useful** purposes.
- We aim to use the **same tools, techniques and principles as engineers**.

Actually there's no right or wrong answer to this question. Synthetic biology means different things to different people!

The Registry

Time for a bit of online shopping!

Have a look at the **Registry of Standard Biological Parts**

(<http://partsregistry.org>) and go to the 'Catalog of Parts and Devices' and then 'protein coding sequences'.

These are standard genes that you might have learnt about in your biology or chemistry lessons. Each gene is made up of a specific DNA sequence and codes for a specific protein.

Try to find a part that might make bacteria glow green (hint: go to reporters).

iGEM

The International Genetically Engineered Machine Competition is for undergraduates all over the world. Each university's team does their own synthetic biology project over the summer, and then goes to the Jamboree at M.I.T. in November to present their project and swap ideas with other teams!

Our iGEM Project

This summer, we've been designing...

[Fill in your own details here! Make sure you explain it so that any school student will get a basic idea of what you're trying to do. You may find this a bit tricky, but it's really important that scientists learn to communicate their ideas in an effective way to non-specialists.]

Activity One: New Applications

Brainstorm some new applications for synthetic biology!

If you're having trouble coming up with ideas, you could choose one of the following key words to focus on. But remember, there are no limits to what synthetic biology can be applied to!

- Health
- Water
- Biofuels
- Bioremediation
- Environment
- Food
- Construction
- Cosmetics

Regulation of synthetic biology

Why is regulation of synthetic biology important? Again, there is no right or wrong answer to this question, but it's essential that we think about it and discuss it!

Activity 2: Regulating Synbio

'Everyone should have access to the methods used in synthetic biology, regardless of their background and training'

What do you think?

The media and synthetic biology

Does the media affect the public's perception of synthetic biology? How?

Why is public engagement so important?

Find some newspaper headlines/articles that talk about synthetic biology.

What language do they use and what images come to mind when you read them?

Activity 3: Marketing your own synthetic biology product

- Think of a name and act out a TV advert for your product.
- How would you ensure the public that it is safe to use?
- What would be the advantages of using a synthetic biology product over a more traditional alternative?

