

BIOMANUFACTURING WITH PROFESSOR TUCK SENG WONG AND THE EVOLUTOR TEAM

TALKING POINTS

KNOWLEDGE

1. Who revolutionised our understanding of life on Earth in 1859?
2. What was the name of the book that contained the concept of natural selection?

COMPREHENSION

3. How has the concept of survival of the fittest inspired Tuck and his team?

APPLICATION

4. What does the Evolutor technology enable Tuck and his team to do?

ANALYSIS

5. How have the workings of Mother Nature inspired Tuck's work?

SYNTHESIS

6. What might the future hold for the field of biotechnology and biomanufacturing? How might nature inspire the scientists of tomorrow?

EVALUATION

7. It has been said there are pros and cons to biotechnology. What do you think the possible advantages and disadvantages are?
8. To what extent do you agree that Mother Nature is the best engineer?

ACTIVITY

The Evolutor technology can develop microbial capabilities applicable for many different areas of biomanufacturing.

Choose an industry from the list and conduct your own research to answer the questions below.

(We have added some useful links to get you started.)

Food and drink

(www.archive.bio.org/articles/biotechnologys-impact-food-ingredients)

Agriculture

(www.usda.gov/topics/biotechnology/biotechnology-frequently-asked-questions-faqs)

Biofuels

(www.biofuelwatch.org.uk)

Flavours and fragrances

(www.cosmeticsdesign.com/Article/2018/10/16/5-ways-biotech-is-working-for-the-fragrance-industry)

- How sustainable is your chosen industry?
- How could microbial optimisation help it to be more sustainable?
- To what extent is this industry already using microbial optimisation?
- If you were a manufacturer in this industry, how could Tuck and his team help you?
- If you could ask Tuck and his team to evolve and adapt a microbe for your biomanufacturing needs, what would you ask them to do?
- What impact could the Evolutor technology have for your industry as a whole?

MORE RESOURCES

Tuck recommends the following websites for useful resources:

• Royal Academy of Engineering:
www.raeng.org.uk/education/schools/teaching-and-learning-resources

• University of Sheffield:
www.sheffield.ac.uk/schools

• Institution of Chemical Engineers:
www.icheme.org/career/early-career

Joe introduces Evolutor in this video:
www.vimeo.com/624434062

Tuck and Kang Lan have published a protein engineering textbook:
<https://link.springer.com/book/10.1007/978-3-030-56898-6>

Head to Tuck's Futurum webpage to download the accompanying animation, PowerPoint and translation:
www.futurumcareers.com/-the-engineering-behind-evolutor