

Questionnaire on Microbial Fuel Cells and synthetic biology

Hello! We are the Nanjing_NFLS team from the iGEM competition. The International Genetic Engineering Machine Competition (iGEM) is a multidisciplinary, international scientific competition focusing on synthetic biology, and was founded by MIT in 2003. Each team selects a new synthetic biology topic to analyze, and we need your feedback and assistance to do so.

We hope that you can take 2-3 minutes of your free time to fill out this questionnaire, and we assure you that your information will be kept anonymous and strictly confidential, and will only be used to help us analyze the public's understanding of microbial fuel cells and synthetic biology. Your contribution will be of great help to us! Thank you!

I. Personal circumstances

1、 Your age group is: [Single Choice]*

- 18 years old and under
- 18-30 years old
- 31-50 years old
- 51-70 years old
- 70 years old and above

2、 The city you currently live in is _____. *

3、 Your academic qualification is: [Single Choice]*

- High school and below
- College
- Undergraduate
- Postgraduate and Doctoral

4. Is your work related to biology or power generation? [Single choice]*

- No
- Ever.
- Working
- Future plans

II. On synthetic biology

Synthetic biology was defined internationally in 2003 as the study of artificial biological systems based on the genetic engineering and engineering methods of systems biology, similar to modern integrated architectural engineering, which applies engineering principles and methods to biotechnological fields such as genetic engineering and cellular engineering. In simple terms, synthetic biology is a multidisciplinary field and aims to create new biological systems by synthesizing artificial components.

5、 Did you know anything about synthetic biology before this survey? [Single choice]*

- Never heard of it at all
- Know but do not understand
- Approximate understanding
- Very professional

6. How do you see the future of synthetic biology? [Single choice]*

- Will bring about a new generation of biotechnology revolution and is very supportive of its development
- Mixed, but generally supportive of its development
- Idealistic and insecure and does not support its development
- Don't know, remain neutral

7. How comfortable you are with the way synthetic biology is used? [single choice]*

- Don't use any products derived from genetic engineering
- Use products brought about by genetic engineering, but the modified genes will not leave the laboratory
- Use all products resulting from genetic engineering, including modified genes

8. In which areas of synthetic biology are you receptive to? [single choice]*

- pharmaceutical
- Medical
- Agriculture
- Environmental governance
- Energy development
- Basic Research
- Other _____

III. On microbial fuel cells

Microbial Fuel Cell (MFC) is a device that uses microorganisms to directly convert chemical energy from organic matter into electrical energy, offering new opportunities to sustain energy production from biodegradable, reduced compounds. We hope to increase its efficiency in producing electricity through synthetic biology and secondly increase its functionality in degrading pollution by improving its hardware issues.

9. Did you know what a microbial fuel cell was before this survey? [Single choice]*

- I'm sorry, I had no idea.
- Know it's a power-producing device, but don't know how it works
- Know that it is a power generation device and is familiar with how it works

10. Do you know the application areas of microbial fuel cells? [Single choice]*

- Know
- Don't know

11、 Where did you learn about the application of microbial fuel cells? [Multiple choice]

- Study within the high school curriculum
- Have people working in related fields around them
- Topics related to university research
- Academic journals and magazines
- Media, video platform
- Other _____

12、 What do you know about the advantages of microbial fuel cells? [Multiple choice]*

- Higher energy conversion efficiency
- Mild response conditions required
- Low carbon emissions
- Wide range of fuel sources
- Can be used for sewage treatment
- Other _____

13、 What do you personally think are the current drawbacks of microbial fuel cells? [Multiple choice]*

- Low power output due to low electricity production
- High cost and low productivity
- Large variation between batteries, difficult to harmonize standards and regulation
- Compared to conventional batteries, they are larger and less portable.
- Risk of leakage of strains from the device
- Other _____

14、 What are your views on the current consumption of traditional energy sources such as oil, coal and natural gas? [Single choice]*

- It's not that bad. I think it will last a long time at least.
- Rapid consumption and the need to develop new renewable energy sources as soon as possible.
- I don't care, since it doesn't affect me anyway

15、 What do you think about the current pollution problems caused by traditional energy sources? [Single choice]*

- Not serious, can be ignored
- More serious, but pollution is within limits, so new energy is not a priority.
- Very serious, need to develop clean renewable biofuels as soon as possible

16、 Do you think microbial fuel cells have the potential to replace traditional energy sources for public use? [Single choice]*

- Unlikely
- Difficulties
- Neutral
- Possible

Certain

17, What is your opinion on the use of synthetic biology to try to increase the productivity of microbial fuel cells? [Single choice]*

Support, we need to try new ways to solve current problems

Neutral, because its effects and the biosafety implications are not known

No support, this method is not useful and has high risks

18: What else do you think and add to synthetic biology/microbial fuel cells?
