GMO Survey

* Required

1. E-mail address. By submitting your email, you allow us to contact you once about the results of this survey (optional)

_____

2. What is your gender? *

Mark only one oval.

- ◯ Female
- ◯ Male
- ◯ Other
- ◯ Prefer not to say

3. What is your age? *

Mark only one oval.

- ◯ Under 12
- ◯ 13-17
- ◯ 18-24
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55-64
- ◯ 65-74
- ◯ 75 or older

4. What country are you from? *

_____

5. What is the highest eduation level you have completed? *

Mark only one oval.

- ◯ No schooling completed
- ◯ Basic elementary school
- ◯ Some high school, no diploma
- ◯ High school diploma
- ◯ Trade/technical/vocational school
- ◯ University: Bachelor's degree
- ◯ University: Master's degree
- ◯ Doctorate
- ◯ Other: _____

6. Are you currently doing or have you finished a biology-related study (e.g. Biology, Life Science and Technology, Biomedical/Pharmaceutical Sciences etc.) *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Other: _____

7. Have you heard of biosafety and biocontainment of genetically modified organisms (GMOs)? *

Mark only one oval.

- ◯ Yes
- ◯ No

8. From which sources do you obtain the majority of your information about GMOs?

Check all that apply.

- [ ] Television
- [ ] Newspapers
- [ ] Government
- [ ] Social media
- [ ] Scientific literature
- [ ] Books
- [ ] Friends and family
- [ ] Other: _____

9. Which sources do you think contain trust-worthy information about GMOs?

Check all that apply.

- [ ] Television
- [ ] Newspapers
- [ ] Government
- [ ] Social media
- [ ] Scientific literature
- [ ] Books
- [ ] Friends and family
- [ ] Other: _____

About GMOs

With current technology, it is possible to modify the DNA of living organisms. These modified organisms are called genetically modified organisms (GMOs). GMOs have the potential to solve many of the major problems of our time. Food security, climate change, plastic pollution, nitrogen fixation; all can potentially be solved with GMO's. Many of these potential breakthroughs, however, do not make it to the real world. The safe release of the GMOs can, namely, not be guaranteed. Proving the biosafety and biocontainment possibilities of the GMO are necessary, since the GMO could be harmful to other organisms or spread easily around the world. The GMO should be safe and unspreadable, as that could harm the natural balance in the ecosystem and/or health of animals and humans.

10. How important do you think biosafety and biocontainment is?

Mark only one oval.

- ◯ I think it is very important to prevent outbreaks of GMOs regardless of the possible benefits.
- ◯ I think it depends on the application as the GMO benefits could outweigh the risks.
- ◯ I think it is not very important as they are not that dangerous.
- ◯ Other: _____

11. What statement fits best with your view on the biosafety regulations?

Mark only one oval.

- ◯ I think the biosafety regulations should inhibit all possible risks, so should be very strict on what gets approved
- ◯ I think the biosafety regulations should allow as much research as possible without allowing the risks to become too high, so the regulations should become a bit less strict
- ◯ I think the biosafety regulations should be more lenient to not restrict research, so the regulations should become a lot less strict
- ◯ I think the biosafety regulations are not necessary, scientists can determine themselves what research is to risky
- ◯ Other: _____

12. Could you elaborate on your standpoint in regards to the current biosafety and biocontainment regulations?

_____

_____

_____

_____

_____

13. If scientists would show that the biosafety and biocontainment of a GMO is feasible, would you trust that the application of GMOs outside of a lab environment is safe?

Mark only one oval.

- ◯ Yes, I do not think there are any risks with the application of GMOs
- ◯ Yes, I think we can mitigate the risk enough with the current developed biocontainment systems
- ◯ No, the current biocontainment systems are not sufficient to guarantee the safety
- ◯ No, the application of GMOs outside of the lab will always be dangerous
- ◯ I do not know enough about this subject to judge this
- ◯ Other: _____

14. Can you describe the concerns and the objections that you personally have with the application of GMOs outside of the lab environment?

15. Considering a GMO-derived product (which is proven to be biosafe) with more benefits, when compared to a traditional product, which one would you choose? For example, GMO foods are more nutritious, tastier, grow faster, need less pesticides and could possibly have more benefits.

Mark only one oval.

- ◯ GMO-derived food products because they enhance the product's outcome and are therefore more cost-effective
- ◯ GMO-derived food products because they are more nutritious, tastier and have less pesticides on them.
- ◯ I have no clear preference.
- ◯ Traditional food products because I think it is safer
- ◯ Traditional food products because I do not think GMOs are beneficial in any way
- ◯ Other: _____

Opinion on risk aspects of GMOs

Can you tell us your opinion on the following statements surrounding the risk aspects of GMOs using the scale. 1 means absolutely not true, while 10 means absolutely true.

16. I think GMOs are dangerous because they are unnatural

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

17. I think GMOs are dangerous because the techniques are too new

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

18. I think GMOs are dangerous because I am unfamiliar with it

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

19. I think GMOs are dangerous because they are too powerful

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

20. I think GMOs are dangerous because they can harm the natural ecosystems

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

21. I think GMOs are dangerous because they can harm human/animal health

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

22. I think GMOs are dangerous because I don´t trust scientists

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

23. I think GMOs are dangerous because they can be misused

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

24. I think GMOs are dangerous because of ethical concerns on genetic modification of living organisms

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

25. I think GMOs are dangerous because of my religious beliefs

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Absolutely not true	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Absolutely true

Biosafety of GMOs

Before the following specific questions, you will get a short explanation of the two systems iGEM team Leiden from Leiden University in the Netherlands and team MIT_MAHE iGEM from the Manipal Academy of Higher Education in India are currently working on. These are both involved with a safe release of GMOs.

Team iGEM Leiden 2021 works on a biocontainment and biosafety system: DOPL LOCK, which could potentially solve the issues surrounding the safe release of GMOs. Using such a system the GMOs could be utilized to solve th real world problems they are designed for. To ensure the safety and prevent the spread of the genetically modified material we will work with a double plasmid lock. Using our double plasmid lock we can both specifically inhibit natural bacteria from taking up the genetically modified material and lock the GMO in a specific place. These two features ensure both the genetic material and the GMO itself cannot go anywhere.

26. Are you more inclined to support the application of GMOs with the knowledge of our developed system? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Not sure
- ◯ Other: _____

27. What additional information or evidence would convince you that the application of GMOs could be safe in the future?

Mark only one oval.

- ◯ Show that the biosafety and containment strategy works in the lab as proposed.
- ◯ Show long term effects in the laboratorium.
- ◯ Show long term effects in a contained space outside of the laboratorium.
- ◯ Show long term effects outside of a contained space.
- ◯ I cannot be convinced to let GMOs out of the laboratorium.
- ◯ Other: _____

28. What concerns do you have about the application of GMOs?

Mark only one oval.

- ◯ I think GMOs are dangerous and should stay in the laboratorium
- ◯ I think there are other solutions possible so GMO solutions are not needed
- ◯ I have no concerns about applying GMOs for problems outside of the laboratorium
- ◯ Other: _____

29. What concerns do you still have about the biocontainment system DOPL LOCK we propose?

Mark only one oval.

- ◯ I don´t believe this system will make GMOs safe because it will remain genetically modified
- ◯ I don´t believe this system will prevent the GMO from spreading
- ◯ This system will make the GMO more dangerous, as more genetic modification is needed
- ◯ I have no concerns about the proposed biocontainment system DOPL LOCK, I believe this could make the release of GMOs safer
- ◯ Other: _____

30. Do you (still) think the application of GMOs will always be dangerous, regardless of a developed biocontainment strategy?

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Not sure

GMOs and food

Team MIT_MAHE works on the project Cell-tinel, which aims to curb the problem of stem borers (a pest) in rice by usin a novel approach! This problem is a huge one because it can't be solved by traditional means, and would require another approach that can avoid genetically modifying the plant. We intend to use a bacterial delivery system for the cr toxin to promote overall immunity of the plant. If we succeed, we might be able to improve yields in our country India, which is primarily agrarian and boost its growth!

31. Do you think the GMO - induced rice crop could retain a significant amount of characteristics of a conventional rice crop?

Mark only one oval.

- ◯ Yes
- ◯ No

32. What do you think of having farmers implementing the aid of GMOs to help grow the plant rather tha modifying the plant itself?

Mark only one oval.

- ◯ It's better than modifying the plant
- ◯ It's the same as modifying the plant
- ◯ It's worse than modifying the plant
- ◯ Other: _____

33. What do you think could be a potential alternative to prevent the spread of GMO's (plant or bacterial when compared to our solution?

Mark only one oval.

- ◯ Organic pesticides
- ◯ Regular pesticides
- ◯ Transgenic crops
- ◯ Other: _____

34. Would you consider using safety mechanisms such as the DOPL LOCK in our delivery system to mak it sufficiently biosafe for application in the real world?

Mark only one oval.

- ◯ Yes
- ◯ No

Thank you so much for taking the time to fill in the survey!

35. Would you like to potentially join us in a discussion about the safety of GMOs?

Mark only one oval.

- ◯ Yes
- ◯ No