

Biotechnology: the use of living things or their parts to perform a useful function or produce a product

Go to <https://www.biotech-careers.org/job-areas> to see some areas of biotechnology!

Summer Assignment Part I: Learning to Love GMOs (see separate document) Due August 26, 2024 to drop-box in new Canvas module

Summer Assignment Part II: During the summer, find a **current event** in biotechnology that could serve as an inspiration for a research project this year. This **must** be something published/released in May, June, July, or August 1-26 2024. **Due August 26, 2024 to drop-box in new Canvas module**

Some good places to find reliable information are:

- Newspaper articles (NY Times has good science reporting)
- Magazine article (<https://www.sciencenews.org/>)
- Podcasts
 - Science Friday (<https://www.sciencefriday.com/>)
 - RadioLab (<https://www.wnycstudios.org/podcasts/radiolab>)
 - Nature (<https://www.nature.com/nature/articles?type=nature-podcast>)
 - Scientific American (<https://www.scientificamerican.com/podcasts/>)
 - Science, Quickly (<https://www.scientificamerican.com/podcast/60-second-science/>)

Submit a document that includes:

1. A link to the article
2. A one paragraph summary
3. A discussion of at least one project idea inspired by the article (these can be very ambitious and something you can't necessarily do in biotech this year)

Summer Assignment Part I
Learning to Love GMOs

Read (or listen) to the article: <https://www.nytimes.com/2021/07/20/magazine/gmos.html>

A pdf of the article is also posted to Canvas.

Reading Check. Turn these questions into the Canvas drop box.

1. Describe the purple tomato from the article in one sentence **in your own words**.
2. The purple tomato has a modified genetic switch. What does that mean?
3. What happened when cancer-prone mice were fed the purple tomatoes?
4. This article contains pictures showing genetically modified foods. Make a table of these foods summarizing the importance of the modification.
5. In the US, what percentage of soybeans are genetically modified? What percentage of corn canola, and sugar beets.?
6. How have RoundUp Ready corn and RoundUp Ready soybeans been genetically modified?
7. What is monoculture and what is the major criticism of this practice? (you might have to look this up; it is not stated explicitly in the article).
8. How did Monsanto antagonize farmers using their GMO seeds?
9. What was the promise of Golden Rice? Why is it not being grown?
10. How has Bt corn been genetically modified? What is the advantage of using it?
11. What other kinds of modifications to tomatoes are Martin's lab working on?
12. What are some possible risks in tinkering with genes of food crops?
13. How have people historically tinkered with genes of food crops?
14. Are plants modified using CRISPR considered to be GMOs by the USDA? Why or why not?
15. What types of foods is the company Pairwise working on?
16. How could genetically modifying crops bring biodiversity back into agriculture?
17. How does money factor into which crops gets genetic modification?

Essay (1-2 pages, single-spaced) Turn this essay into the Canvas Turn It in drop box.

Reflect and expand on this article.

You can use the bullet points to guide your essay but don't try to address them all and feel free to go in another direction with your essay if you wish.

- What were your views of GMOs before and after the article?
- Would you eat and/or grow a GMO purple tomato? Why or why not?
- Do you think gene edited crops should be regulated? GMO crops? Why or why not?
- What is the role of Big Agriculture in this discussion?
- What are some problems this article brings up and how would you solve them?
- What is the promise of genetically modified foods and what obstacles are preventing them from becoming reality? Can you offer some solutions?