**Microbe Research Project**

**Introduction:**

Microbes are microscopic organisms and are found all around us. They can be classified into 5 main groups: Bacteria, Viruses, Fungi, Algae, and Protists. Microbes have special roles in the world and can have either positive or negative impacts on us. Demonstrate your understanding of an assigned microbe and share its importance to the class.

**Your project will include:**

1. **Title**, name, partner, date, block
2. **Scientific and Common Name** of ONE organism. Scientific name consists of TWO names in italics ( *Escherica coli* )
3. **Image**
4. **Description** of organism: Shape, Size, Type (bacteria, virus, fungus, algae, protist), Habitat (where normally found).
5. What does your microbe do? How does it do it?
6. Impact: Does it have a Positive (good) or Negative (bad) impact on humans/plants/ society? Discuss how/why this is important. How many people are affected?
7. Cite your sources – minimum of three reliable sources. No Wiki, Prezi, Weebly.
8. Can be poster, cereal box, powerpoint.
9. Separately on Teams, submit at least one multiple choice question about your presentation to play kahoot with. One per group.
10. Individually, submit a **Reflection** separately on Teams about something you learned or that surprised you about your topic.
11. **Share** – you will present your project to another group
12. **Peer Review** other group’s projects

**Things to be aware of:**

* MUST BE DONE DURING CLASS TIME
* Project must be IN YOUR OWN WORDS
* Use images to support your descriptions
* Cite all your work, even the images. Minimum of three RELIABLE sources.
* Well organized, no spelling mistakes, visually appealing, effort

Microbe Cereal Box

**Front Back**

Description of what your microbe does and how it does it.

Discuss how/why this microbe is is so important. (How many people are/were affected?)

How would things progress if this microbe stopped functioning?

Images supporting importance (waste treatment diagram, symptoms of disease, foods it is used to make, graph showing population affected)

**In back right corner:** name, partner

Common Name and scientific name and common name. It’s role (microbiome, waste management, nutrient cycling, etc)

Hand drawn image



Description - shape, Size, Type (bacteria, virus, fungus, algae, protist),

Habitat (where normally found).

|  |
| --- |
| **Side panel:** Fun facts about your microbe |

|  |
| --- |
| **Side panel:** books, websites you used |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Emerg | Dev | Prof | Ext |
| To be extending your presentation  |  |  |  |  |
| Topic is well explained with images fully supporting text |  |  |  |  |
| My reflection is meaningful and is in complete sentences |  |  |  |  |

Topic List

1. Bacteria in the environment – Nitrogen fixers
2. Gut bacteria – Name a (beneficial) bacteria species that normally lives in our gut and what it does for us. How did it get there? What can decrease the population? Could we live without that one species? Are there other species that could take it’s place? How can we replenish this population if we lose it?
3. Bacteria in Medicine – Bacteria are used to make antibiotics and the insulin that people with diabetes need. Pick ONE microbe that is used to make a particular medicine/protein. (eg. Penicillin, insulin).
4. Bacteria in Waste Management – more than 300 species of bacteria are used in water treatment plants to decompose wastes. Explain the process and its importance.
5. Bacteria in Disaster recovery – Bacteria can help clean up oil spills and areas contaminated by chemical spills or radioactive waste.
6. What is bacteria’s role in cavities?
7. Bacteria that cause disease/infection. This can include food poisoning.
8. Virus that causes disease
9. Fungus that causes disease
10. Protist that causes disease/infection
11. How are fungi used in food production?
12. Importance of plankton – oxygen production and industry
13. Food Poisoning – pick ONE microbe that can cause food poisoning, what type of food would you find it in? How does it get there? What happens to our bodies when we eat it? What steps can we take to prevent this microbe from poisoning us? Discuss the overall toll on the general population if this microbe was widespread.
14. Parasite – Pick a microscopic parasite. Where does this microbe normally live? Show its life cycle. What is the host (list all if more than one). At what stage in life cycle does it infect the host? How long does it stay in the host? How does it get in? If it does, how does it get out? Or what part of life cycle gets out? What are the symptoms? Is it treatable? Curable? How can you prevent getting it? What countries is it most common?
15. Disease – Pick a microbe that causes a particular disease. How do you catch it? What are the symptoms? Does the disease kill? How long does it last? How do you cure/treat it? How can you prevent it? Is there a certain population that is more vulnerable? What countries is it most common in?
16. Food Production – pick ONE microbe or family that is used to make food. What type of food? Discuss the process in which this microbe helps make the food. What requirements does this microbe have to do its job?
17. Gut bacteria – Name ONE (beneficial) bacteria species that normally lives in out gut and what it does for us. How did it get there? What can decrease the population? Could we live without that one species? Are there other species that could take its place? How can we replenish this population if we lose it?
18. Medicine – Pick ONE microbe that is used to make a particular medicine/protein/vaccine. (eg. Penicillin, insulin). How is the medicine taken? How does it help? Does it prevent growth, prevent, cure or treat a disease/illness?
19. REMOVE: Vaccine – Pick one microbe that is used in the creation of a vaccine. What disease/illness is it used for? Does it fully prevent or just reduce the effects of the disease? At what age do you get the shot? Is a booster required? Is the vaccine live, killed, or weakened? Is the vaccine available world wide or only some countries? Is it free? What would happen if you did not get the vaccine? Give some reasons why some people DO NOT/CAN NOT receive the vaccine. Discuss how this vaccine benefits the general population.

1. Cycling of Nutrients – pick ONE specific microbe that is useful the cycling of ONE nutrient (eg. Nitrogen). Briefly discuss nitrogen cycle and what your microbe does in this cycle. How does it do this? Where does it live? What do you think would happen if a disease wiped out all these microbes? Are there any particular requirements for this microbe to do its job? What hampers it? Discuss how does it benefits the general population.
2. GMO/Agriculture – Pick a microbe that is used in the process of Genetic Engineering. What part of the microbe is used? How is it used? You may want to include a diagram to support the process. What other organism is involved? What is the benefit for the new organism? How does it benefit the general population?
3. Bioremediation - Pick ONE microbe that is used in cleaning up chemical spills (oil spills, agricultural waste). How does it do this? Are there any particular requirements for this microbe to do its job? What hampers it? Discuss how does it benefits the general population.
4. Waste Management Pick ONE microbe that is used to purify water. How does it do this? Are there any particular requirements for this microbe to do its job? What hampers it? Do all countries use this technology? Discuss how does it benefits the general population (compare to other countries that do not have this technology).
5. Microbes in clothing.....why do they use microbes in clothing?
6. Food Spoilage that causes illness – Pick one organism that spoils our food ( you may need to pick a particular type of food). Why does it spoil our food (is it breaking down the food into something it can use?) how does it do this? What enzymes does it use? What is the result? How do we slow/stop this process? What can be the symptoms.

