

Make a Plant Attacker Activity



Teaching notes

This activity introduces microorganisms: fungi, bacteria and viruses. It helps to show how microorganisms have different structural parts which they use to attack plants.

KS2 Curriculum links

- **Sc2 Living things in their environment a:** about ways in which living things and the environment need protection.
- **Sc2 Life Processes c:** to make links between life processes in familiar animals and plants and the environments in which they are found.
- **Sc2 Microorganisms f:** that microorganisms are living organisms that are often too small to be seen, and that they may be beneficial [for example, in the breakdown of waste, in making bread] or harmful [for example, in causing disease, in causing food to go mouldy].

Background concepts

- Ask the class of any examples of human illness that they know of. Explain that in just the same way as we get nasty colds, chicken pox and flu, plants get sick too and similar 'germs' or 'bugs' cause plants to get sick.
- Explain that the scientific name for these 'germs' is microorganisms, which are very small living things, so small you often can't see them without looking down a microscope or using a magnifying glass. There are three types of microorganisms: bacteria, viruses and fungi.
- Explain that these microorganisms have different parts of their bodies, which allow them to infect plants and that in this activity they are going to be making models of microorganisms that attack plants.

Resources

- Key Facts: introduce basic points about bacteria, viruses and fungi (Appendix 1)
- Fact Files: introduce different pathogens (Appendix 2)
- Extension: more background information for each pathogen with Information Sheets (Appendix 2)

Extension

Explain that not all microorganisms cause harm to animals and plants; some are extremely useful. For example some bacteria help plants to absorb nutrients (nitrogen) needed for plant growth; in return the plant provides the bacteria with sugar and protection in the roots. This type of relationship is known as symbiosis.

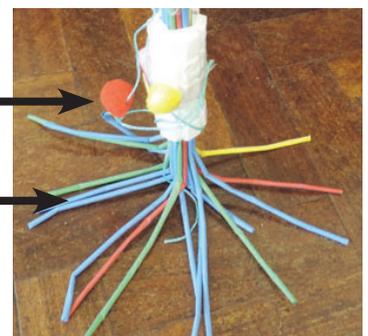
Models

Pupils are free to get creative making their models. However there are key structural elements of the pathogens to be included for each pathogen.

As students are making models, it's useful to ask key questions such as: do you think plants can get sick, what is the purpose of this body part, what would happen if all the plants in the world were attacked, what do we need plants for? This will get students thinking about the importance of plants and why plant diseases might be important.

Fungi

- Different types of spores (summer and winter)
- Infection tubes (hyphae)



Bacteria

- Rod shaped to squeeze between plant cells
- Swimming tails to swim towards plants
- Proteins that help ice crystals to form. The crystals pierce holes in plants



Virus

- Very small helps it to squeeze into plant cells
- Spiral of virus code which tricks the plant into becoming a 'virus making machine'
- Identical protein coat blocks are easy to put together to make new viruses



Extension

Once students have made models of the three main types of pathogen they can make a model of their 'deadliest plant attacker', with different body parts to attack plants with: chemical bombs, or create disguises to hide from plants.

Materials

You can use any arts and crafts materials you may have to hand. Below are some ideas and how they can be used:

- Pipe cleaners, string: for making bacterial swimming tails (flagella), the virus code in *Tobacco Mosaic Virus*, the infection tube (hypha) in bean rust fungus
- Plastic bottles, cardboard tubes, cardboard: for making the bodies of the viruses, bacteria and fungi
- Plasticine, fluffy balls, sequins: for viral coat blocks and fungal spores
- Other materials: pens for colouring in spores, sticky tape and glue, scissors

Technical Notes

The only safety issue arises when using scissors and glue etc. for sticking parts of the models together.

Appendix 1

- Fungi: Key Facts (PDF)
- Bacteria: Key Facts (PDF)
- Virus: Key Facts (PDF)

Appendix 2

- Bean Rust Fungus: Fact File (PDF), Information Sheet (PDF)
- *Pseudomonas syringae* Bacteria: Fact File (PDF), Information Sheet (PDF)
- *Tobacco Mosaic Virus*: Fact File (PDF), Information Sheet (PDF)

Contact

Please send us photos of models your students make, so we can post them online. We'd also like to hear your feedback. Please get in touch: outreach@bspp.org.uk and visit: bspp.org.uk/society/education for more resources.