



14–16 years

Present the news: Using microbes to convert waste plastic





Using microbes to convert waste plastic

Polyethylene terephthalate (PET) is a widely used type of **plastic**. Most recycling technologies turn PET back into its **monomers** and then use them to make new plastic. Now, scientists have genetically engineered bacteria to transform PET plastic waste into vanillin, which is a very valuable chemical. Vanillin is the **molecule** responsible for the smell and taste of vanilla. It is used in food and cosmetics. Traditionally, it is extracted from the vanilla plant but global demand far outweighs the supply from natural sources.

The researchers genetically engineered a strain of the *Escherichia coli* (*E. coli*) microbe to produce **enzymes** that convert one of the **monomers** of PET into vanillin. These **enzymes** were introduced to a biological cell to carry out the reaction. There were challenges to overcome with the process including getting the substrate into the cell and removing the vanillin, which is toxic to the new strain of *E. coli*.



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How a genetically engineered bacteria could reduce our planet's plastic waste



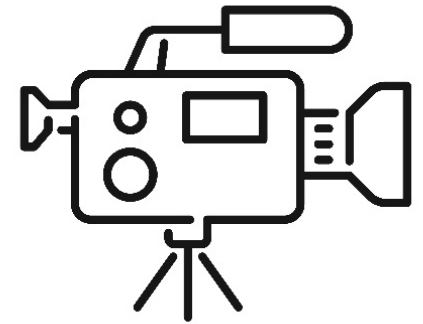
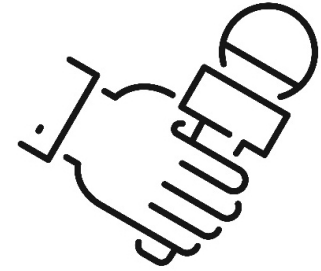
The task

In your groups, prepare to present the science research news as an item on a news programme. Use the script template to help you.

You have five minutes for the presentation.

Everyone needs to say something during the 'broadcast'. You will have the following roles in your group:

1. News anchor – introduces the story.
2. Reporter – gives more detail.
3. Scientist/s – answers questions.





What the news anchor needs to do

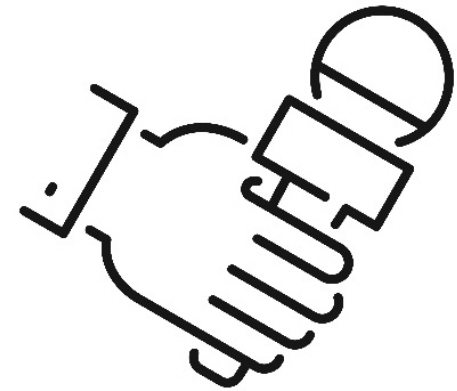
- Introduce the news item and explain simply what problem the scientists were trying to solve, or what they were trying to investigate.
- Work with your group to make sure the whole presentation is no longer than five minutes. Talk together about how much time each part should take.
- End the news item after your teammates have finished. Give a closing statement in reaction to what's been said. For inspiration, imagine how your friends or family might feel hearing the news item.





What the reporter needs to do

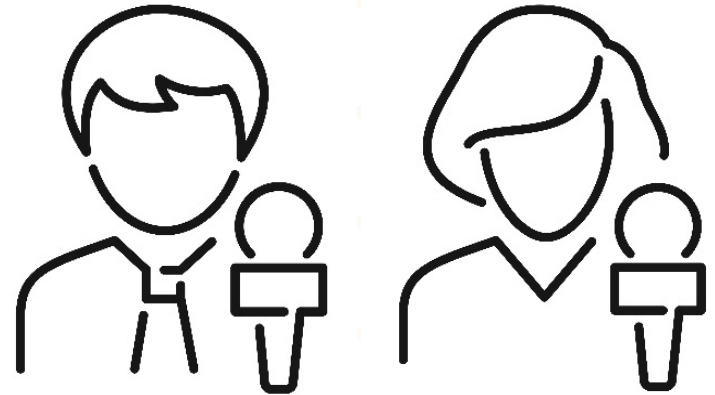
- After the news anchor speaks, tell the audience more about the problem the scientists were trying to solve.
- Ask the scientist questions so the audience can learn about their discovery. Think about what the audience would want to know. Look at the prompts in step 6 of your worksheet.
 - Findings
 - Context
 - Relevance/application
 - Impact
- When practising with your group, try to respond to what the scientist says instead of just reading your questions.





What the scientist needs to do

- When the reporter asks you questions, give clear answers that your classmates will understand.
- Read the text carefully and make sure you know the main ideas. Look at the prompts in step 6 on your worksheet.
 - Findings
 - Context
 - Relevance/application
 - Impact
- If any words from the text seem hard, think of simpler ones to explain them.
- Talk to your group about whether pictures or diagrams could help the audience understand better. If you decide to use them, find and present them.



What does a good news presentation look like?

In a good presentation...

- there is a clear beginning, middle and end
- everyone involved gets to speak, and when they do, they are introduced and thanked for their contribution
- it's clear that the participants have considered the needs and interests of their audience
- it ends on time (remember each group has five minutes to speak).

When speaking...

- be clear
- be loud enough
- look at the audience
- use words the audience will understand
- look and sound confident (even if you don't feel it yet).