



LESSON 4: EVALUATING THE DRUG DEVELOPMENT PROCESS



Level: Key Stage 4

Duration: 60 minutes

Resources: Evaluating the drug development process presentation
Stages in drug development information sheet
Future of Science information sheet
Diamond nine cards

Overview: This lesson teaches students about the drug development process within the wider context of an ever-changing, dynamic scientific process. It explores the strengths of the current process and encourages students to think critically to suggest how it could be improved in the coming decades.



View/download film &
other resources

LEARNING OBJECTIVES

Explain why drugs need to be tested for toxicity, efficacy and dose

Describe the steps in the drug trial process and explain the reasons each step is needed

Evaluate different methods of testing new drugs.;

The development of scientific thinking

The ways in which scientific methods and theories develop over time

STARTER

1. Show students slides 2 to 5 of the 'Evaluating the drug development process' presentation which features some examples of the 'Lost Futures' artworks. These images are predictions of the year 2000 drawn in the year 1900.

Discussion points:

- Did they predict anything correctly?
- What did they get wrong?
- How might science and medicine be different in another 100 years?

2. Show *Future of Science* film.

Suggested follow-up questions:

- Was there anything in this film that surprised you?
- What did you think was the most important message from the film?
- Why is it important that models, theories and equipment develop over time?

MAIN

Display slide 8 of the 'Evaluating the drug development process' presentation. When clicked, correct answers turn green and incorrect answers disappear.

1. Students use the *Stages in drug development information sheet* to answer questions on slide 9 of the 'Evaluating the drug development process' presentation. Show answers on slide 10 and 11 for students to self-assess.

2. Using the *Future of Science information sheet*, Students evaluate the use of animal experiments and humane research. Display the instructions on slide 13 of the 'Evaluating the drug development process' presentation for students to consider:

- Is the data human-relevant? i.e. Does it use human cells and data?
- Can experiments accurately predict what will happen in a human?
- Are there ethical issues?
- How well-established is it?

Show model answer on slide 14 for students to self-assess.

PLENARY

Reiterate that scientific models and technologies evolve over time and that there are many variables which influence this change. For example, social, ethical and scientific factors.

Give each pair of students a set of *Diamond nine* cards. Each card has a different fact or statistic relating to either animal experiments or humane research. Students discuss each consideration with their partner and decide how important they believe each card is, placing it in the 'diamond nine' shape accordingly.

This leads to a group discussion of whether they believe the benefits of animal experiments outweigh the problems.

