Animal testing **Advanced material**

Teacher Guide

#### overview

1.2 million EU citizens have signed a petition for the complete ban of animal testing. Their argument being it is both unethical and not useful. In this activity students are asked to decide whether they agree. They apply their knowledge about how asthma affects the gas exchange system to examine evidence and decide if animal testing is essential to developing new asthma drugs. They also learn about how to use ethical thinking to make difficult decisions and study different ethical viewpoints.

#### ADvanced materials

Animal testing is a sequence of two lessons. Advanced materials are longer than regular ENGAGE materials because in addition to applying science content they explicitly teach enquiry processes (Working Scientifically in the English National Curriculum). Each lesson has a distinct purpose:

Lesson 1: To understand the science behind the issue, and get student to apply knowledge (which we assume was introduced in a previous lesson)

Lesson 2: To consider the evidence and arguments, by learning to use an enquiry process (such as estimate risks, examine consequences)

#### LEARNING OBJECTIVE

In this lesson students will:

* Breathing: show how asthma affects the structure of the gas exchange system
* Use ethics: learn 3 kinds of ethical thinking: utilitarianism, rights and duties, virtues

#### Curriculum LINK

England National Curriculum KS3:

* Working Scientifically: understand the uses and implications of science, today and for the future.
* Biology: Gas exchange systems: the impact of asthma on the human gas exchange system

GCSE Combined Science subject content:

* Working Scientifically: Development of scientific thinking: appreciate the power and limitations of science and consider any ethical issues which may arise. Make decisions based on the evaluation of evidence and arguments.
* Biology: Health, disease and the development of medicines: describe the relationship between health and disease. Describe the process of discovery and development of potential new medicines, including preclinical and clinical testing.

#### ENGAGE MATERIALS

* For use with the PowerPoint containing both the teaching presentation and the Student Sheets.
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* Visit the ENGAGE website [www.engagingscience.eu](http://www.engagingscience.eu) for more real-life science lessons.

## **Lesson 1**

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| STAGE/PURPOSE RUNNING NOTES |
| Engage Get students interested in the issue of animal testing. | Display images (2). Ask students to discuss in pairs what they think the issue is. Reveal the answer and further information (3-5) and then the decision they will be making in the activity (6). Ask students for a show of hands to show who would sign the petition. NB: For a KS4 class you may wish to spend longer discussing the process of drug testing at this point.The objectives for this lesson is shown (7) and then a breakdown of how the students will use scientific evidence in lesson 1 and ethical thinking in lesson 2 to help them to make a decision (8).  |
| Review Students review their understanding of the gas exchange system | Introduce the need to develop more asthma drugs (9). Students work alone to apply their knowledge of the gas exchange system to explain how asthma affects it and how asthma drugs work (SS1). This task is used to activate their background knowledge so they are able to use it when looking at evidence in the next stage of the lesson. |
| Consider Groups use evidence to discuss how essential animal testing is in drug development | The next task is introduced (10). Ask students to work in small groups and give each evidence cards (SS2) and an A3 copy of the continuum line (SS3). Students read each evidence card and then discuss as a group what it tells them about how essential animal testing is for drug development. They decide where to place each card on the line. When all cards have been placed, they discuss how essential they think animal testing is. Ask groups for feedback and compare their thoughts. For any opinions presented, ask groups to use evidence and explain their reasoning. |

## **Lesson 2**

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| STAGE/PURPOSE RUNNING NOTES |
| Engage Review the dilemma about signing the petition to ban animal testing. | Review the dilemma (2). Ask students for a show of hands on how they would vote and ask if anyone has changed their mind after looking at the scientific evidence. Show the breakdown of how the students will use lesson 1 and 2 to help them to make a decision (3). Reveal the objectives for this lesson (4). |
| Play Students play a game to learn about how to use the three kinds of ethical thinking | Students are introduced to a new reality show that they are taking part in (5). In the show, as in life, they will need to make difficult decisions but can use three kinds of thinking to help make them (6). Ask students to work in pairs. Each will need information on the three kinds of ethical thinking (SS1). Assign each pair one type of thinking to use and show the slides (7-12) which contains the decisions. Pairs should make their decision based on what type of thinking they are assigned. The outcomes from each decision are shown. Compare the decisions made using different principles. Ask students if they feel happy with their choice now? Discuss as a class that when making a decision it is not usually a case of just using one principle.  |
| Decide Groups use ethical thinking to write arguments for a class debate | Set the next task (13). Ask students to work in pairs or small groups. They read through the viewpoints on animal testing (SS2) and decide if it is for or against a ban on animal testing and what ethical thinking it is demonstrating. They record this information (SS3).These viewpoints can now be used as a basis for a teacher-led class discussion or a specific format like a [‘Fishbowl’](https://en.wikipedia.org/wiki/Fishbowl_%28conversation%29). If you use a class discussion, we recommend getting students to present and justify their viewpoints by following this structure: * State your opinion
* Present your evidence (science, ethics)
* Explain your reasoning (how the evidence supports your opinion)

Students now consider the scientific evidence from lesson 1 and ethical thinking to come to a personal decision on whether they think animal testing should be banned (14). They should write down their decision with reasons. You may wish to provide sentence starters to support students. Finish with another show of hands - has anyone changed their opinion? If so, what has made you think differently?In order to extend learning, ask students if they would make the same decision for animal testing on different species (15). They can discuss in their groups using the three kinds of ethical thinking to help them make a decision. |