



Key Stage 3 – Cell Structure and Structural Adaptations

Notes for teachers

At a glance

The following activity encourages students to engage with the course content of cell structure and organelle function. In addition to reviewing cell structure, the activity uses the animation about the immune system to provide vivid examples of an array of specialised cells and challenges students to predict the structure of such cells based on their function.



Learning Outcomes

- Review cell organelle function
- Predict basic structural adaptations of cells based on their function
- Explain structural adaptations of cells in relation to organelle function

Each student will need

- A copy of the student worksheet
- Blank paper and equipment to draw diagrams of cells.

Possible Lesson Activities

www.oxfordsparks.ox.ac.uk/content/our-immune-system-battle-within



1. Starter activity

- Ask students what you need to build a cell? Use questioning to build up a diagram of an animal and plant cell on the board.

2. Main activity: Video comprehension

- Hand out student worksheets and encourage students to read the introduction.
- Play students the immune system animation twice through (see web links below)
 - On the first viewing allow students to just watch. On the second viewing, challenge students to write down as many specialised cells as they can from the video. (It does not matter if they do not get them all or spell them incorrectly, the exercise is meant to impress upon students the variety of specialised cells and their diverse functions).
- The specialised cells mentioned in the video include;
 - Phagocytes
 - Lymphocytes
 - B-lymphocytes
 - T-lymphocytes
 - Plasma cells
 - Memory B-cells
 - Helper T-cells
 - Killer T-cells
 - Memory T-cells
 - *You may wish to highlight that for GCSE biology, the only distinction that students are required to make is between phagocytes and lymphocytes. Further classification of lymphocytes is not required.*

3. Main activity: Organelle function

- Students review organelle function and complete the table on student worksheet.

4. Main activity: Cell Structure and Structural Adaptations

- Students use information about given blood cells and their table of organelle functions to predict the structure of blood cells.
- The emphasis of the activity is not to accurately predict the structure of these cells but for students to be able to explain why they have chosen the organelles they have with reference to their function.

5. Plenary:

- Cell organelle bingo

To extend the most able groups further you may wish to challenge them to produce a similar diagram (predicting the structure of other specialised cells) based on research into a specialised cell of their choosing. Suggested cells may include: Sperm cells, muscle cells, palisade cells or other specialised cells covered in KS4 biology specifications.

Web links

- Oxford sparks animation: Our immune system – the battle within
<https://www.oxfordsparks.ox.ac.uk/content/our-immune-system-battle-within>