

Activity 3 – Design Your Own Immune Cell

Introduction

White blood cells are immune cells designed to carry out important roles in maintaining a healthy environment in the body. They work together to prevent infection and illness. However, following trauma these immune cells may become over activated and begin to damage the body's own cells.

This activity will focus on specific types of immune cells, how they work and what can occur when they become over activated.

Aim of activity

This activity will provide pupils with an understanding of different types of immune cells and how they work. Pupils will also get to work in small groups and build on their presentation skills.

Materials

Each group will need:

- Large sheet of paper to design an immune cell
- Worksheet
- Coloured pens
- Reward for the group who create the best immune cell (optional)

Instructions

1. Begin the lesson by asking students how they think immune cells work. Discuss how specifically immune cells can target pathogens, mentioning cytokines, phagocytosis and lysosomes.
2. Divide the students into small groups – 5 students per group. Give them 15 minutes to design their own immune cell with as many infection fighting properties they can think of. Tell the students that each group will present their design at the end of the 15 minutes.
3. Get each group to present their immune cells, describing the functions which they have included and how these would help to fight infection.
4. Once each group has presented, take a vote on which group designed the best immune cell – based on its functions.
5. Next, discuss that not all immune cells carry out all of the functions you discussed earlier. Talk to the students about how the immune system is made up of specialised cells that carry out specific roles.
6. Focus your discussion around the cellular and humoral immune response. Hand out the sheets with the immune cell cards, allocating each group of 5 a specific immune cell to research. Provide the students with a textbook or internet access to research the functions of their immune cell. Given them 5 minutes to collect data.

7. Ask the groups to report back their information about their allocated immune cell, ask them to tell you whether it is part of the cellular or humoral immune response.
8. As the students report back their information, the rest of the class can fill out their worksheets with the relevant information about each cell.
9. Ask the students what they think would happen if these immune cells became over activated or switched off. Discussing how following trauma, over activation of the immune system can lead to the immune cells damaging the body's own cells, and potentially becoming unresponsive.

Extension Activities

- Discuss how immune cells recognise pathogens and "self" cells
- Discuss how B cells produce antibodies and immune memory
- Talk about the vaccination programme in the UK and how immunisation works
- Research other conditions where the immune system can cause illness – autoimmune conditions.