Co-IMMUNicate game

Introduction

To fight an infection, all cells in the immune system must work together!

Infected cells warn other cells about viruses by releasing alarms or warning signals.

These warning signals call in immune cells called **macrophages**. These cells can eat up and kill viruses. Infections of just a small amount of virus can be dealt with by macrophages.

But infection with lots of virus needs more specialised immune cells, called **T cells**, to come in and join the fight! These cells need a bit of help to get started.

Communicating cells called **dendritic cells** take information about the virus to lymph nodes. These lymph nodes act like immune fire stations. Here T cells wait to be called in to fight the infection.

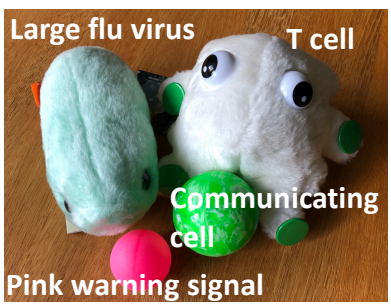
In the lymph node, **warning signals** and **communicating cells** kick start the **T cells**. Each T cell can only recognise one virus but once they know about the infection, they can work with other immune cells to kill infected cells and get rid of the virus.

Activity

The aim of this activity is for the pupils to match up the virus to the right type of immune response.

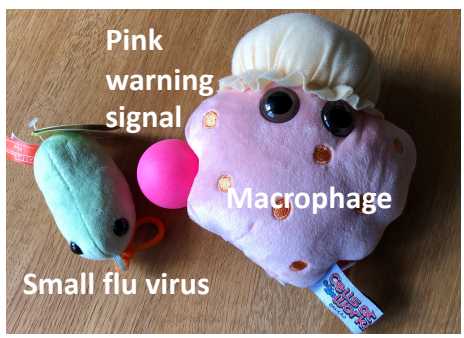
- Give one pupil a small influenza virus and one a large influenza virus soft toy
- Give warning signal (e.g. ping pong balls) to two pupils
- Give one pupil a communicating cell (e.g. tennis ball)
- Give one pupil a macrophage soft toy
- Give one pupil a T cell soft toy

Now ask the pupils to match up the size of the response with the warning signals and the right immune cells.



Group 1 - The large influenza virus soft toy represents a large amount of virus infecting the body and the pupil with this toy needs to match up with pupils that have a warning signal, a communicating cell, and a T cell.

Group 2 –The small influenza virus soft toy represents a small amount of virus. The pupil with this toy need to match up with pupils that have warning signal and a macrophage. The communicating cell and T cell are not necessary to control small viral infections.



Co- IMMUNicate game

University of Glasgow

List of materials required:

1. One large influenza virus soft toy
2. One small influenza virus soft toy
3. Two ping pong balls for warning signals
4. One tennis or bouncy ball to represent a communicating cell
5. One macrophage soft toy
6. One white blood cell (T cell) soft toy

We bought our soft toys at giantmicrobes.com but other websites sell similar products or you can make your own viruses and cells!

Length of activity

This activity can last between 15 – 30 minutes depending on the complexity of the game and number of students. The game above requires 7 pupils but see below how this game can be modified for larger class sizes.

The game 2.0

This game can be extended for larger class sizes by the addition of two (one large and one small) COVID viruses or other viruses that you are interested in.

You can buy or make COVID and flu viruses that are different colours and have matching coloured communicating cells for each virus. Pin matching coloured badges to the T cells too. Ask the pupils to match the same coloured virus, communicating cell, and T cell to get rid of each virus!

Ask the pupils to repeat the activity with the same pupils in each group. They should be able to match up more quickly. This represents immune memory which happens once you have been exposed to an infection or vaccine. Your T cells remember the virus and can act to get rid of it much more quickly!


COVID virus


Flu virus


Macrophage


T cell