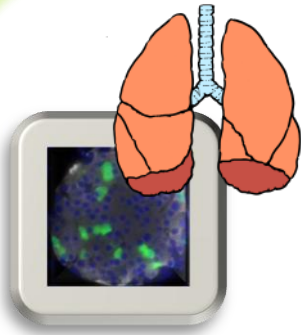


Where are my stem cells?



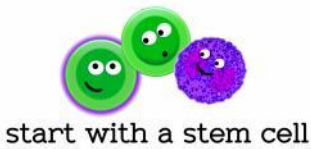
Aim of the activity:

To place the organs and tissues in the correct place on the body and match each with its correct cell image.

1. Ask someone to stand against the whiteboard and draw round the outline of their body.
2. Place the organs and tissues in the correct place on the outline.
3. Look at the science images. They show cells found in each of the organs or tissues. Place them on the correct organ or tissue by first having a go using the image alone and then using the information on the back.

You will need:

1. A whiteboard / chalkboard / human size piece of paper and a suitable marker.
2. Laminated organs and tissues, with labels on the back (9).
3. Science images and labels printed, cut and laminated (9).
4. Blue/white tack for the organs and science images.



EuroSyStem



Where are my stem cells?

Introduction

A common idea is that stem cells can only be found in the embryo. This activity aims to counter this by introducing pupils to current scientific understanding of the range of locations that stem cells can be found in adult tissues. It's also fun drawing round your partner and thinking where their organs are!

The science images have all been taken by leading scientists from across Europe. All of the images, apart from the image showing skin cells, were taken using fluorescent microscopy. In this technique cell type is inferred through fluorescently labelling a known product of the cell (termed the marker), which sets them apart from other cell types. This is why for some organs and tissues scientists can't definitively say which are the stem cells, as they haven't worked out a marker to use, even though they know that there are stem cells present. One scientist told me a few days ago that it took his team six years to work out a marker for stem cells found in the eye! When stem cells divide they produce progenitor cells as the next step in the pathway of differentiation. As you'll see in some of the images, scientists may have located progenitor cells but not stem cells in that tissue.

Learning outcomes

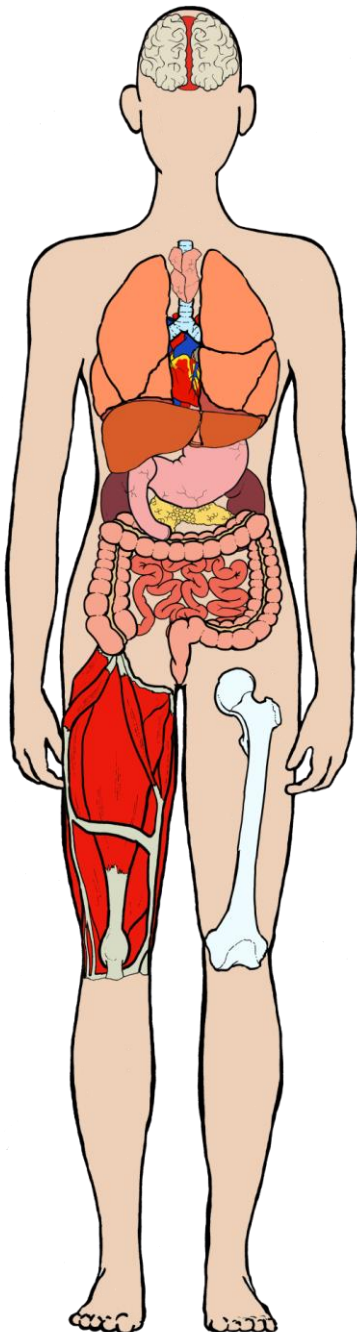
1. To reinforce knowledge of the location of organs within the human body.
2. To introduce or reinforce that our bodies are made up of many different types of cells and that these cells are organised to form different tissues and organs.
3. To understand that stem cells are found in organs / tissues in our bodies and that these are termed adult or tissue stem cells.
4. That adult stem cells enable the body to grow, maintain and repair itself.
5. To appreciate that this area of research is contemporary and fast moving and that new discoveries about the location and function of adult stem cells are being made all of the time.
6. That scientists use microscopes and fluorescent dyes to visualise different types of cells in the tissues.

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Developed for EuroSyStem by Dr Cathy Southworth with graphic images by Jim and Lindsey Southworth

Did you place the organs and tissues in the correct place?



Ideas for use in class:

1. Use as a lesson starter with the whole class. The images could be downloaded to use as a drag and drop activity on the interactive whiteboard or a large sheet of paper could be placed on the floor and one of the pupils could be drawn round.
2. Use as a group activity as part of an 'activity circus'.
3. The activity could be adapted and extended by firstly asking pupils to place the organs and tissues in the right place. Then pupils could research images of stem cells in the body using the internet, to find out what they look like. Once they have done this research they could then place the activity images in the correct place (the images could be printed without the information on the back), checking whether they were correct by referring to the image file provided with the activity.
4. Extend the activity by asking pupils to research current understanding of a few chosen adult stem cells at EuroStemCell:

<http://www.eurostemcell.org/>

5. The activity could be used to introduce the difference between embryonic and adult stem cells. After the activity pupils could write a concise definition of what a stem cell is and the different types of stem cell that exist. These could then be displayed and a favourite 'class definition' chosen for display.