

# Microscope activity

**Audience:** 11+

## Introduction:

The slide shows a slice of a mouse kidney teratoma produced from implanting mouse ES cells under the kidney capsule of a mouse, and then staining with Masson's trichrome stain. The activity involves using a light microscope to view the slide and then trying to identify the different types of cell found within the teratoma.

## Instructions:

1. Set up a light microscope and the slide at a resolution where the audience can see the kidney and teratoma. It's useful to have a copy of the teratoma image (shown on these notes) next to the microscope so that the audience can see what they should be seeing.
2. Choose some 'cell types' for the audience to try and identify. We use fat, skin, nerve and muscle. The images are given in these notes and are available in the PowerPoint file of these instructions on the data stick. They were adapted with kind permission from *Development*<sup>1</sup> and are free to be used for this outreach activity.
3. After explaining what the slide shows and how it was made you could use the following questions (these were designed and tested on a 11-16 aged audience).
  - Look at the slide. Can you see the kidney and the tumour?
  - look at the slide under a higher magnification. Can you see any different types of cells in the tumour?
  - Can you find the different cells shown on the cards?
  - Do you know what types of cells these could be? (Turnover the cards to find the answers)

## Science messages:

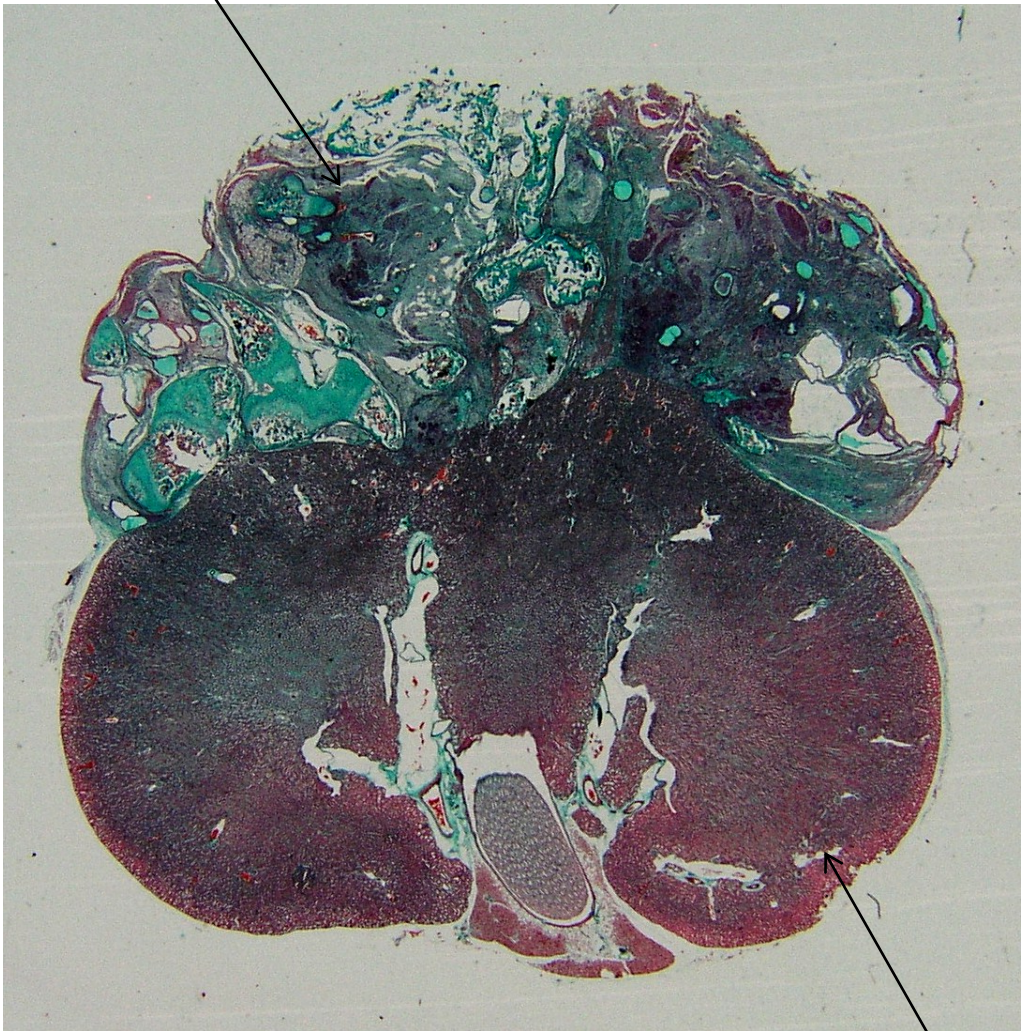
1. The use of microscopes and staining in cell biology.
2. That embryonic stem cells are capable of making all of the cell types in our bodies (are pluripotent).
3. Scientists can use this method to test whether a cell is pluripotent. If it is pluripotent it will produce three sub sets of cells (*differentiation into all three germ layers*).
4. That the type of cell they produce is determined by the signals they receive and that this signalling can go wrong.
5. That a tumour is an abnormal growth of cells.

## Risk assessment pointers:

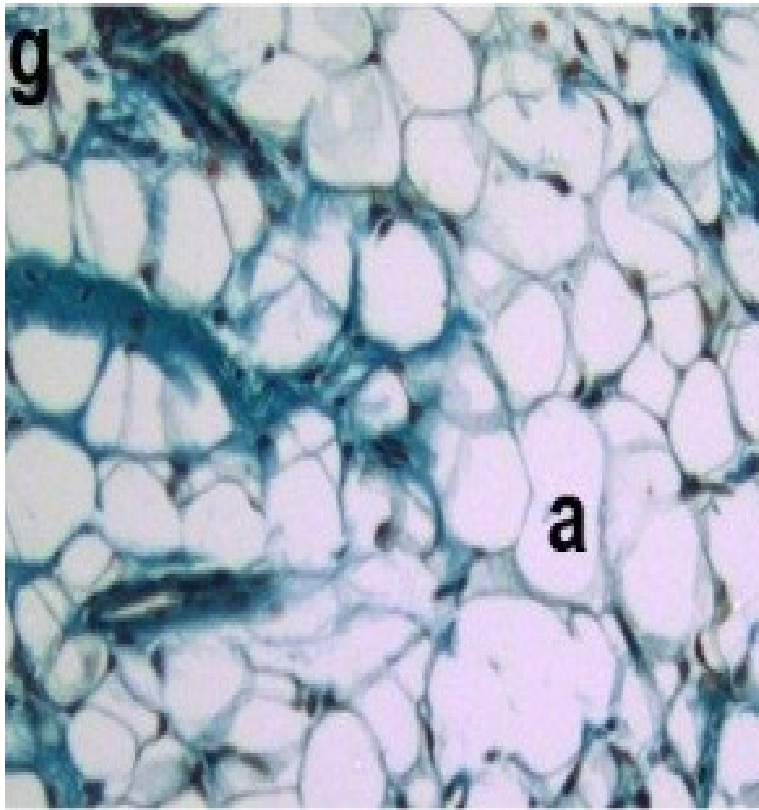
- The microscope slide is glass so care needs to be taken when using, especially if handled by the audience.
- Lights on some microscopes can get very hot – these need to be labelled to encourage people not to touch them.



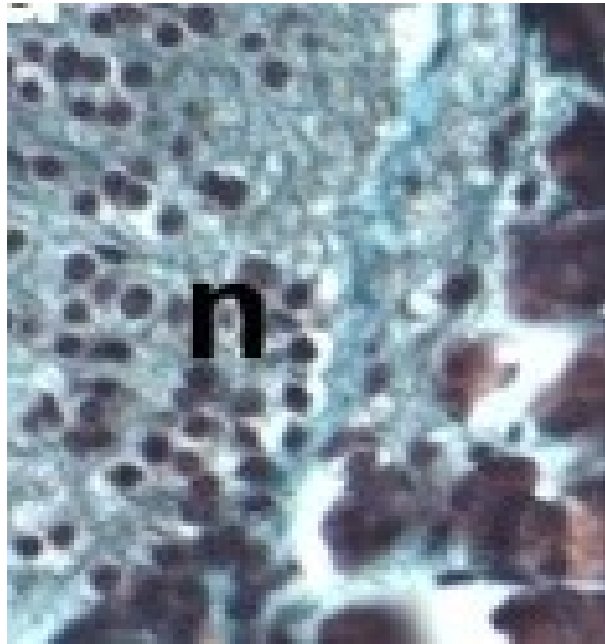
**teratoma**



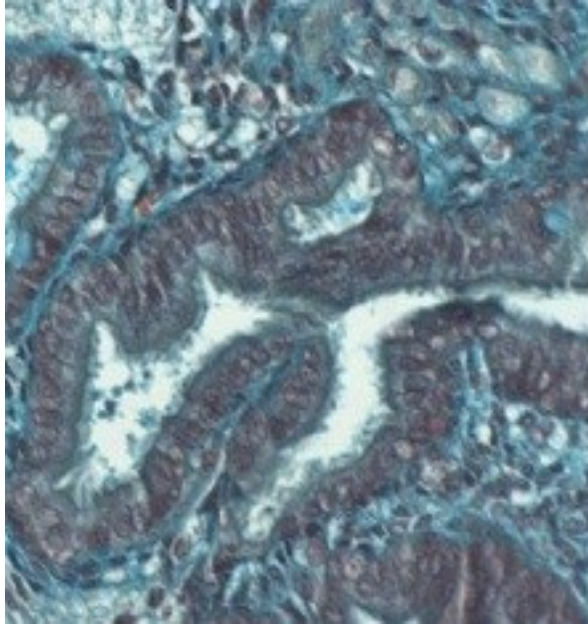
**kidney**



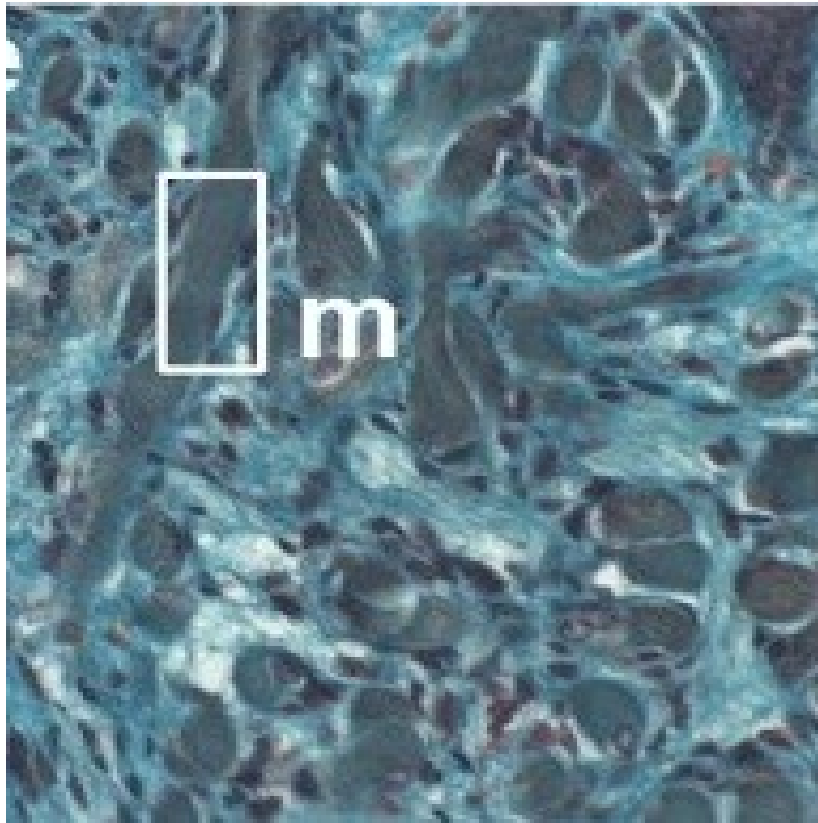
Adipose  
(fat) cells



Nerve  
cells



## Epithelium (skin) cells



Muscle  
cells