

## Diagram Worksheet: *Plant Vascular System*

### Aims

- Preparation of thin sections of plant tissue and mounting on microscope slides
- To learn how identify xylem, phloem and parenchyma cells,
- To observe differences between roots and stems.

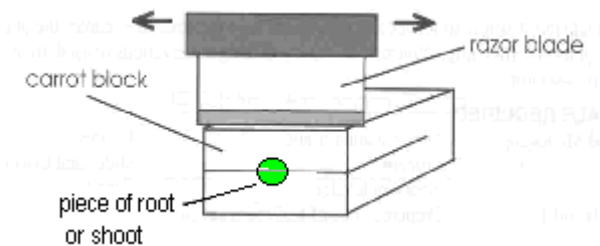
### Activity 1 – Roots and Stems

#### Apparatus

- 1 single sided razor blade or scalpel
- A carrot cut into a rectangular shape
- slides & cover slips (six of each)
- 250ml beaker of water
- Stems & roots of sunflower, Clover, Cucumber, bean

#### Method

1. Using a carrot block and a very sharp razor blade cut extremely thin sections of the stem and root and float the sections in water in your beaker.



2. Transfer each of the thinnest sections onto a small drop of water on a microscope slides (they look the most transparent in water) using a small paint brush.
3. Stain them with a drop of iodine and add a cover slip.
4. Observe the sections at x40 and x100 magnification.

#### *How to cut a good section*

Use a newly sharpened blade

Keep the blade, your fingers and the carrot moist

Use a single diagonal slicing motion across the leaf as you cut

Float all the slices in water

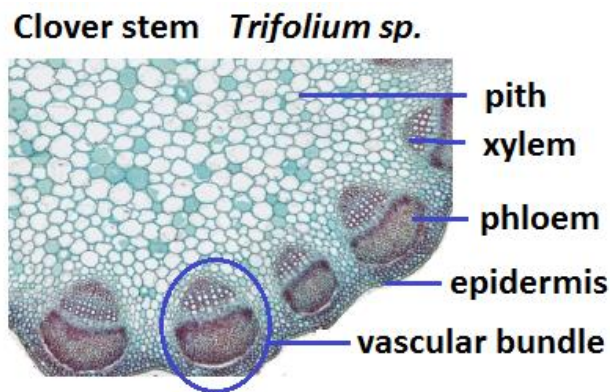
Use a small brush to transfer your sections from the beaker to your slides

## Drawing tissue distribution a stem or root at low power x100

1. Adjust the slide and microscope to get a good view of the stem or root.
2. Identify the different types of cells by looking at the thickness of the cell wall, presence or absence of cytoplasm and its shape or size.
3. Draw an outline to show the position of each type of tissue

### Example

When drawing a tissue distribution diagram simply identify the different areas of cells as in the diagram of clover below.



Then draw simple lines showing the size and shape of each area, and label them carefully.



### Extension

This procedure can also be used to look at transverse sections of leaves, or longitudinal sections of roots and stems.