

In this experiment we are going to examine xylem under the microscope.

Xylem are narrow, hollow, dead tubes of lignin, responsible for the transport of water and minerals in plants.

Water molecules enter the xylem vessels in the roots and are transported to the leaves where they exit and move from cell to cell.

Water moves from the xylem vessels into the mesophyll cells where it can be used for photosynthesis.

For this experiment we need:

Celery that has been standing in a beaker of water mixed with food colouring for at least 24 hours.

A scalpel or knife.

A mounted needle.

A tile.

Two glass slides and a microscope.

Let's start the experiment.

Carefully cut across a stick of celery to produce a transverse slice.

When you examine the celery you will see small circles.

These are xylem.

The coloured water has stained the xylem as the celery has consumed and transported the water, staining the xylem blue.

Carefully cut a length of celery.

You will see lines of blue where the xylem is.

Cut along the xylem.

Remove the xylem and squash it between two microscope slides.

Examine the slide under a microscope.

At a higher magnification you should be able to see rings or spirals within the xylem.

These are lignin.

At this stage, you could do a simple line drawing of the structures you see and label them.