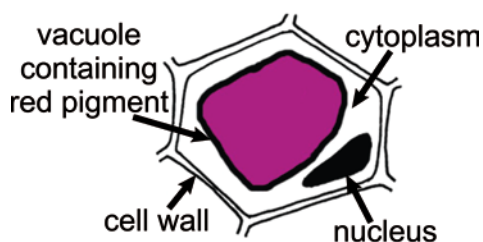


INFORMATION SHEET



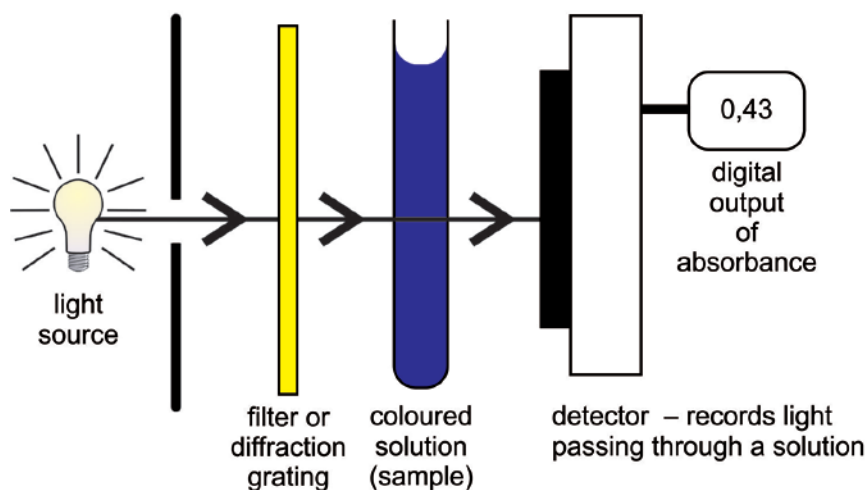
The outermost layer of plant cells is the cell wall. It is made up of a carbohydrate called cellulose and also has other protein substances embedded within it. The cell wall is a rigid layer and gives structural stability to the cell and also limits the permeability of large substances into and out of the cell. Lying just inside the cell wall is the cell membrane. This membrane is made up of phospholipids and proteins. In beetroot cells and red cabbage cells, the vacuoles (surrounded by a membrane called the tonoplast) also contain red pigments called **betalain** which give beetroot their colour.

Proteins are macromolecules. They are sensitive to changes in the concentrations of solvents such as ethanol, changes in temperature and in pH. This could lead to them becoming **denatured**. Altering the protein structure allows 'leaks' to develop in the cell wall and in the various membranes in cells.

A SPECTROPHOTOMETER

A spectrophotometer is a piece of laboratory equipment used to determine the composition (make up) of a solution. It works by measuring the amount (%) of light that passes through a solution. The more transparent a solution, the more light will pass through. This light reading is then measured and the data plotted on a graph. In clear water, the % transmission is 100%.

A simplified diagram to show how a spectrophotometer works.



[Adapted diagram]

