SNC2D Worksheet

Making a Biological Drawing & Measuring with a Microscope

Biological Drawings

A biological drawing is not meant to be a work of art. It should however, be a neat and well-proportioned outline which accurately records your own observations. Draw from the specimen. Draw only what you see. Do not copy from books nor from the work of other students. Copying or plagiarism defeats the purpose of the laboratory exercise -- actual observation by you.

Procedure

1. Study the material carefully before beginning to draw, and frequently while planning and making the drawing. Observe several samples of the specimen at different microscope powers to get a general idea of the typical cell type.

2. Prepare an outline drawing.
   a) Place the drawing in the centre of the page.
   b) Blank paper must be used.
   c) The drawing should be sufficiently large to allow for small details to be shown.
   d) Start by drawing faint, sketchy lines to plan the proper outline and proportion of internal structures. Replace these lines with firm crisp continuous lines to make your final drawing.
   e) No shading, stippling or colouring is to be used on the outline drawings.

3. All structures illustrated should be labelled.
   a) Labels should be printed in ink.
   b) Labels should usually be placed in a neat vertical column to the right of the drawing.
   c) Pointers for labels should be fine, straight, horizontal unbroken lines drawn with a pencil and a ruler. Pointers should never cross one another. Arrowheads should not be used.

4. All drawings must have a title, name and date.

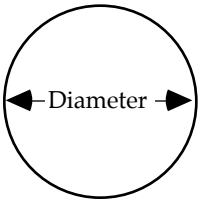
5. Included with the drawing at the bottom of the page should be the power of the microscope, magnification of the drawing and the actual size of the object drawn. Calculations for these should also be shown. See example diagram.

Measuring with a Microscope

It is often important for the professional biologist to know the dimensions of the object she/he is observing under the microscope.

The actual measurements for the **diameters** of objectives on your microscope are known. They are:

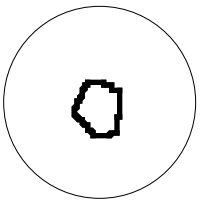
1 x objective	=	18 mm
4 x objective	=	4.5 mm
10 x objective	=	1.8 mm
40 x objective	=	0.45 mm
43 x objective	=	0.42 mm



Field of view of microscope

The size of an object can be estimated by the fraction of the field of view of which it takes up, eg.

High Power (40 x)



width of object = 0.45 mm /4
= 0.11 mm

Microscope Drawings - Expectations

- **Use a sharp pencil and plane paper.**
- **To represent the field of view, draw a circle with a radius of about 5 cm.**
- **Draw what you see. Include all details.**
- **If possible, place all labels to the right of the drawing.**
- **Use a ruler to draw a line to the part you are drawing. Don't cross label lines. Name this part in lower case letters.**
- **Give your drawing a title. Underline it.**
- **Indicate the magnification (e.g. 100 x) in the bottom right hand corner of the diagram.**