

Examination of artery and vein using a light microscope and production of labelled scientific drawings of these from observation

Introduction

This practical requires you to observe and draw a prepared slide of an artery, and of a vein.

Apparatus

Light microscope
Slide of a Transverse Section (T.S.) of an artery
Slide of a Transverse Section (T.S.) of a vein

Method

1. Use a light microscope to examine a T.S artery using the $\times 10$ objective lens.
2. Use the $\times 40$ objective lens to identify the tough outer layer and the muscular and elastic fibres.
3. Draw a diagram to show the distribution of tissues in the correct proportion.
4. Identify and label: tough outer layer; muscular and elastic fibres; lumen.
5. Repeat steps 1 - 4 using a T.S. vein.

Analysis

1. Compare the structure of the artery and vein and relate this to their function.
2. Calculate the total magnification of the image seen under the microscope by multiplying the power of the objective lens by the power of the eyepiece.

Risk Assessment

Hazard	Risk	Control measure
No significant risks are associated with this investigation.		

Teacher/Technician notes

A lamp may be required, if not part of the microscope.

× 10 and × 40 objective lenses are suggested for viewing the slides. It will be necessary to determine the optimum magnification before presenting the slides to students.

Students will need to be briefed regarding safe and effective microscope use prior to this practical activity.

Students should produce low power plans of the blood vessels, no individual cells should be drawn. This practical activity is effective at developing microscope skills and biological drawing skills. Drawing skills should include using a pencil to draw smooth, continuous lines with no overlapping or gaps. No shading or colour should be used.

Students can calculate the total magnification of the image as the power of the objective lens multiplied by the power of the eyepiece. Students could also calculate the magnification of their drawing if given the mean diameter of the blood vessel used.

A virtual microscope for demonstration purposes is available on the link below.

http://medsci.indiana.edu/a215/virtualscope/docs/chap7_3.htm

Practical techniques covered

- B3 Use of appropriate apparatus and techniques for the observation and measurement of biological changes and or processes.
- B7 Use of appropriate apparatus, techniques and magnification, including microscopes, to make observations of biological specimens and produce labelled scientific drawings.