# WJEC Wales Biology A Level

## SP 2.3b: Scientific drawing of low power plan of a prepared slide of T.S. artery and vein

Practical notes

## Introduction

There are **three** main types of blood vessel in the body (arteries, veins and capillaries) which carry blood around the body. This practical focuses on the structure of **arteries** and **veins**.

**Arteries** carry blood **away** from the heart under **high** pressure whilst **veins** carry blood **towards** the heart under **low** pressure. The **structural adaptations** of each blood vessel can be investigated using a **light microscope**.

## Equipment

- Slide of T.S. artery
- Slide of T.S. vein
- Light microscope
- Eyepiece graticule
- Stage micrometer

## Risk assessment

| Hazard | Risk | Precaution | Emergency |
|---|---|---|---|
| Broken glass | Cuts | Keep glassware away from the edge of the desk; handle microscope slides carefully | Dispose of broken glassware carefully; elevate cuts; do not remove glass from cuts; seek medical assistance |

## Method

1. **Calibrate** the microscope for all three objective lens magnification (see 'Calibration of a light microscope' practical).
2. Place the microscope slide of **T.S. artery** under the clips on the microscope stage.
3. Turn the **lowest power objective lens** (×4) on the nose piece.
4. Turn the **coarse adjustment knob** to move the stage closer to the lens.
5. Look down the microscope and turn the **coarse adjustment knob** to **focus** the image.
6. Turn the **fine adjustment knob** until the best image is obtained.

7. Rotate to the medium power objective lens (×10) and focus using the **fine adjustment knob.**

8. Draw a **low power plan** to show the distribution of tissues but **not** individual cells. *The high power objective lens (×40) can be used to aid in the identification of the different tissue layers.*

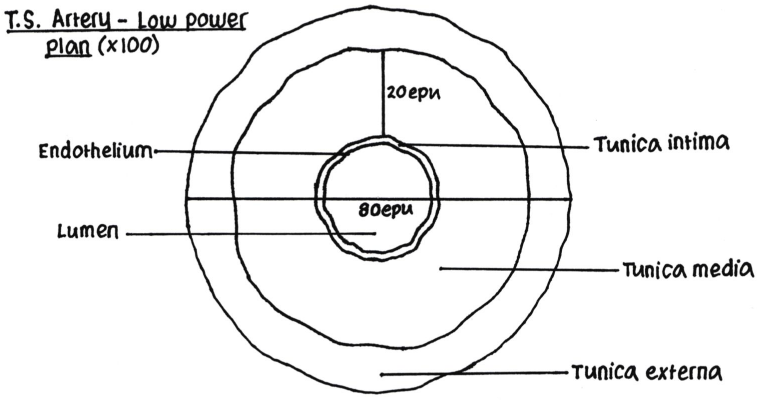
9. Using the **eyepiece graticule**, draw two lines on the low power plan, measured in **eyepiece units.**

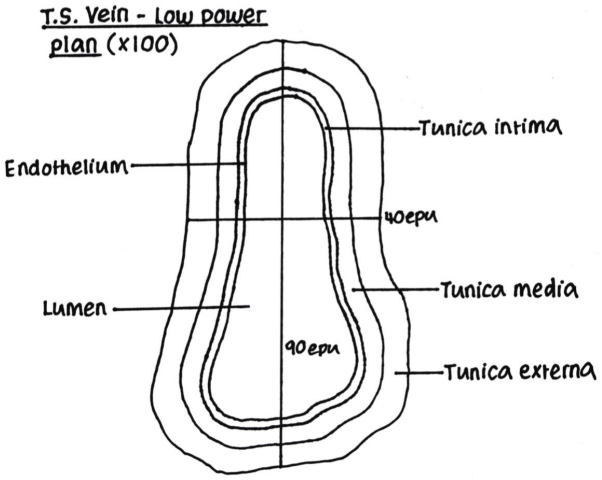
10. Label the following structures: **endothelium**; **tunica intima**; **tunica media**; **tunica externa** and **lumen.**

11. Calculate the actual size of the low power plan and hence the **magnification** of the drawing.

12. Repeat steps 2-11 using the microscope slide of **T.S. vein.**

## Example diagram



## Tips for biological drawings

- Drawing should fill at least half of the provided space
- Only draw what you can see
- Use a **sharp pencil**
- Ensure lines are **single**, **complete** and **non-overlapping**
- Do **not** use shading or colour
- Create **straight lines** for labels using a ruler
- Label lines should **not** have arrow heads
- Label lines should **not** intersect
- Include a scale in terms of **eyepiece units**
- Include a title and objective lens power
- Include a **magnification**

## Magnification of drawings

$$\text{magnification} = \frac{\text{size of image}}{\text{size of object}}$$