

# WJEC Wales Biology A Level

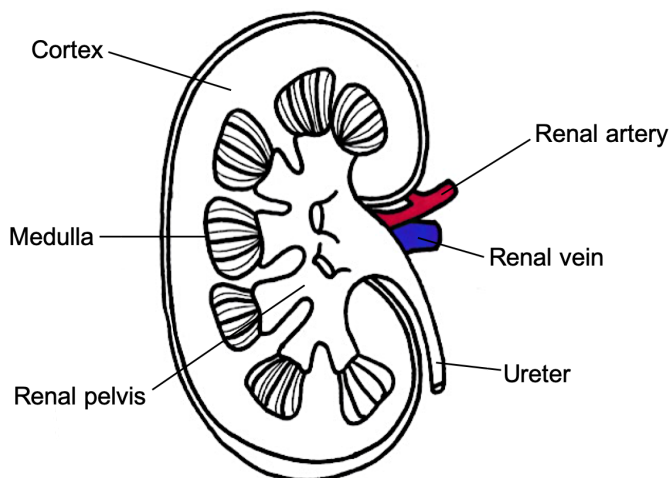
## SP 3.7: Dissection of a kidney

### Practical notes



## Introduction

The kidneys are a pair of organs responsible for **osmoregulation** and the **removal of toxic waste products** from the body. They consist of three distinct regions: **cortex**, **medulla** and **renal pelvis**. Recall the structure of the kidney in the diagram below:



Dissections are essential to the understanding of **internal processes** within organs such as the kidney.

## Equipment

- Kidney
- Dissection board
- Scalpel
- Scissors
- Fine forceps
- Paper towels
- Disinfectant
- Non-latex disposable gloves

## Risk assessment

Hazard	Risk	Precaution	Emergency
Sharp tools e.g. scalpel, scissors	Cuts	Direction of cut away from the body; do not attempt to change blade; keep scalpel away from the edge of the desk	Elevate cuts and apply pressure; wash minor cuts in cold water; seek medical assistance



Biohazard	Contamination	Cover any cuts; wear disposable gloves (optional); wash hands after handling heart; use disinfectant	Seek medical advice
Disinfectant	Flammable	Make sure that there are no naked flames in the room	Put out small fires with a damp cloth; evacuate the building

## Method

### External examination

1. Observe the kidney's external structure. Note that it is surrounded by the **renal capsule**, a tough fibrous **membrane**. Identify **adipose tissue** (fat) which is commonly deposited around internal organs like the kidney.
2. Locate the **ureter**, **renal artery** and **renal vein**. *The walls of the renal artery are thicker than those of the renal vein.*
3. Identify the **renal hilum**, a central recess where the blood vessels and ureter emerge.
4. Draw a labelled scientific diagram of the **external** structure.

### Internal examination

1. Remove any fatty deposits from the external surface.
2. Using the scalpel, cut the kidney lengthways (**longitudinal** cut) into two sections.
3. Notice that the cortex is a **red-brown** colour whilst the medulla is a **darker red**.
4. Using scissors, cut through the **connective tissue** that surrounds the epithelium of the renal pelvis and ureter to expose **tubules** which lead into the renal pelvis.
5. Continue cutting towards the cortex and observe the multitude of **blood vessels** which deliver and remove blood from the nephrons.
6. Identify **renal pyramids** in the medulla. These are **cone-shaped** structures that appear **striated**. *This is due to the loops of Henle and collecting ducts of nephrons which run parallel to one another.*



7. Hollow chambers (known as **renal calyces**) leading from the renal pyramids may be observed. These join to form a large **hollow** structure, the **renal pelvis**.
8. Draw a labelled scientific diagram of the **internal** structure.

## Tips for labelled scientific 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
- Lines should **not** intersect
- Label lines should **not** have arrow heads
- Include a **scale**
- Include a **magnification**
- Include a **title**

