

11.3 The Kidney & Osmoregulation

Kidneys

Define excretion

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Identify the nitrogenous waste produced by the following animals:

Fish:

Birds:

Mammals:

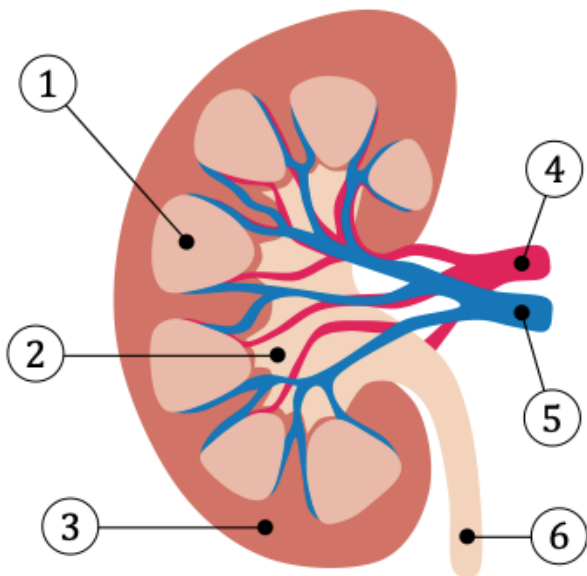
Distinguish between the excretory systems of insects and mammals

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Label the diagram of a human kidney

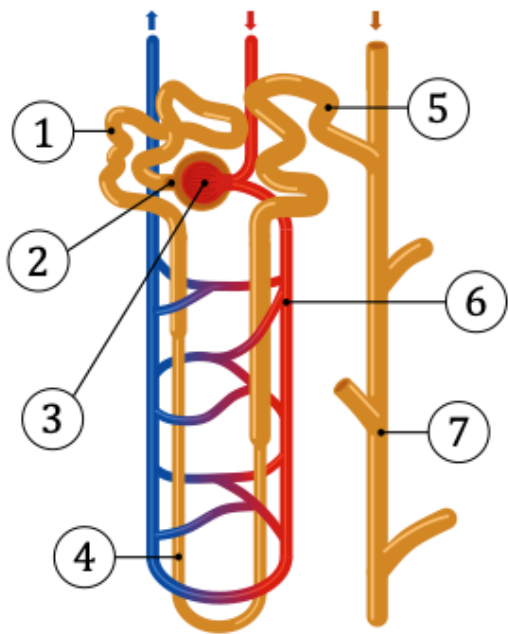


- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

State the functional unit of a kidney

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Annotate a diagram of a nephron



1.
2.
3.
4.
5.
6.
7.

Osmoregulation

Distinguish between osmoconformers and osmoregulators

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Identify the three stages of urine formation and where each stage occurs

| | Stage | Location |
|---|-------|----------|
| 1 | | |
| 2 | | |
| 3 | | |

Explain the process of ultrafiltration

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Describe the selective reabsorption of glucose, salts and amino acids by the nephron

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Explain, using the diagram, how the loop of Henle maintains hypertonic conditions in the medulla

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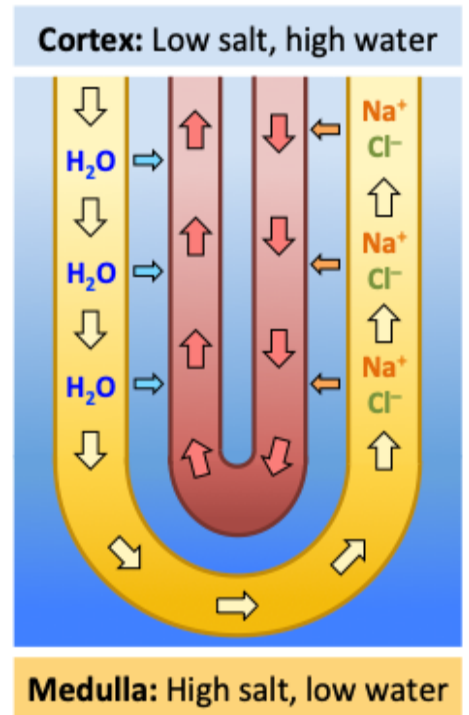
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Explain the role of ADH (vasopressin) in maintaining the water balance of the blood

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Outline an adaptation to the kidneys of desert mammals that increases water conservation

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Explain the difference in the concentration of molecules within the blood plasma, filtrate and urine

| Component | Blood | Filtrate | Urine | Reason |
|------------------|--------------|-----------------|--------------|---------------|
| Protein | | | | |
| Glucose | | | | |
| Urea | | | | |
| Water | | | | |

Identify four substances that can be detected via urinary tests, and the significance of a positive sample

1.
2.
3.
4.

Outline the consequences of dehydration and overhydration

Dehydration

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Overhydration

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Outline two methods for the treatment of kidney failure

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