Blood components and plasma transport

Student activity • observation and reasoning

YEAR 10 / LESSON 59 / BIOLOGY + SCIENCE (DOUBLE AWARD)

The question

How can one tissue transport substances and support defence?

Use the supplied examples, record your reasoning and correct it using evidence.

Equipment

- Student booklet, pencil and ruler
- Teacher-provided labelled blood-smear image or diagram

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

Course coverage: Shared Biology / Double Award: 2.59–2.60. Blood composition and plasma.

Plan, model or apparatus sketch

Draw and label the apparatus or biological model; identify one limitation.

Method and reasoning

Read the whole sequence before starting

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1. Use a labelled blood-smear image or diagram, not fresh blood, to identify red cells, white cells and platelets.

2. Distinguish cells and cell fragments from the liquid plasma surrounding them.

3. Make a table linking plasma to transport of absorbed nutrients, urea, hormones, carbon dioxide and thermal energy.

4. Explain why most carbon dioxide is transported in blood as hydrogencarbonate rather than as bubbles.

5. Distinguish urea carried to kidneys from undigested material in the gut.

6. Explain why the red colour of blood does not mean plasma itself is red.

Cleanup

- Return models and keep the corrected work.

Record your evidence

Blank spaces are for your own work

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Reference and task data

Blood contains plasma, red cells, white cells and platelets. Plasma is mostly water with dissolved substances and proteins; it carries heat through circulation. Much carbon dioxide is carried as hydrogencarbonate in plasma after conversion involving red cells. No blood collection is part of this activity.

Example / trial	Observation / evidence	Explanation / limit
Evidence / comparison		
Explanation		
Limit / correction		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. Name the liquid part.

2. Which cells contain haemoglobin?

3. Are platelets complete nucleated cells?

4. Name two plasma-transported substances.

5. Where is urea carried for removal?

6. Does carbon dioxide normally travel as visible gas bubbles?