

Microscopy Challenge: Plant vs Animal Cells

Casper Forensic Laboratory: Notebook

Interview with Mrs Fizzy: While interviewing Mrs Fizzy, police noticed a cut on her fingers. Mrs Fizzy explained that she accidentally scraped her finger with the knife that morning while baking a steak and onion pie.

Computer found in Price-Light Pawn Brokers: A computer found at Price-Light Pawn Brokers matched the serial number of the computer stolen from Computer Room 4. The evidence found on the computer included a small piece of skin caught in between the panels of the computer.

Evidence logged out: Piece of skin found on stolen computer (stolen computer evidence bag)

Casper Forensic Laboratory Investigation:

Aim: To identify whether the piece of skin found the stolen computer contains plant or animal cells, in order to determine the source of the skin.

Equipment (in addition to the evidence):

- Prepared slide of human skin cells
- small piece of onion
- monocular microscope
- iodine solution
- microscope slide and cover slip
- tweezers
- goggles
- paper towel

Procedure:

Part 1 – Prepare a slide of plant cells (onion skin cells)

On the outside of each onion layer is a very thin, almost transparent skin. Remove a small piece of this skin and place onto a microscope slide.

Place 2 drops of iodine solution onto the skin.

Cover with a cover slip.

Part 2 – Prepare the evidence

Using tweezers, place the piece of skin from the stolen computer onto a microscope slide.

Place 2 drops of iodine solution onto the skin.

Cover with a cover slip.

Part 3 – Identify whether the skin on the stolen computer contains plant or animal cells.

Focus on the prepared slide of human skin cells, using the monocular microscope.

Sketch 2 or 3 cells in the results section below.

Repeat steps 1 and 2 above for the prepared slide of plant cells, and the prepared slide of the skin from the stolen computer.

RESULTS:

Animal cells: Human Skin Cells

Sketch 2 or 3 human skin cells below.
Use all the space available

Plant cells: Onion Skin Cells

Sketch 2 or 3 onion skin cells below.
Use all the space available

Results continued

The evidence: Skin from the stolen computer.

Sketch 2 or 3 skin cells below. Use all the space available

Analysis of the results

Describe the main similarities and differences between plant and animal cells observed in this investigation.

Identify whether the skin found on the stolen computer belongs to a plant or animal. Justify your decision in terms of observed similarities and differences between plant and animal cells.

Explain how this investigation has increased your understanding of events in Computer Laboratory 4 on the day of the crime.

Do you need to update your Evidence Summary?

Suggested Answers – Microscopy Challenge: Plant vs Animal Cells

Analysis of the results

1. Describe the main similarities and differences between plant and animal cells observed in this investigation.

Students should identify that the main difference between plant and animal cells is the shape of the cells. Plant cells have a regular shape due to the presence of cell walls, compared to the irregular shape of animal cells.

2. Identify whether the skin found on the stolen computer belongs to a plant or animal. Justify your decision in terms of observed similarities and differences between plant and animal cells.

The skin found on the computer is a form of plant matter, evidenced by the regular shape of its cells.

3. Explain how this investigation has increased your understanding of events in Computer Laboratory 4 on the day of the crime.

Idea: Mrs Fizzy made a steak and onion pie before coming to school and may have left some of the onion skin on the computer that was stolen. This evidence provides a link between Mrs Fizzy and the computer that was stolen from the computer room.

Evidence: Students should briefly describe the procedure for the investigation, and identify that the skin found on the stolen computer is likely to be onion skin due to the shape of the cells, and the fact that one of the potential suspects was cutting onions on the morning of the crime.