

Cell biology

REVIEW IT!

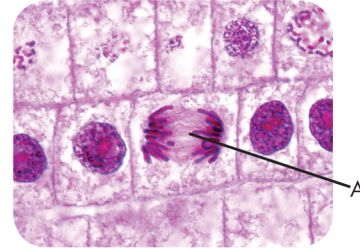
- 1 A plant cell is a eukaryotic cell. List three ways in which a prokaryotic cell is different to a eukaryotic cell.
- 2 **a** Describe how to use a light microscope to observe a specimen.
b A magnified image of a cell is $30\,000\mu\text{m}$ in diameter and the actual diameter of the cell is $10\mu\text{m}$. What is the magnification?
- 3 **a** Describe how a root hair cell is specialised and explain how these adaptations help the cell to carry out its function.
b How does the root hair cell become specialised?
- 4 Some students investigated the growth of bacterial colonies on a Petri dish that had been treated with three different antibiotics A–C.
 - a** Plan an investigation to do this.
 - b** What are the independent and dependent variables in this investigation?

| Antibiotic | Zones of inhibition | Cross-sectional area of colony (cm^2) |
|------------|---------------------|--|
| None | 2.2 | 15.2 |
| A | 1.8 | |
| B | 0.2 | |
| C | 0.8 | 2.0 |
| D | 1.1 | 3.8 |

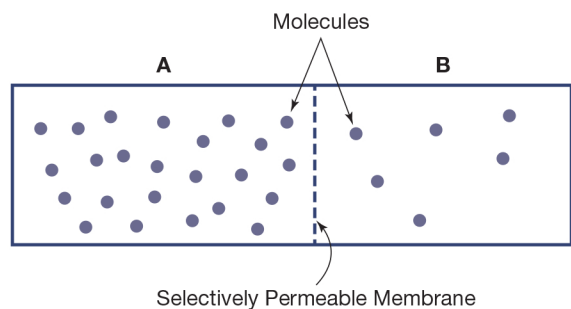
The results are shown below:

- c** Calculate the cross-sectional area of the colonies treated with antibiotics A and B.
 - d** Use evidence from the table to explain which antibiotic was the most effective at inhibiting bacterial growth.
 - e** Explain why the students used aseptic techniques in their investigation.
 - f** How could the students have made sure that their investigation was valid and reliable?
- 5 **a** What is the correct order of the stages of mitosis?
- ___ Prophase ___ Telophase
___ Anaphase ___ Metaphase

The photograph below shows onion root tip cells in the process of mitosis.



- b** What stage of mitosis is cell A in?
 - c** Explain why onion root tip cells are undergoing mitosis.
- 6 Stem cells are used in research to make organs for transplant.
- a** What are stem cells?
 - b** Describe where stem cells can be found.
 - c** Discuss the advantages and disadvantages of using stem cells to make organs for transplant.
- 7 **a** Define diffusion.
- b** The diagram below shows the concentration of salt ions on either side of a partially permeable membrane. In which direction will the salt ions move?



- c** Explain your answer to (b).
- 8 **a** What type of diffusion requires protein channels in order to cross the cell membrane?
b Compare diffusion and active transport.