Cell biology

Answers

GCSE science knowledge recall

This topic online

Q	Answer	Remember
1	nucleus	Animal and plant cells have one; bacteria do not.
2	cell membrane	Do not mix it up with the cell wall, which only gives support.
3	mitochondria	Cells that need lots of energy, like muscle cells, are packed with them.
4	ribosomes	Found in every type of cell, including bacteria.
5	cellulose	Cellulose fibres make the wall strong so the cell keeps its shape.
6	chloroplasts	They contain chlorophyll. Root cells have none because they get no light.
7	cell sap	A full vacuole presses outwards and keeps the cell firm.
8	prokaryotic	Pro = before, karyon = nucleus. Animal and plant cells are eukaryotic.
9	plasmids	Separate from the main loop of DNA; they often carry genes for antibiotic resistance.
10	300	Magnification = image size ÷ real size. Both sizes must be in the same unit.
11	resolution	Electron microscopes have higher resolution as well as higher magnification, so we can see ribosomes.
12	differentiation	Most animal cells lose this ability early; many plant cells keep it for life.
13	root hair cell	The long thin extension pokes between soil particles.
14	lignin	Lignin makes xylem dead, hollow and strong: a pipe for water.
15	46	They come in 23 pairs, one of each pair from each parent.
16	mitosis	Before it starts, the DNA is copied and extra ribosomes and mitochondria are made.
17	bone marrow	Adult stem cells can only form a few cell types; embryonic stem cells can form almost any.
18	meristem	Meristem cells let growers clone rare plants quickly and cheaply.
19	The embryo is made from the patient's own cells, so the stem cells have the same genes and are not seen as foreign.	Same genes means the immune system treats the new cells as self.
20	diffusion	It is passive: no energy from respiration is needed.
21	increases	Higher temperature and a bigger surface area also speed it up.

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Q	Answer	Remember
22	3 : 1	Surface area 24 cm^2, volume 8 cm^3. Bigger organisms have smaller ratios, so they need exchange surfaces.
23	water	Water moves from a dilute solution to a more concentrated one.
24	active transport	Used by root hair cells for mineral ions and by the gut for sugar.
25	The concentration of mineral ions in the soil is usually lower than inside the root cells, so they must be moved in by active transport.	Diffusion only works down a gradient; here the gradient points the wrong way.
26	binary fission	In good conditions it can happen as often as every 20 minutes.
27	64	3 hours is 6 divisions, so $2^6 = 64$. The number doubles each time.
28	25	Keeping it at or below 25 °C makes it less likely that harmful pathogens will grow.
29	The heat sterilises the loop, killing any unwanted microorganisms so the culture is not contaminated.	This is part of aseptic technique, along with sterile Petri dishes and agar.
30	50	Area = $\pi r^2 = \pi \times 16 = 50.3$ mm^2. A bigger clear zone means a more effective antibiotic.

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