

Exercise walk-through

1.2

Cell division and stem cells (4.1.2)

AQA · GCSE · Biology

Exercises 2.1·2.3

2.1 State where chromosomes are found in a body cell, and what genes are. [2]

2.2 Name the stage of the cell cycle before mitosis and state two things the cell does in it. [3]

2.3 Give one benefit and one risk of therapeutic cloning. [2]

Exercises 2.1·2.3

2.1 State where chromosomes are found in a body cell, and what genes are. [2]

2.1 In the nucleus; genes are sections of DNA that code for a protein / a characteristic.

2.2 Name the stage of the cell cycle before mitosis and state two things the cell does in it. [3]

2.2 Growth and DNA replication stage: the cell grows and replicates its DNA / increases sub-cellular structures such as ribosomes and mitochondria.

2.3 Give one benefit and one risk of therapeutic cloning. [2]

2.3 Benefit: stem cells with the patient's own genes are not rejected / can replace damaged tissue; risk: transfer of viral infection.

Exercises 3.1·3.2

3.1 Describe the process of cell division by mitosis.

[3]

3.2 A drug stops cell division.

(a) Explain why a tumour treated with this drug stops growing.

[2]

(b) Explain one side effect a patient on this drug might have.

[2]

Exercises 3.1·3.2

3.1 Describe the process of cell division by mitosis.

[3]

3.1 The chromosomes are copied before mitosis; one set of chromosomes is pulled to each end of the cell and the nucleus divides; the cytoplasm and cell membrane divide to form two identical cells.

3.2 A drug stops cell division.

(a) Explain why a tumour treated with this drug stops growing.

[2]

(b) Explain one side effect a patient on this drug might have.

[2]

3.2 (a) Tumour growth depends on cells dividing by mitosis; the drug stops mitosis so no new tumour cells form. (b) Cells that normally divide rapidly are also stopped – e.g. hair cells, skin cells, blood-producing marrow; so hair falls out / wounds heal slowly / fewer blood cells.

Exercise 3.3

3.3 Scientists can clone rare plants from meristem tissue.

- (a) Explain why meristem cells can become any type of plant cell. [2]
- (b) Give two benefits of cloning rare species this way. [2]

Exercise 3.3

3.3 Scientists can clone rare plants from meristem tissue.

(a) Explain why meristem cells can become any type of plant cell. [2]

(b) Give two benefits of cloning rare species this way. [2]

3.3 (a) Meristem cells are undifferentiated stem cells; they retain the ability to differentiate into any plant cell throughout the plant's life. (b) Rare species cloned quickly and economically, protecting them from extinction; large numbers of identical plants with special features such as disease resistance can be produced for farmers.