

APOLLO

Cell and nuclear division

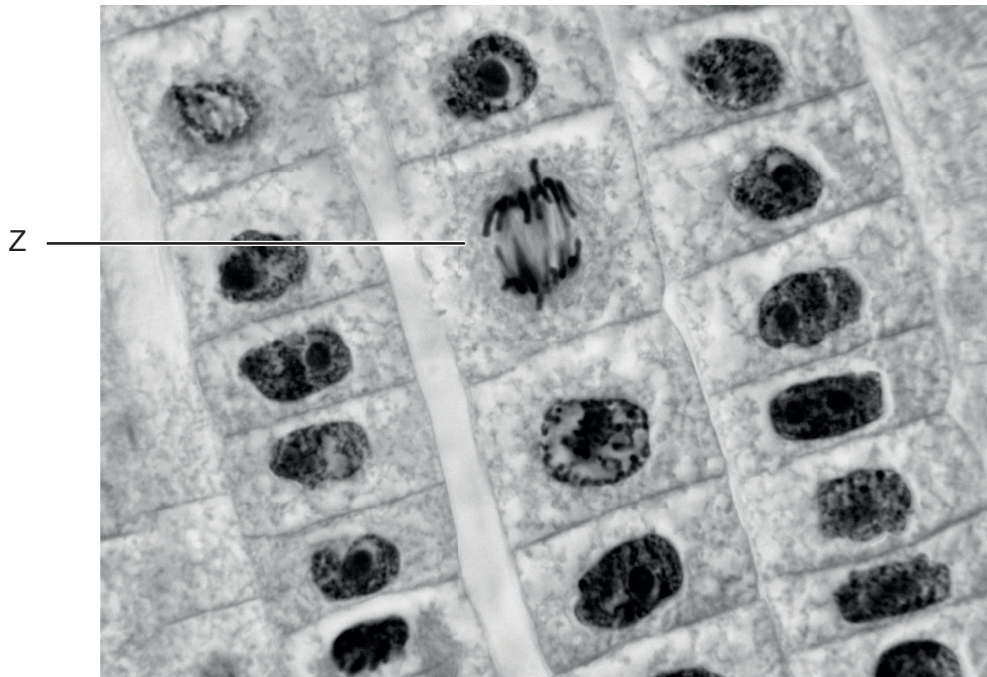
SL

Biology

First assessment 2025

6 questions | questions

11. The micrograph shows onion (*Allium cepa*) root tip cells dividing by mitosis.



In which phase is cell Z?

- A. Interphase
- B. Prophase
- C. Metaphase
- D. Anaphase

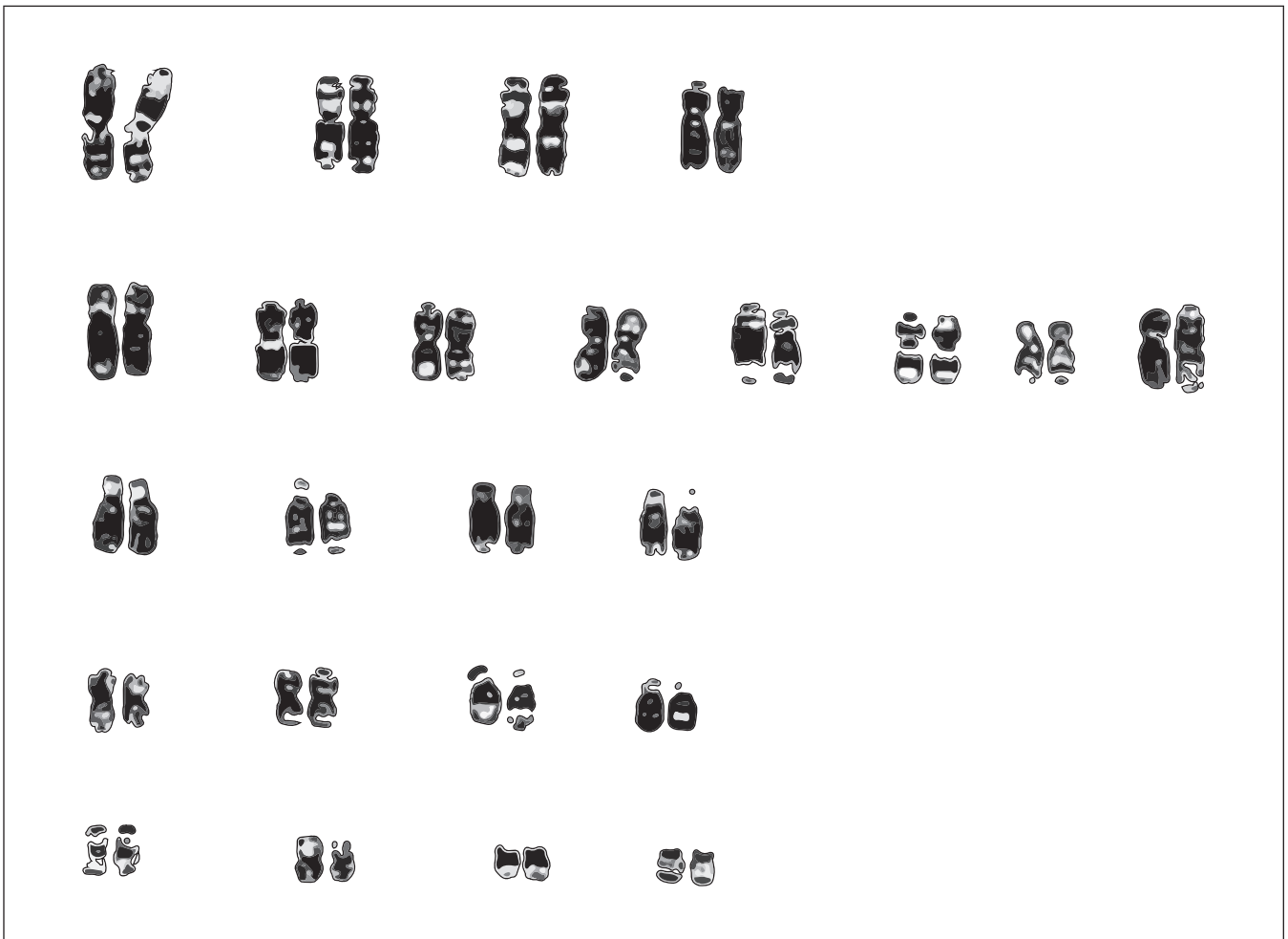
- 12.** What occurs in cell division during both mitosis and meiosis?
- A. Condensation of DNA by supercoiling in telophase
 - B. Movement of microtubules to move chromatids in anaphase
 - C. Pairing of homologous chromosomes in prophase
 - D. Crossing over between chromosomes in metaphase

- 13.** What occurs during both mitosis and meiosis?
- A. Chromatids are held together by microtubules.
 - B. Homologous chromosomes are separated.
 - C. Crossing over occurs.
 - D. Chromatids are separated.

- 12.** Daughter cells usually receive equal amounts of cytoplasm as parent cells undergo cytokinesis. Which of the following is an exception?
- A. Asexual reproduction by budding in yeast
 - B. Bacterial cell division
 - C. Cloning of lymphocytes during an immune response
 - D. Formation of a zygote during fertilization

Turn over

1. The western gorilla (*Gorilla gorilla*) is the largest primate. Sex determination in gorillas is the same as in humans. The image shows a karyogram of a gorilla.



- (a) (i) Acrocentric chromosomes have a centromere near one end of the chromosome. Draw a circle around the row on the karyogram that contains all acrocentric chromosomes. [1]

- (ii) State the chromosome number in this gorilla. [1]

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- (b) Deduce with a reason the sex of this gorilla. [1]

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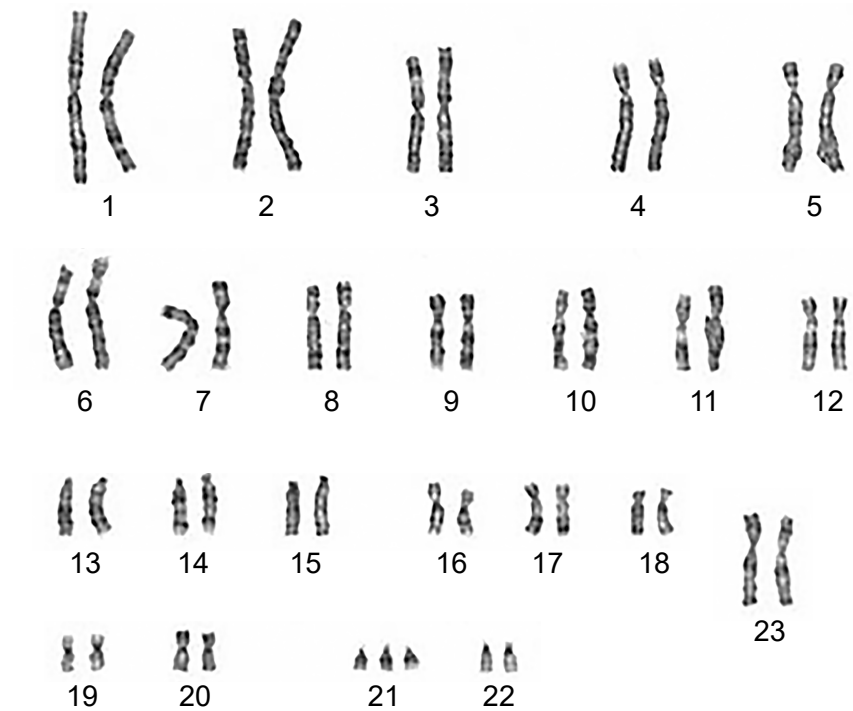
(Question 1 continued)

(c) Describe how a karyogram is constructed. [2]



Turn over

15. The karyogram shows a chromosome abnormality in a human female.



What could cause the abnormality to arise?

- A. Failure of homologous chromosomes to separate during gamete formation
- B. Chromosome 21 replicating after fertilization
- C. A gene mutation of the mother's chromosomes during cell division
- D. Polyploidy occurring during anaphase I of meiosis in both parents

Turn over