Name: Date:

HUMAN KARYOTYPE

Answer the questions below!

1. How are chromosomes arranged in a karyotype?
   Chromosomes are arranged in pairs from largest to smallest, with the sex chromosomes placed last (pair 23).

2. What is the purpose of staining chromosomes in a karyotype?
   Staining helps to highlight the banding patterns on chromosomes, making it easier to identify individual chromosomes and detect structural abnormalities.

3. What phase of the cell cycle is used to prepare a karyotype?
   Chromosomes are most visible and best studied during the metaphase stage of cell division.

4. Why are banding patterns important in a karyotype?
   Banding patterns allow scientists to identify specific chromosomes and detect structural abnormalities such as deletions, duplications, or translocations.

5. What is nondisjunction and how does it relate to karyotypes?
   Nondisjunction is an error in cell division where chromosomes fail to separate properly, leading to an abnormal number of chromosomes in the resulting cells. This can be detected through a karyotype.

6. How are amniocentesis and chorionic villus sampling related to karyotyping?
   These prenatal diagnostic tests collect fetal cells that can be used to create a karyotype to check for chromosomal abnormalities.

7. What does "mosaicism" mean in the context of karyotypes?
   Mosaicism refers to a condition where an individual has two or more populations of cells with different chromosome numbers, which can be identified through karyotyping.

8. How is a karyotype different from other genetic tests?
   A karyotype provides a broad overview of chromosome structure and number, while other genetic tests, like DNA sequencing, focus on specific genes or smaller regions of the genome for detailed analysis.