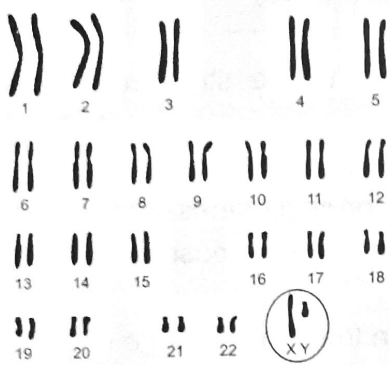
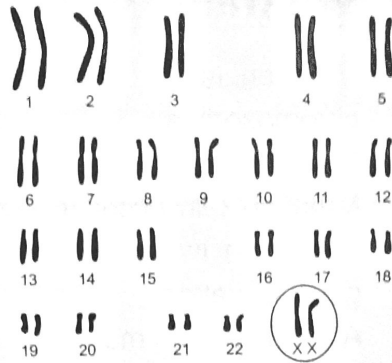


SEX DETERMINATION



The 23 pairs of chromosomes in a male



The 23 pairs of chromosomes in a female

VARIATIONS

discontinuous

- easily distinguishable and are not affected by environmental conditions
- examples
 - ABO blood groups
 - double/single eyelids
 - ability to roll tongue

continuous

- often affected by environmental factors
- examples
 - height
 - weight
 - skin colour
 - intelligence

MUTATION

- sudden change in gene or chromosomal structure
- causes
 - exposure to UV and gamma rays
 - chemicals such as tar
- sickle-cell anemia
 - red blood cells possess a rigid, sickle shape when oxygen concentration is low
- Down's syndrome
 - results in mental retardation, heart and respiratory defects
 - zygote inherits 3 copies of chromosome 21 instead of 2

