

## CHROMOSOMAL NUMBERS

A normal set of human chromosomes contains twenty-three pairs. Strikingly speaking the twenty-third pair in males is not really a pair. In normal human males the twenty-third chromosomes are shaped like XY and in females like XX. They are usually referred to as XY chromosomes and the XX.

People sometimes think that having an extra chromosome or two would result in a superhuman. This is not the case. Extra chromosomes, damaged chromosomes and missing chromosomes almost always cause severe abnormalities.

Studies of chromosomes are made by enlarging photographs of an individual's chromosomes. The chromosomes are cut out of the picture and one by one they are matched in pairs and glued into place by an expert. This is called a karyotype. Drawn on the next page are four karyotypes of chromosomes from four different individuals. Match each karyotype to the descriptions below.

1. Down's syndrome results in mental retardation. It is determined in a karyotype with an extra twenty-first chromosome.
2. Normal chromosomes show up as twenty-three pairs. The twenty-third pair can be either XX for females or XY for males.
3. Turner's syndrome is the result of only one X chromosome for the twenty-third pair. It occurs when an egg cell does not contain a sex chromosome. Its karyotype will have only one X chromosome which came from the male parent's sperm. Turner's syndrome occurs only in females.
4. Cri du chat syndrome results in severe mental and physical retardation. The affected individuals make catlike cries, hence the name *cri du chat* which is French for cry of the cat. It is determined on a karyotype by a missing portion of chromosome five.

