Karyotypes & Genetic Disorders

Honors Biology

Mrs. Glassmeyer

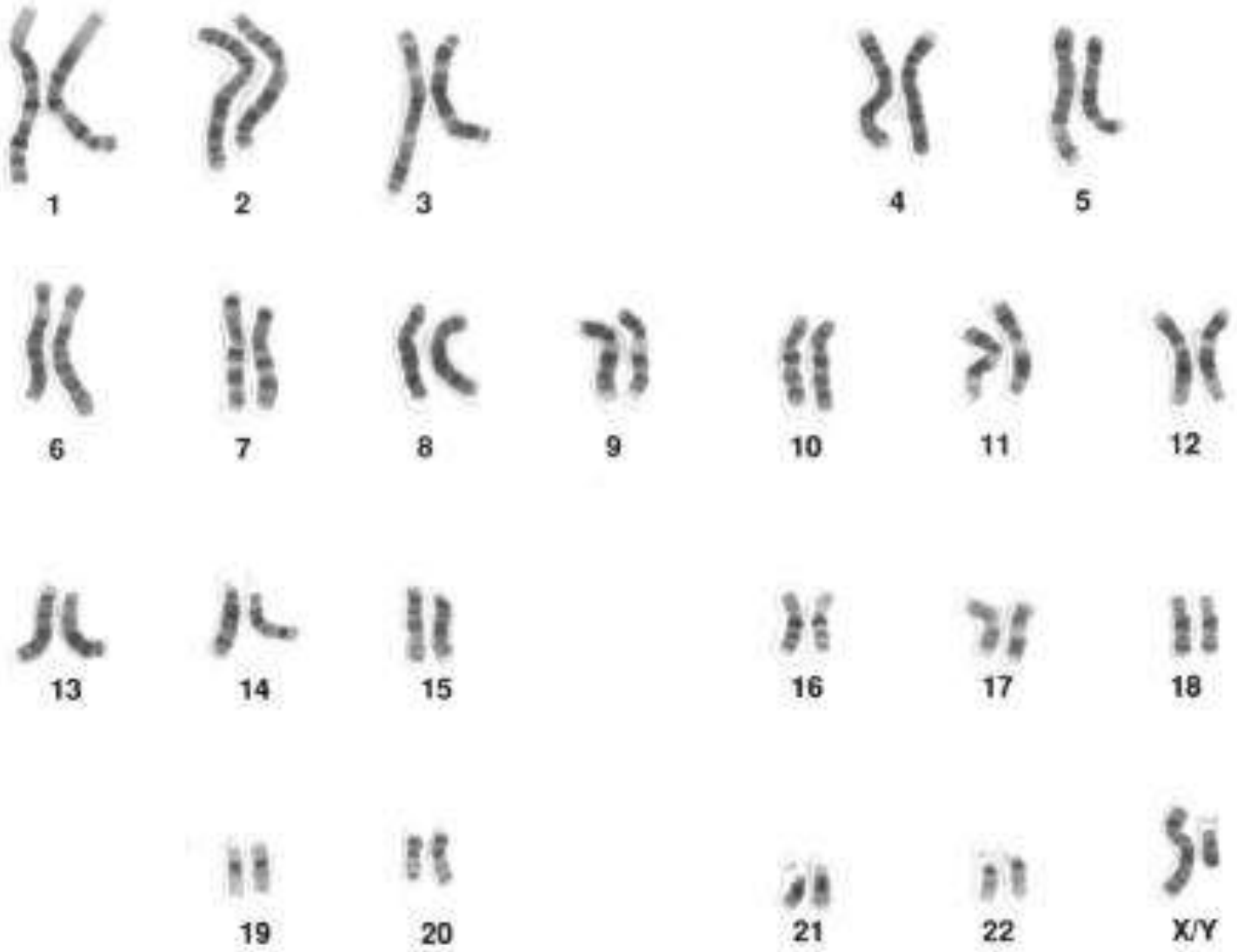
Essential Knowledge

What is a karyotype? – organization of chromosomes of a eukaryotic organism in size order from largest to smallest

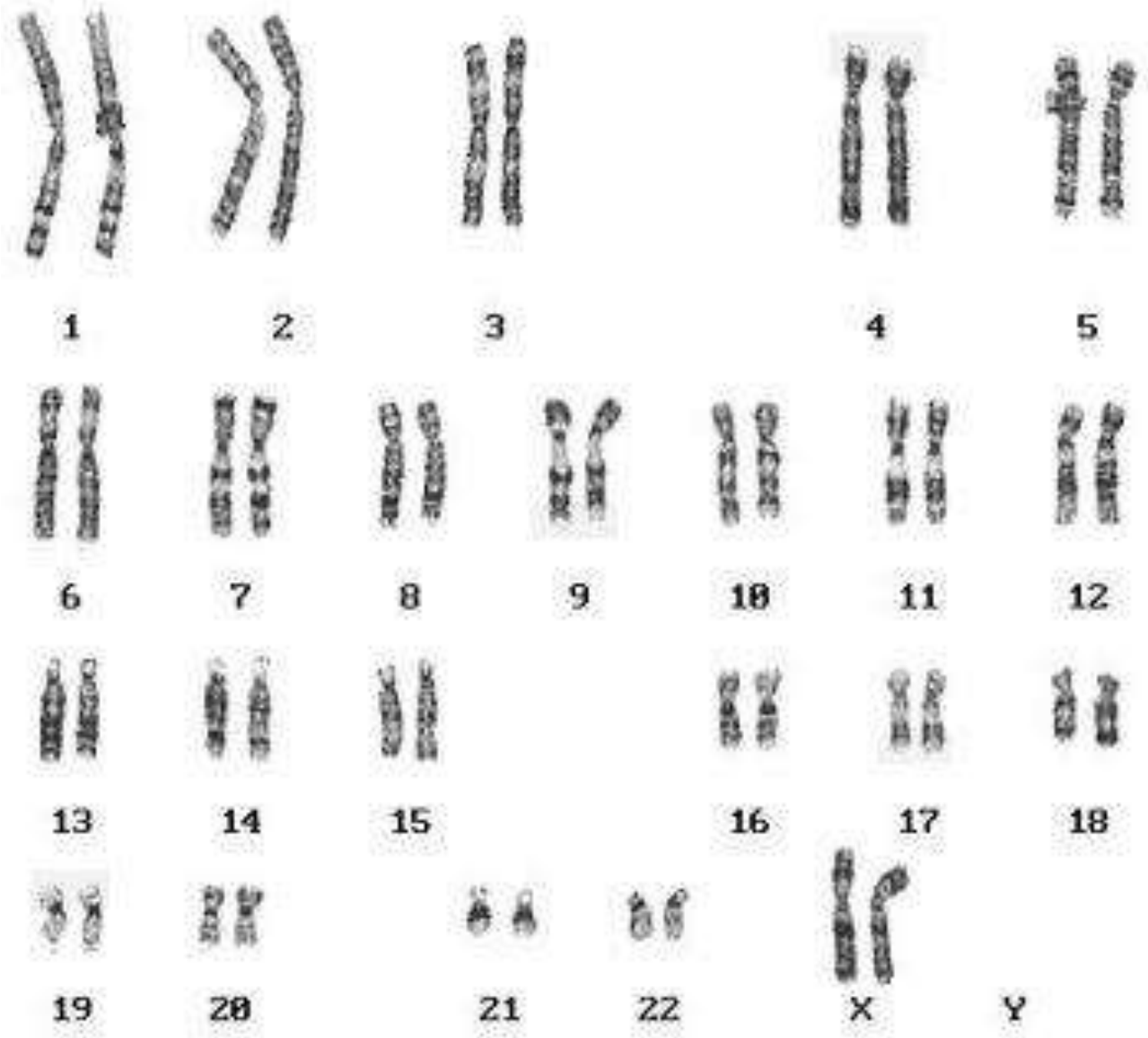
What two types of chromosomes make up a karyotype?

- **Autosomes** – chromosomes that make up a eukaryotic cell that DO NOT determine sex
- **Sex chromosomes** – one to three chromosomes that determine sex of an eukaryotic organism. Placed at the end of a karyotype.

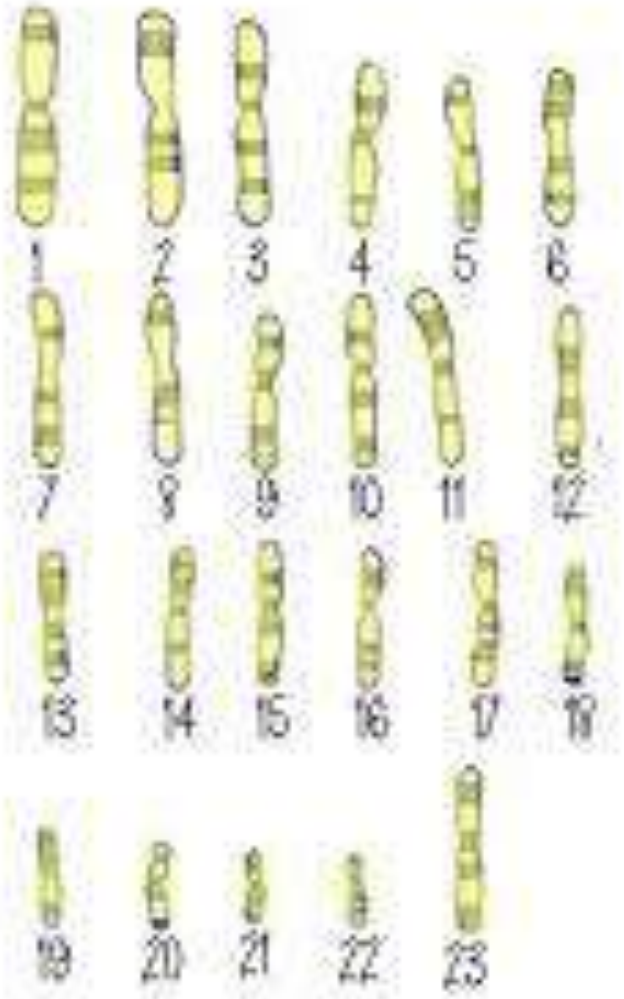
Normal Human Male

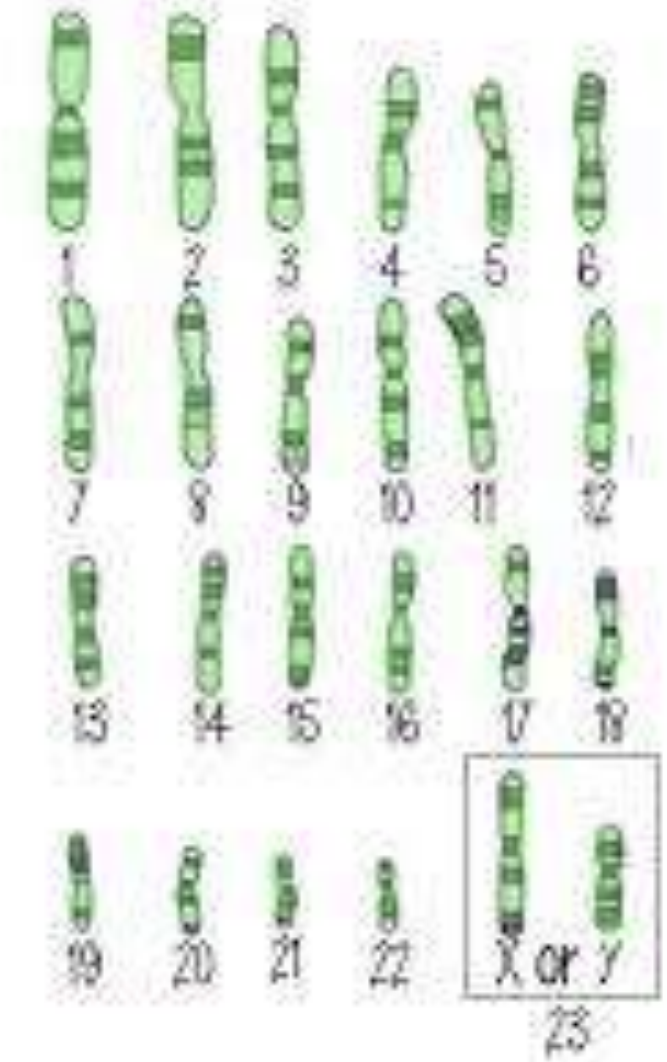


Normal Human Female



Karyotypes of Human Gametes





Differences???

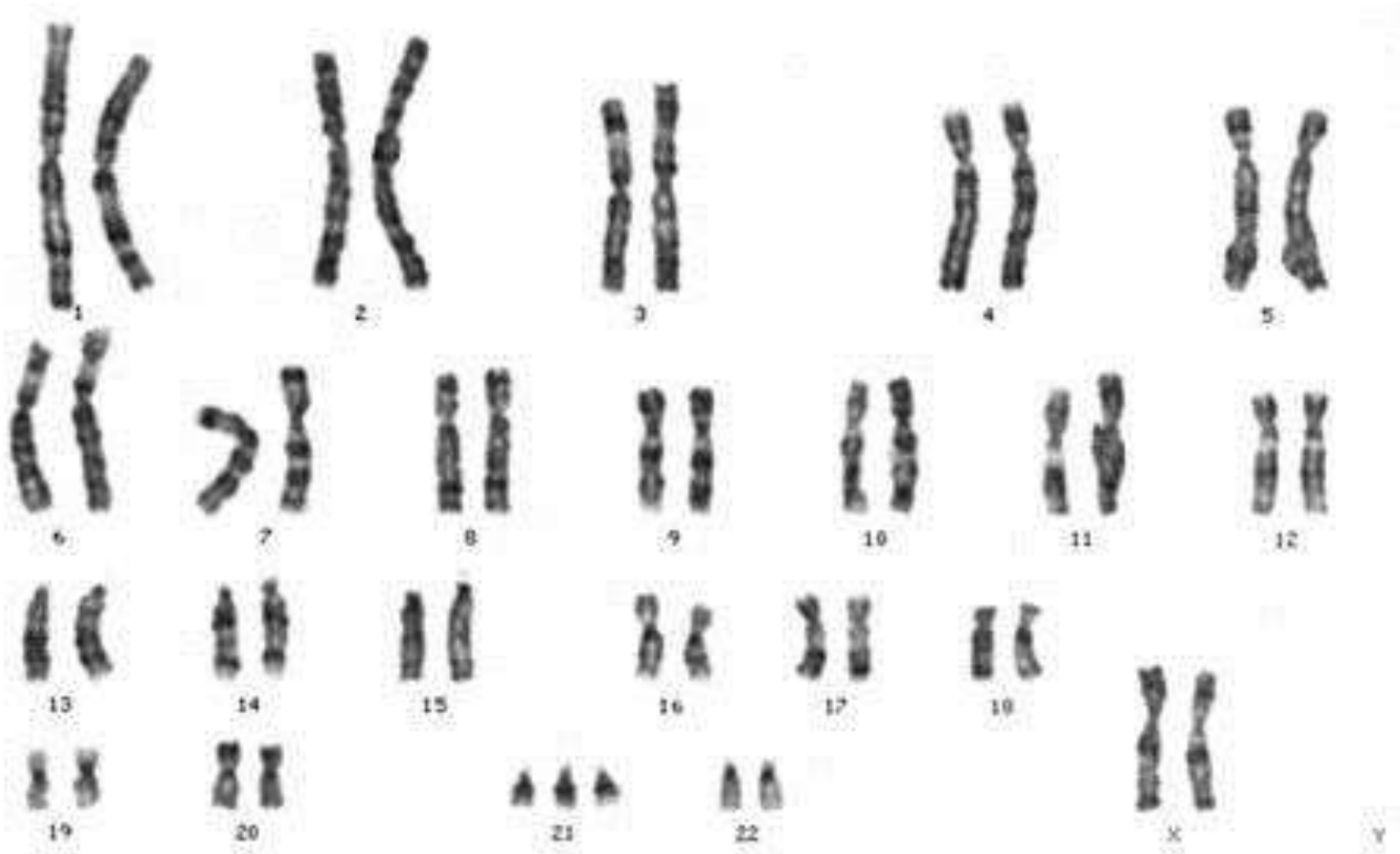
- What was the difference between the human organism and the human gamete?

Let's look again.

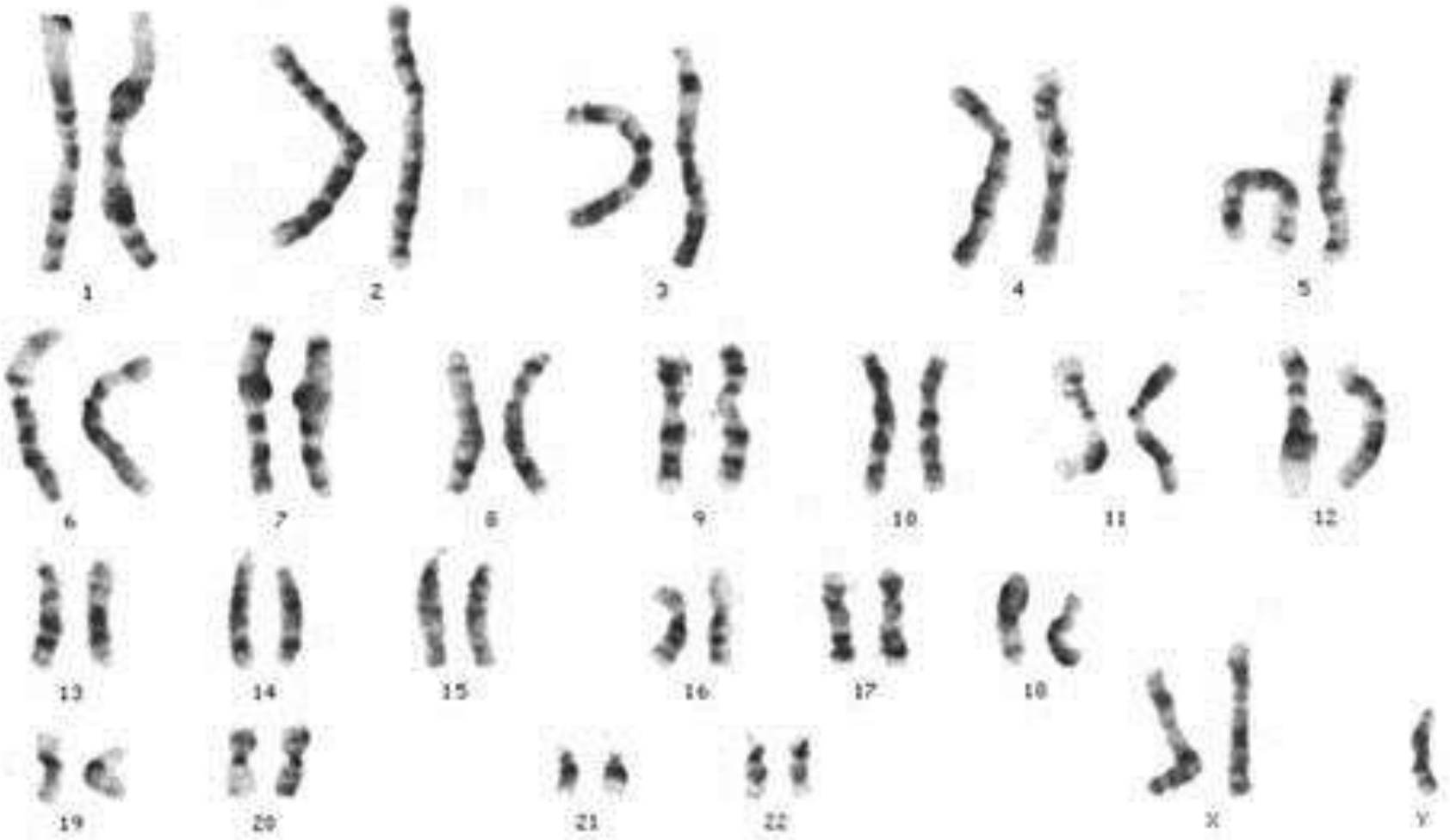
Things to Know for Analysis

- Make sure the chromosomes are arranged from largest to smallest.
- Trisomy – when there are three chromosomes at a given location in a karyotype.
- Sex chromosomes in location 23 in all karyotypes.

Down's Syndrome



Klinefelter's Syndrome



What's Wrong Here?

Lab Directions

1. You will be given a set of chromosomes. Cut out and arrange chromosomes in size order to create karyotype.
2. Identify genetic disorder based on karyotype. Include chromosome set #, sex, disorder.
3. Create brochure of disorder. Must include description of disorder, support information, and references.

Genetic Disorders

- **Down's Syndrome** - Trisomy 21 (3 copies of chromosome 21)
- **Patau Syndrome** - Trisomy 13 (3 copies of chromosome 13)
- **Edward's Syndrome** - Trisomy 18 (3 copies of chromosome 18)
- **Klinefelter's Syndrome** - XXY (2 copies of the X chromosome and 1 copy of the Y chromosome)
- **Turner's Syndrome** - X (only one copy of the X chromosome)
- **Cri Du Chat syndrome** – One of the number 5 chromosomes will have a shortened arm