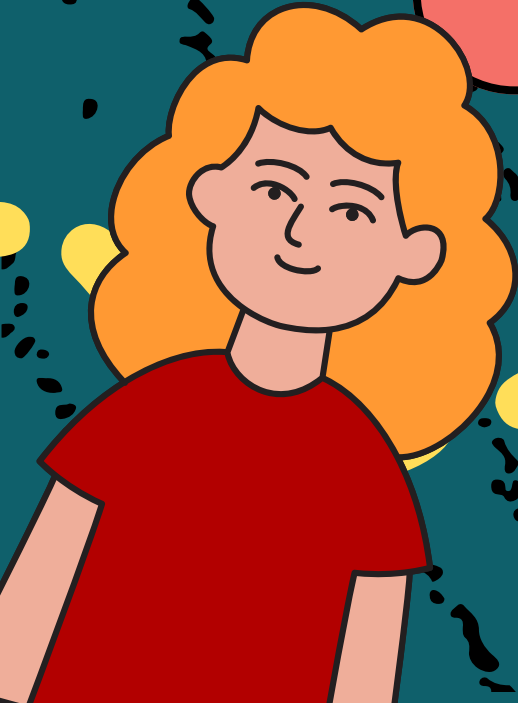




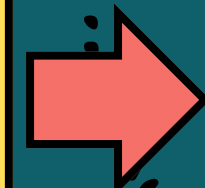
Grade 10, Biology with Miss Ainur

Chromosomal mutations

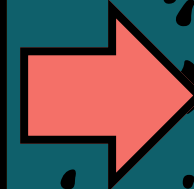


Learning Points

Distinguish between
the point and
chromosomal
mutations

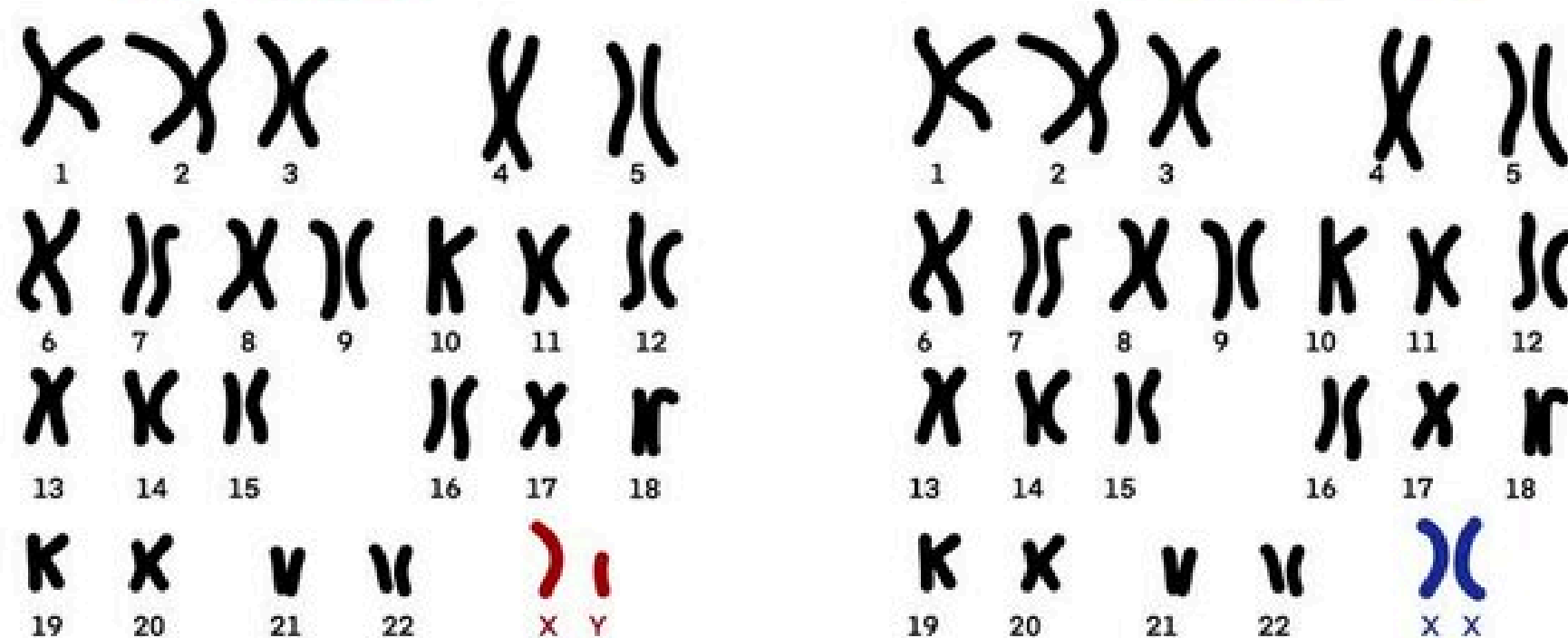


Explain what a
chromosomal mutation
is and give an example.

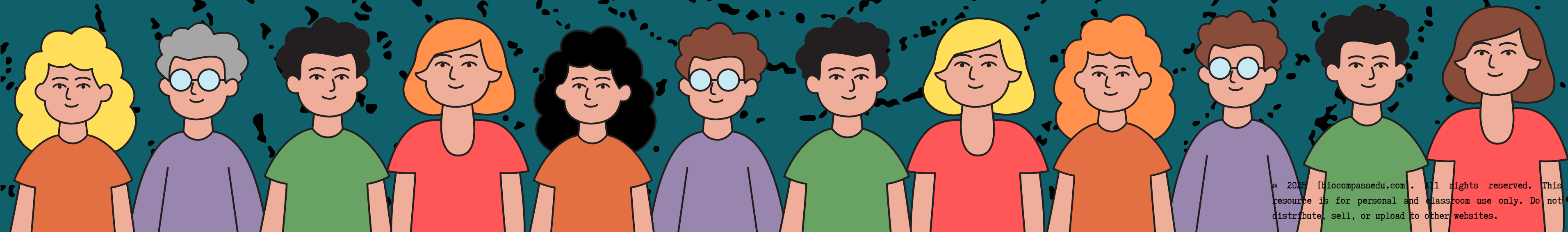


Identify the causes of
chromosomal
mutations

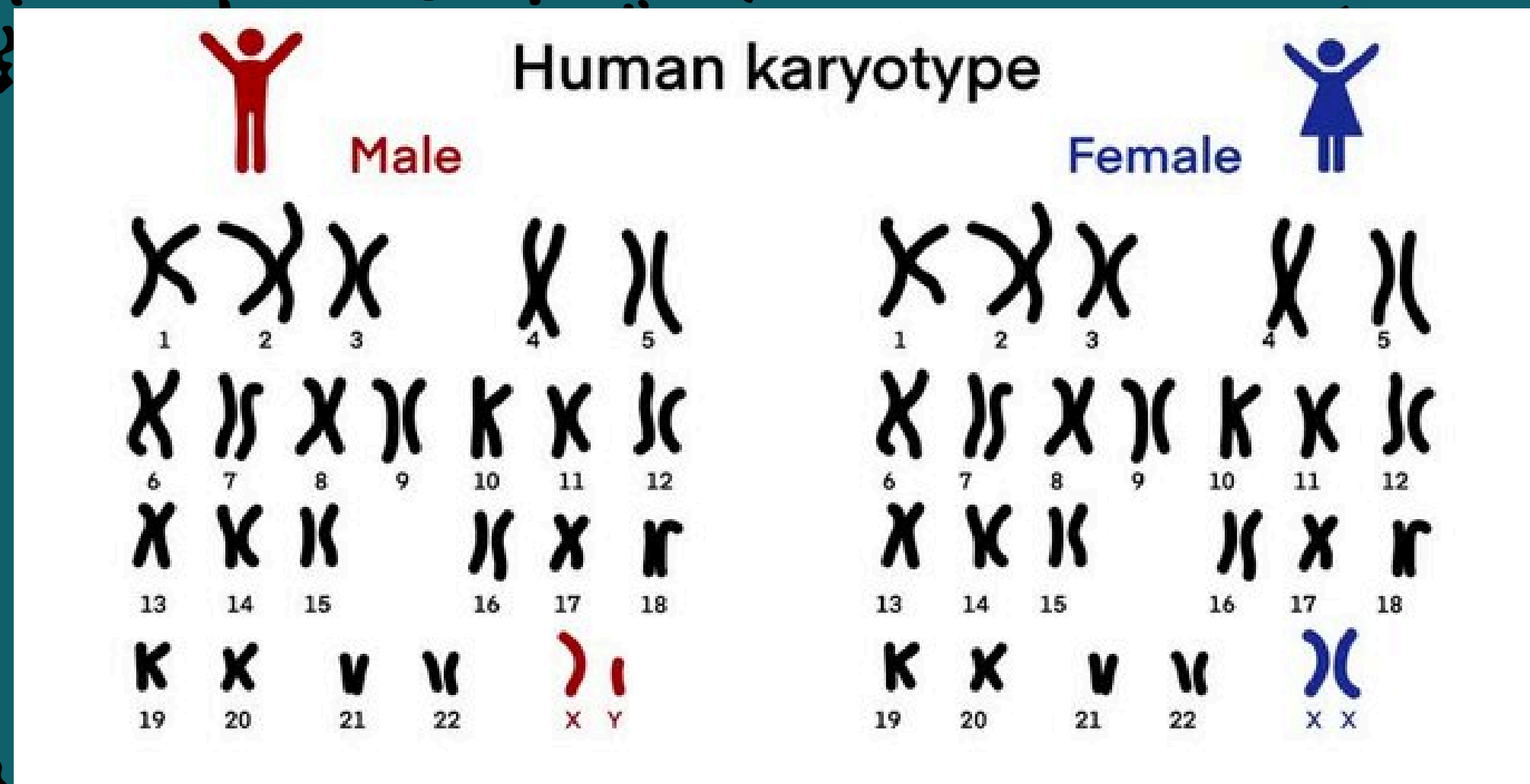
Human karyotypes



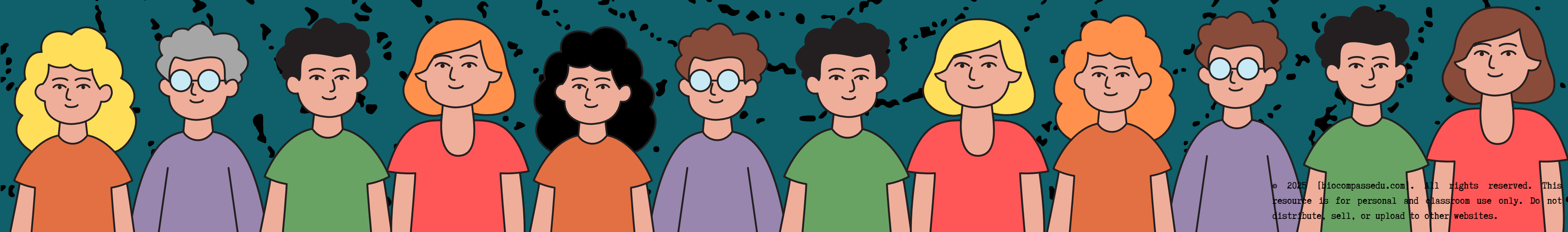
Identify the most significant difference between the two karyotypes. Discuss how this observed difference in karyotypes manifests itself



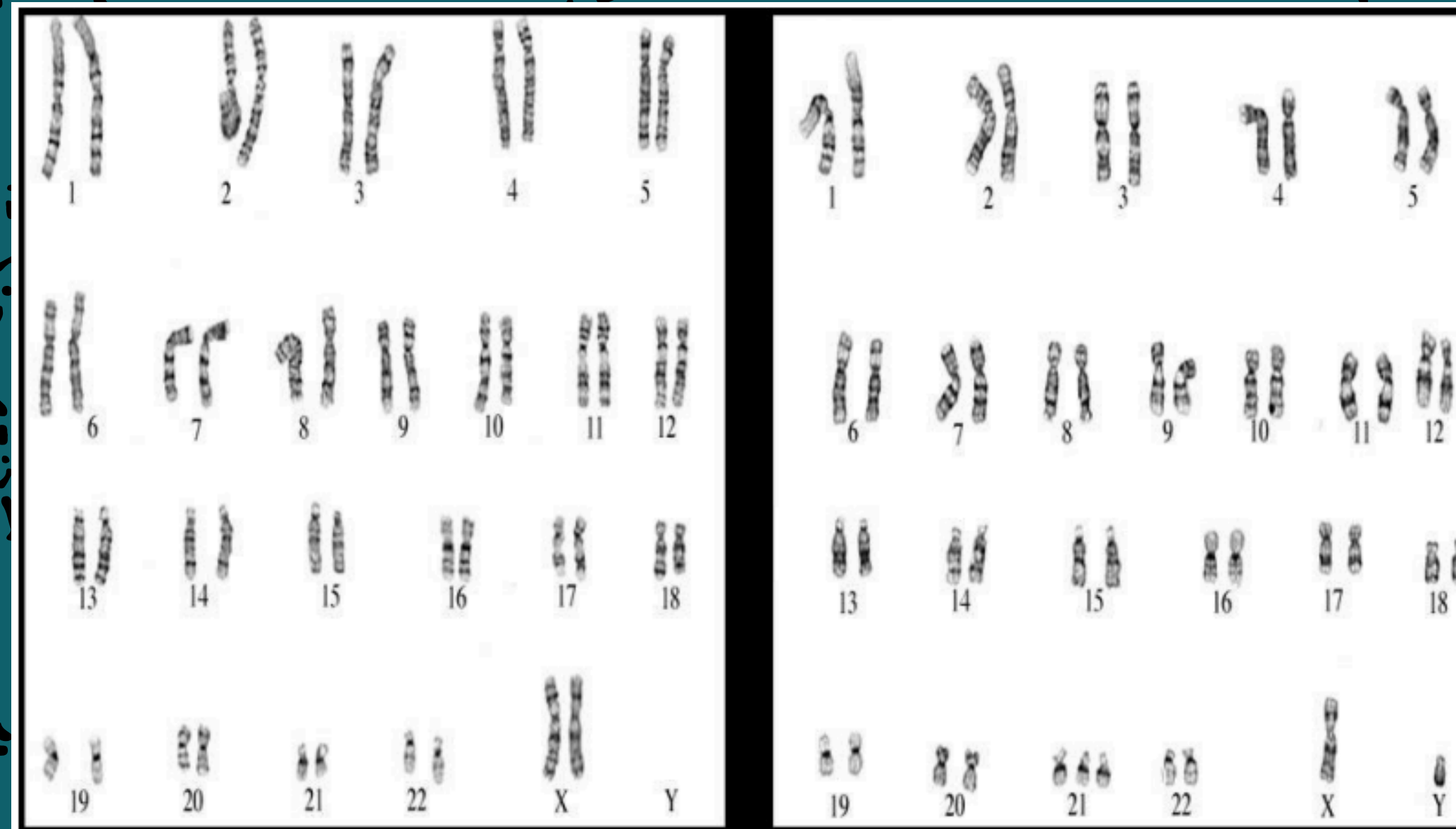
Human karyotypes



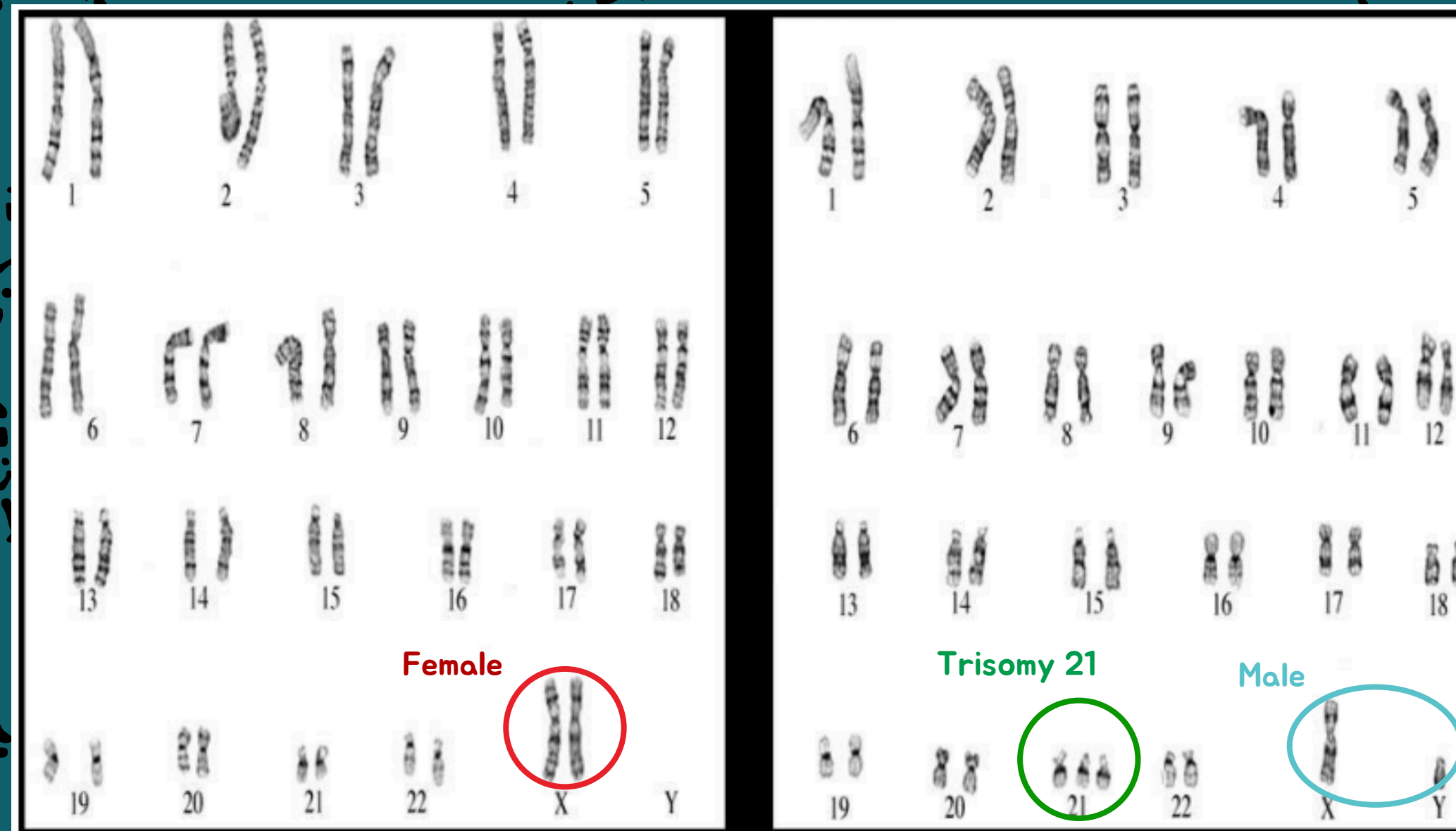
Human have 22 pairs of autosomes and **1 pair of sex chromosomes.**



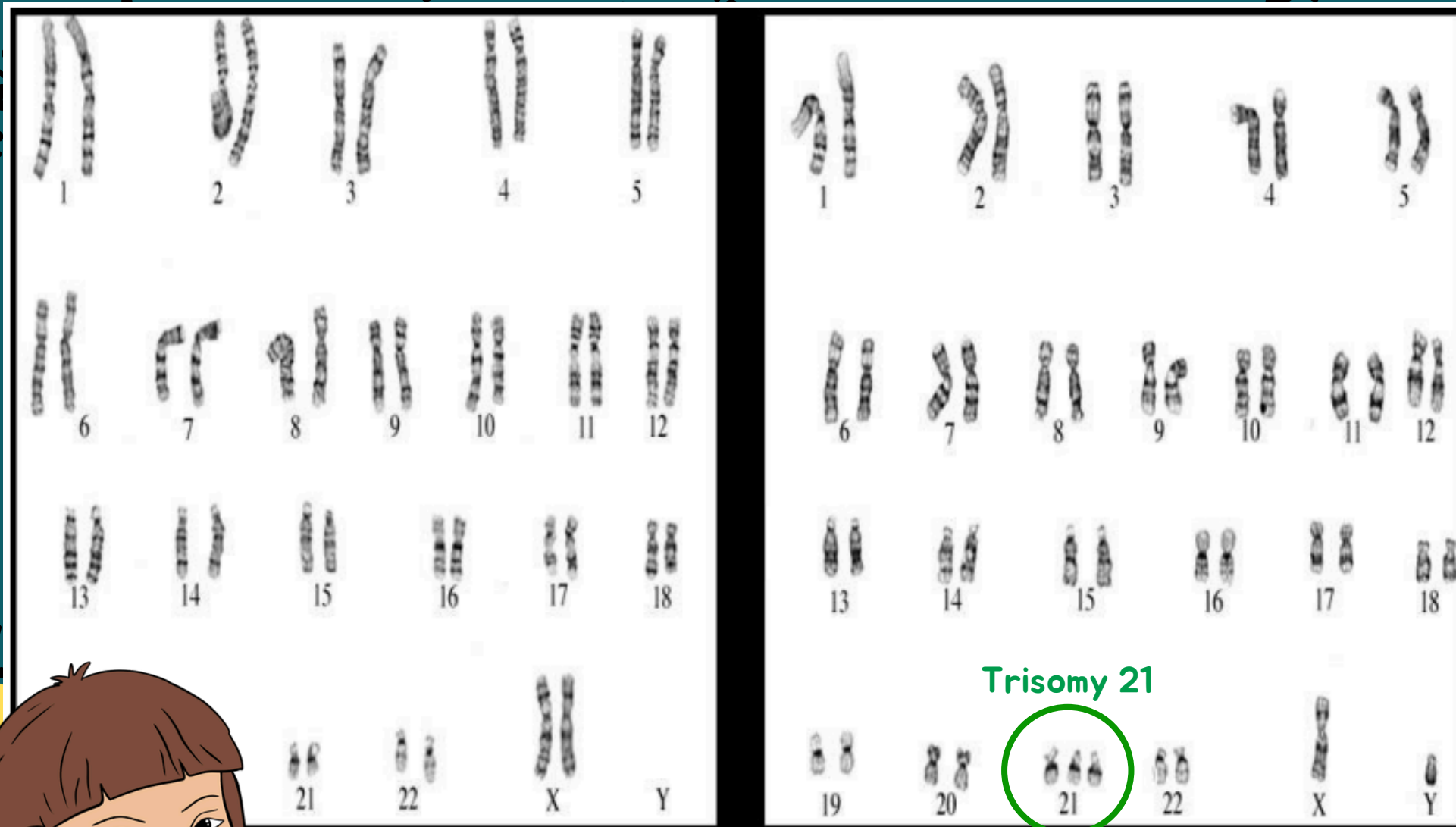
Identify the most significant difference between two different karyotypes.



Identify the most significant difference between two different karyotypes.



Identify the most significant difference between two different karyotypes.



Down Syndrome occurs due to an error in which a person's cells have an extra copy of chromosome 21. This additional genetic material alters the course of development in a person and causes the characteristics associated with Down Syndrome



Down Syndrome



Down syndrome



According to the Centers for Disease Control and Prevention, approximately **one in every 775 babies** in the United States is born with Down syndrome, making Down syndrome the most common chromosomal condition. About **5,000 babies** with Down syndrome are born in the United States each year.

-De Graaf, G., Buckley, F., & Skotko, B. (2024, May 3). People living with Down syndrome in the USA: Births and Population.

What causes Down syndrome?



The cause of the extra full or partial chromosome is still unknown. Age is the only factor that has been linked to an increased chance of having a baby with Down syndrome resulting from nondisjunction or mosaicism. However, due to higher birth rates in younger women, 51% of children with Down syndrome are born to women under **35 years of age**. (De Graaf et al., 2022).

There is no definitive scientific research that indicates that Down syndrome is caused by environmental factors or the parents' activities before or during pregnancy.

The additional partial or full copy of the 21st chromosome which causes Down syndrome can originate from either parent.

Role-play

Patients: You will each take on the role of a patient with a specific health condition. You need to provide symptoms and give clues about your condition when asked by the doctors.

Doctors: You will each act as a doctor assigned to diagnose a specific condition. You will listen to the patient, ask appropriate questions, and try to figure out the diagnosis based on the symptoms provided.

