

# Genetics: The Study of Heredity *Learning Guide*



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ISBN 978-1-63212-058-8

Printed in the United States of America.



# HOW TRAITS ARE INHERITED

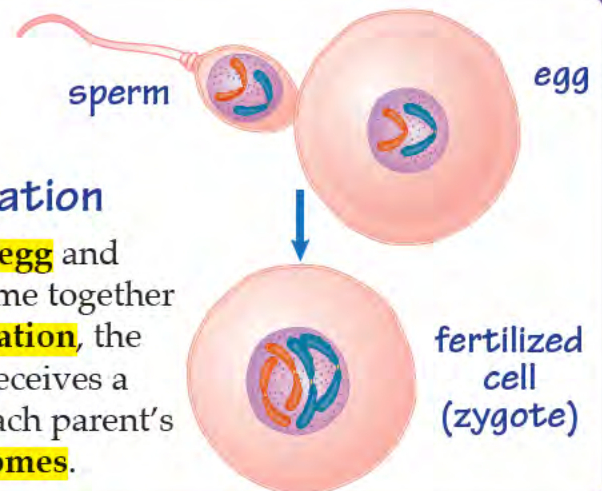
## What Is Heredity?

**Heredity** is the passing of traits or characteristics from one generation to the next.

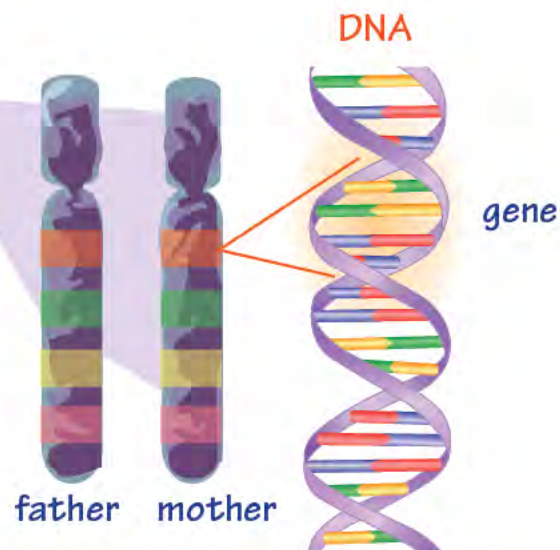
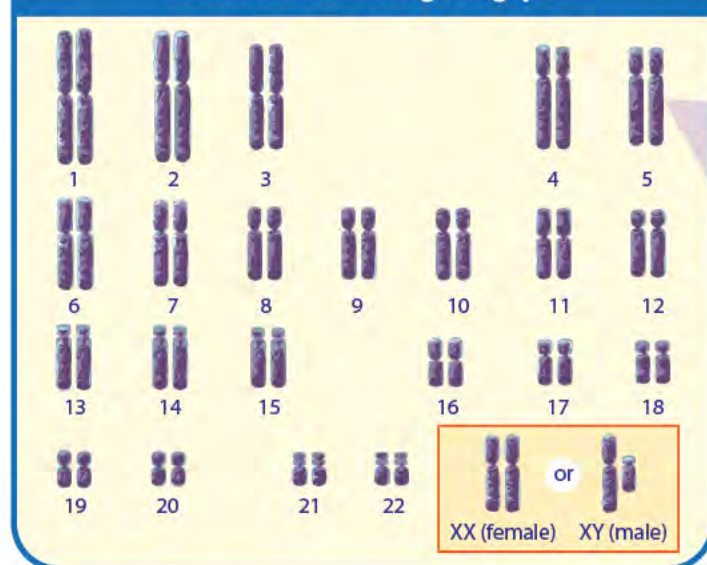


## Fertilization

When an **egg** and **sperm** come together at **fertilization**, the **embryo** receives a copy of each parent's **chromosomes**.



## Human Karyotype

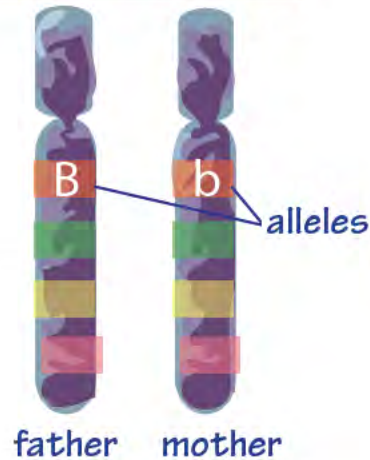


Humans have 46 **chromosomes** that are present in 23 **pairs**. One chromosome in each pair is inherited from the mother, and the other from the father.

The inherited **genes** on these chromosomes contain **DNA** sequences that are related to particular traits. A person inherits two copies of each gene.

## Alleles - Alternate Gene Forms

**Genes** exist in **alternate** forms called **alleles**. For example, the gene that determines eyebrow shape has two alleles—one codes for bushy eyebrows and the other fine eyebrows.



eyebrow shape

Bb



## Homozygous and Heterozygous Alleles

A person can inherit two of the same alleles, called **homozygous**. Or a person can inherit two different alleles, called **heterozygous**.

