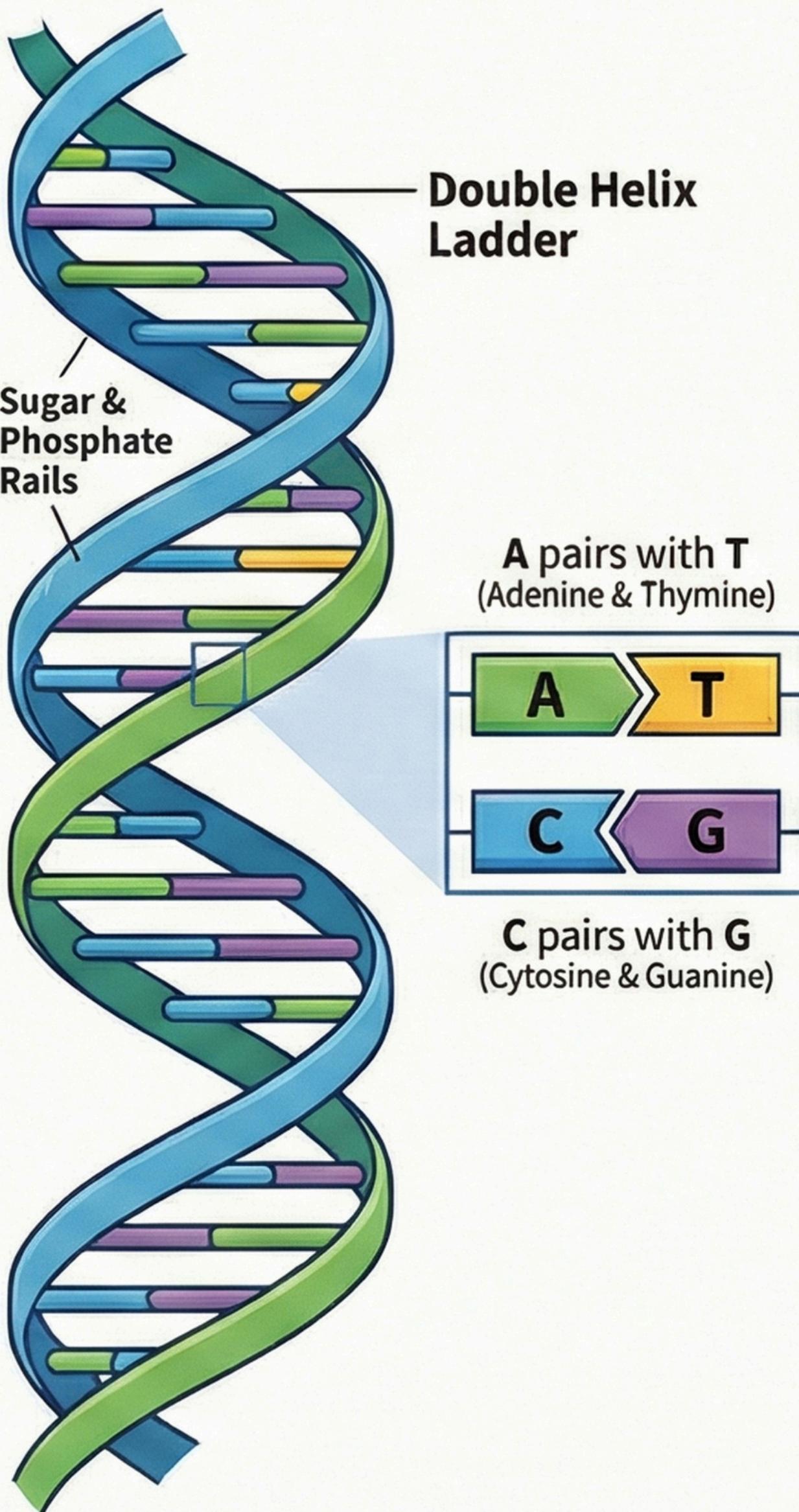
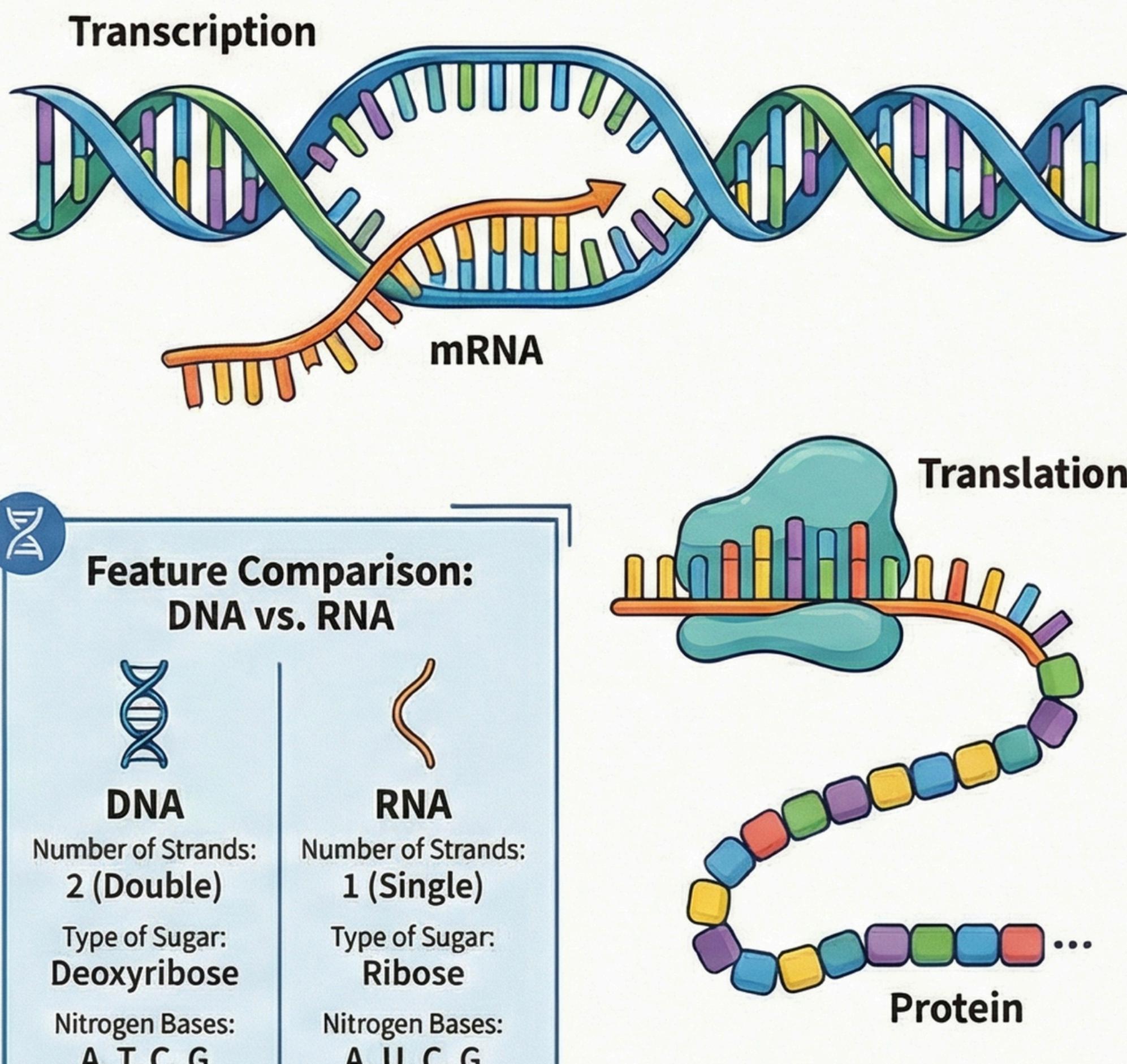


Genetics

The Code of Life: DNA & Genes



Genes are Instructions to Build Proteins



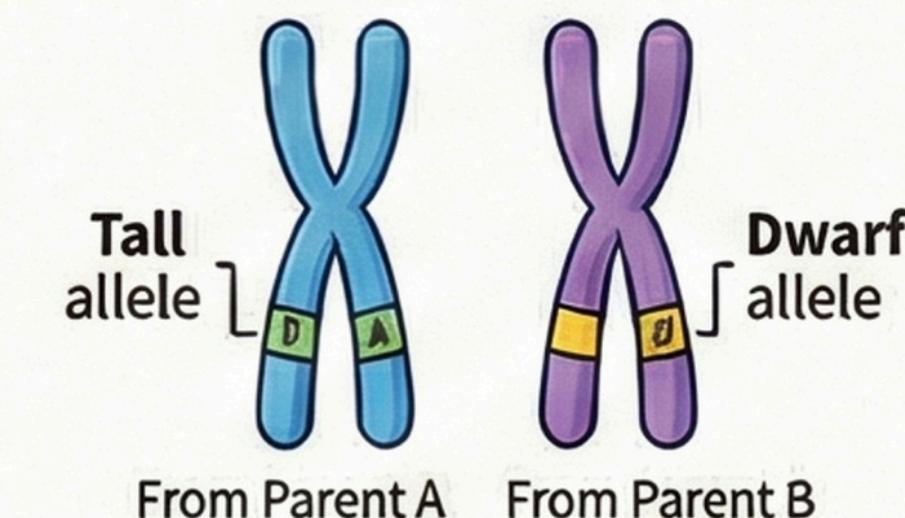
How Traits Are Passed Down: Heredity



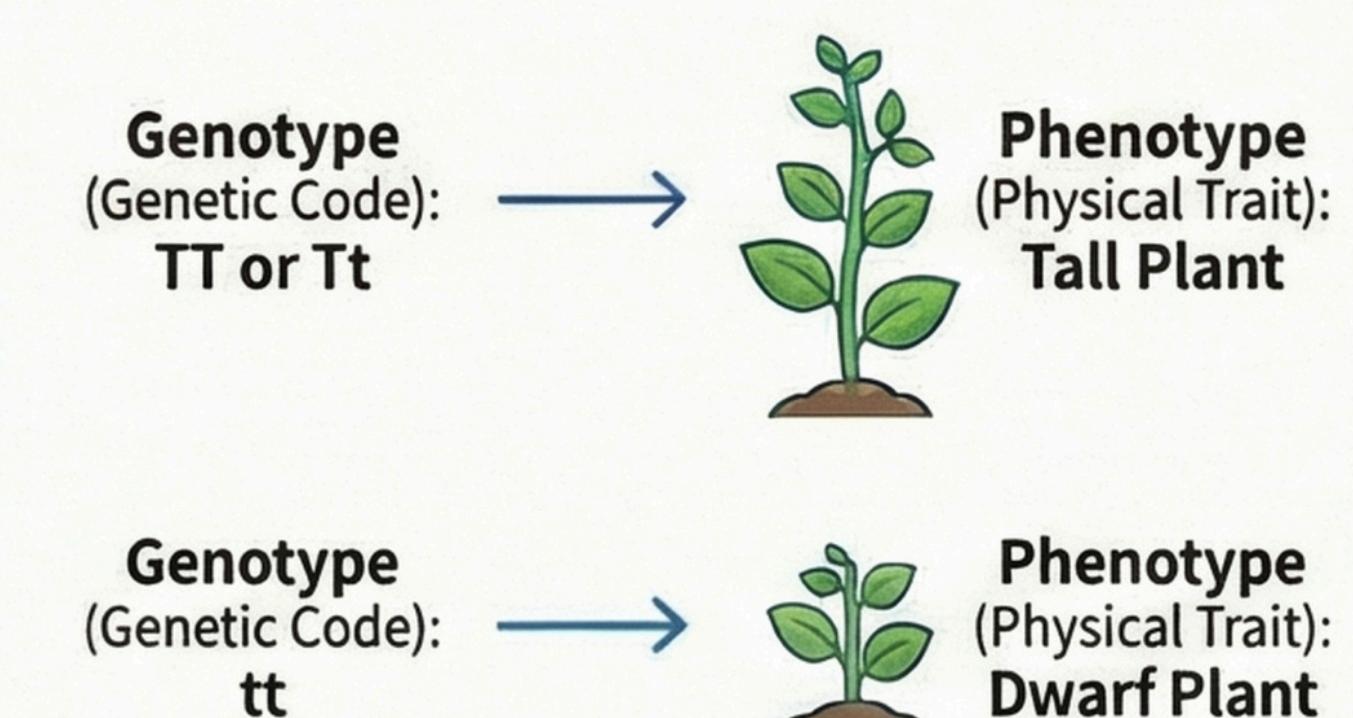
Mendel: The Father of Genetics

- Discovered:
- dominant traits (always show up)
 - recessive traits (can be hidden)

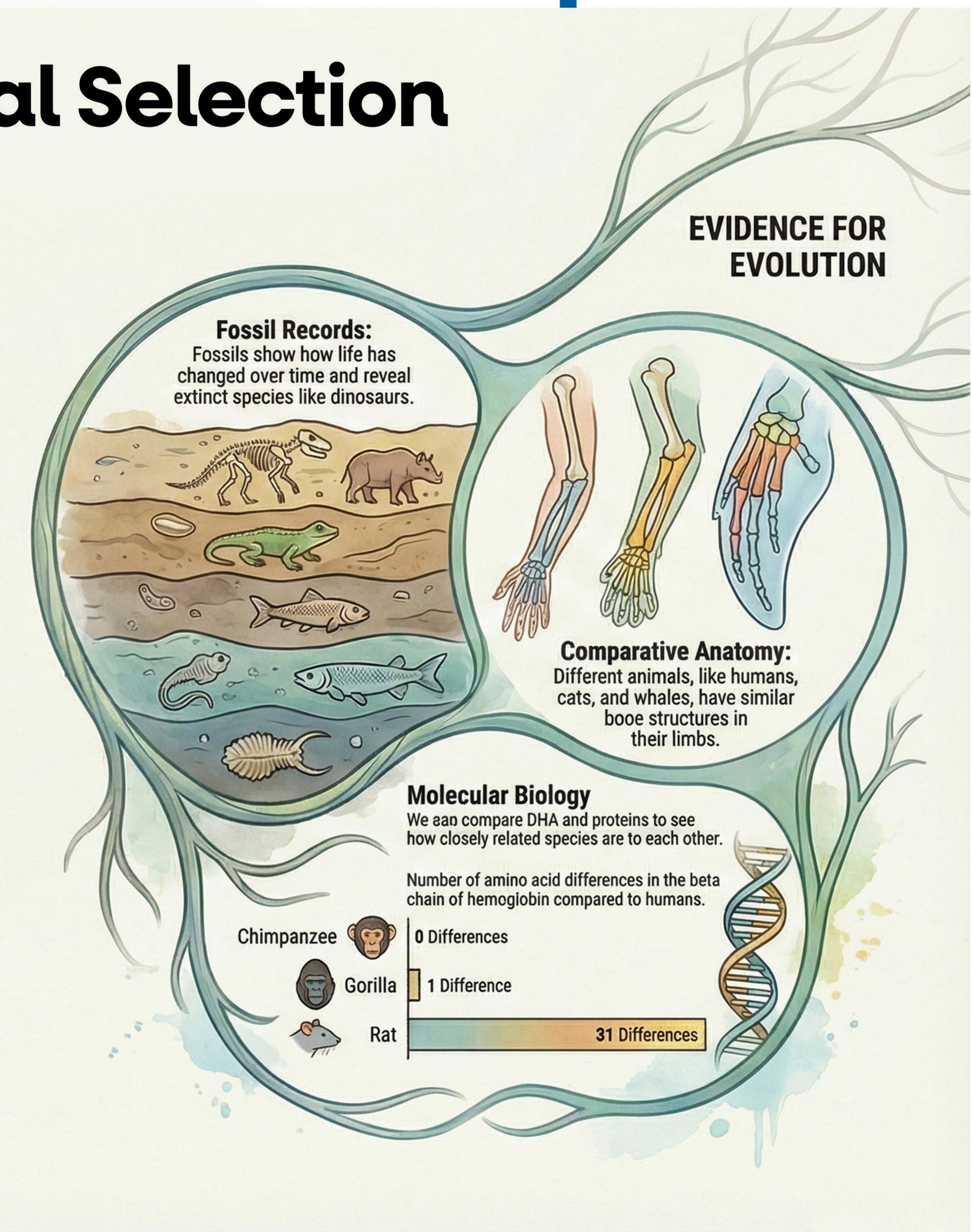
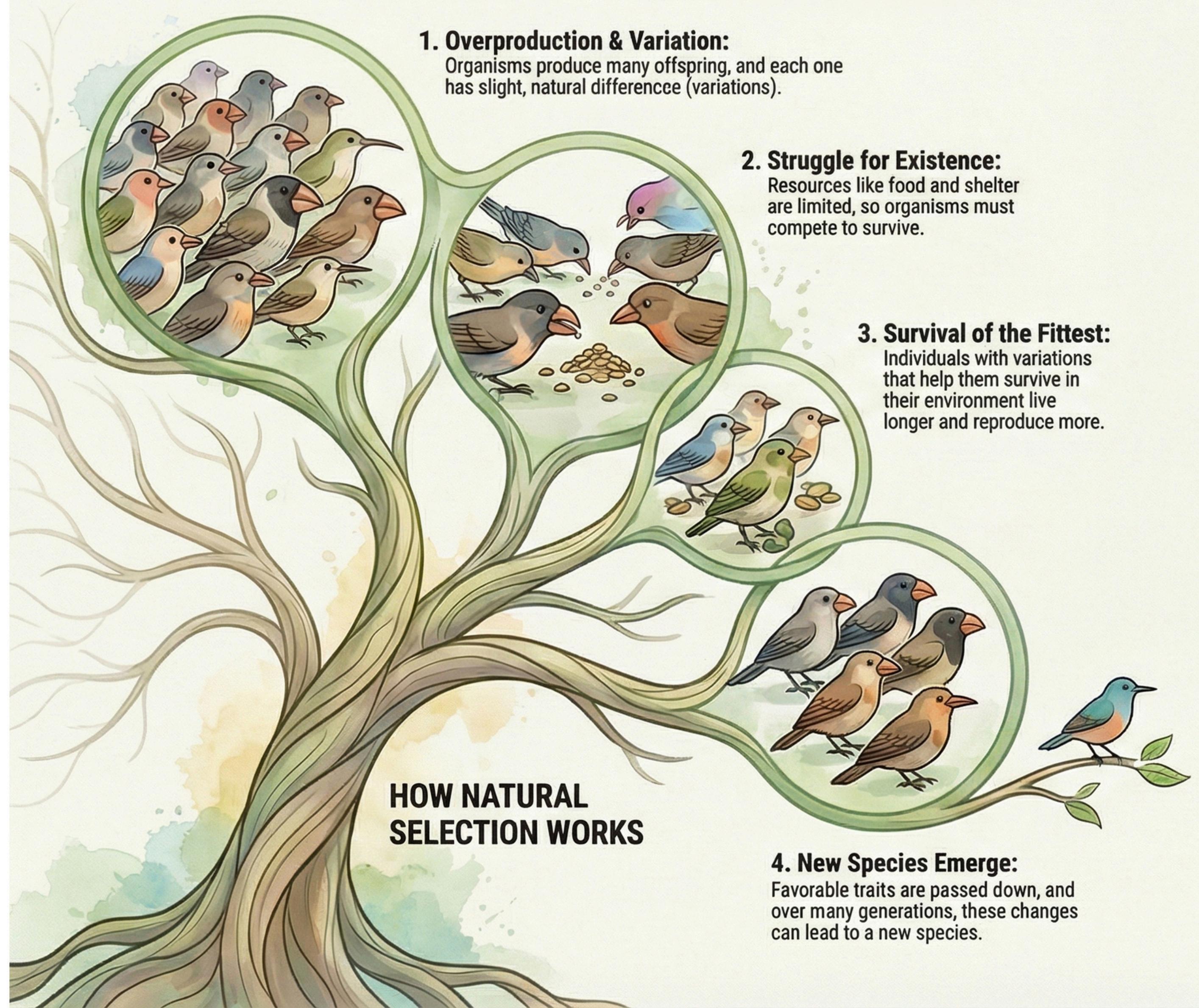
Alleles are Different Versions of a Gene



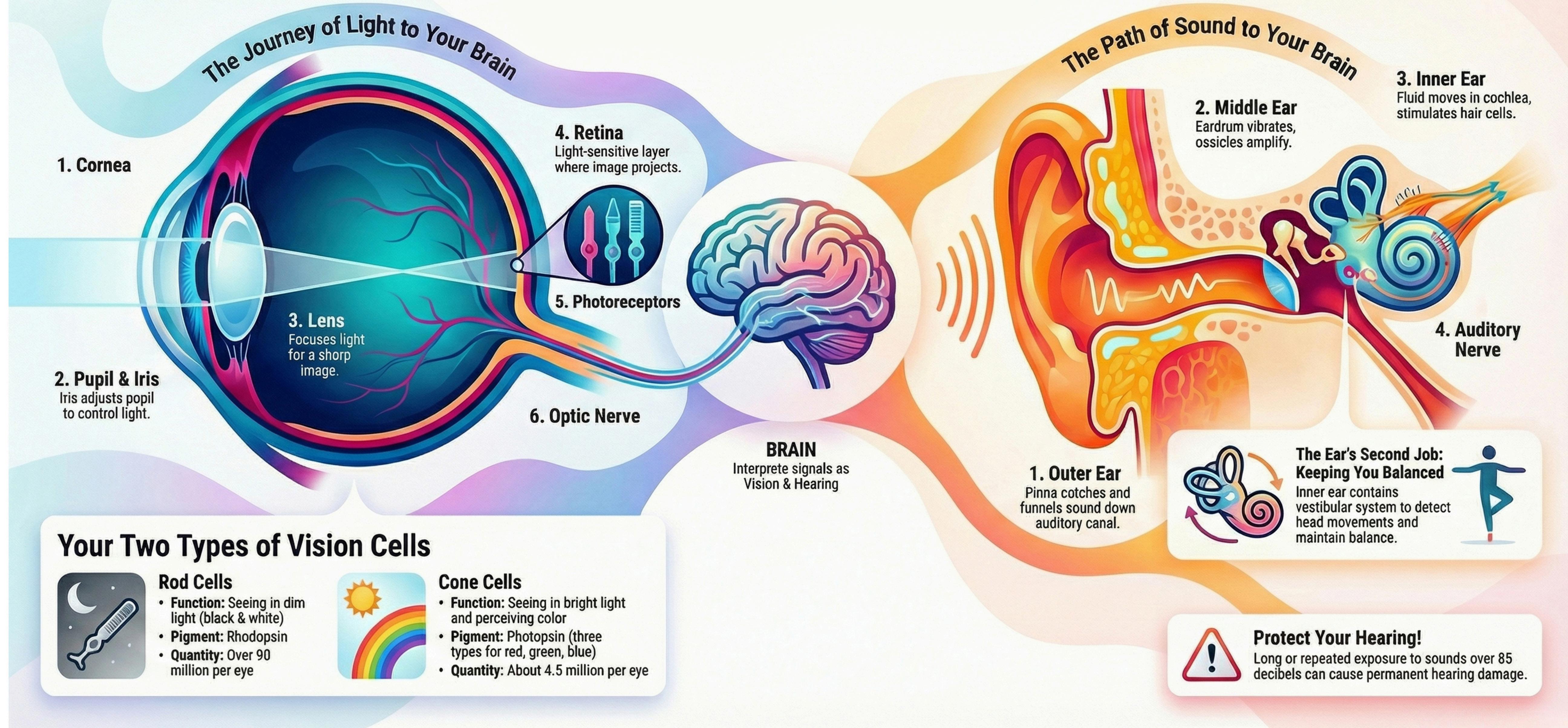
Genotype vs. Phenotype



Evolution & Natural Selection



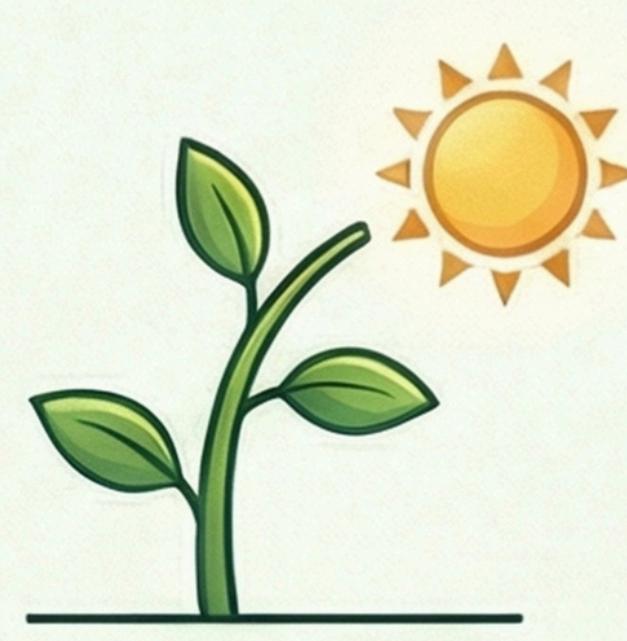
Sense the World



Chemical Messengers: How Hormones Control Plants and People



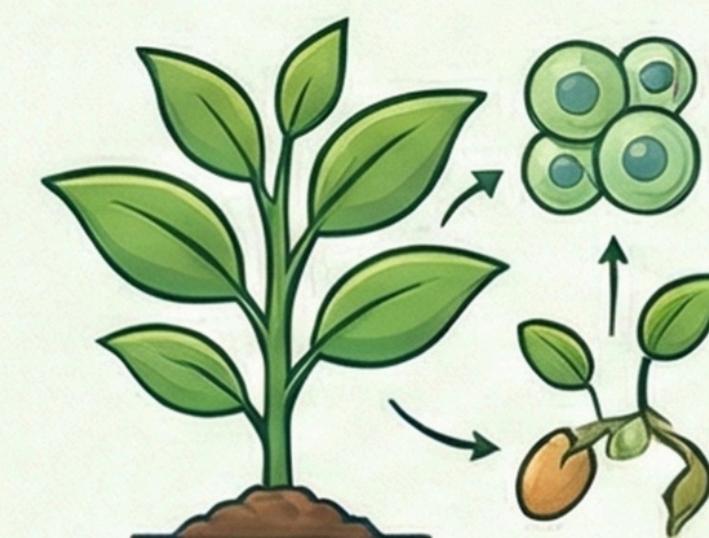
PLANT HORMONES: The Growth Regulators



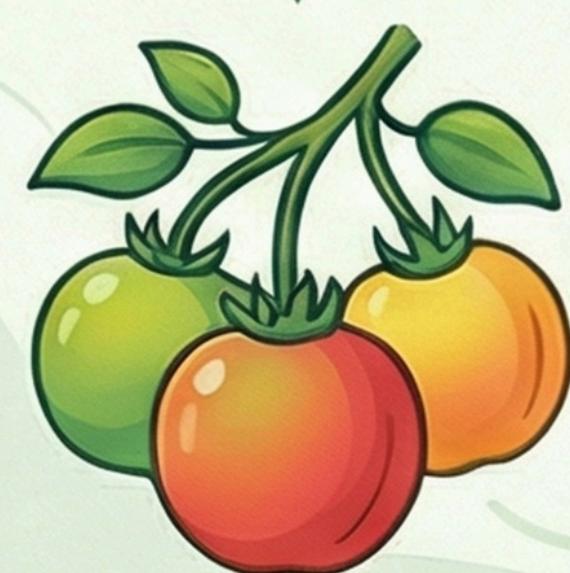
Auxin: The Light Chaser
Causes plant stems to grow and bend towards a light source.



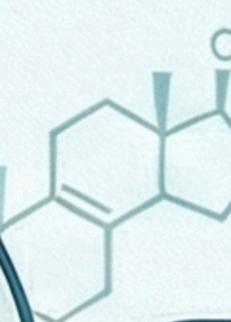
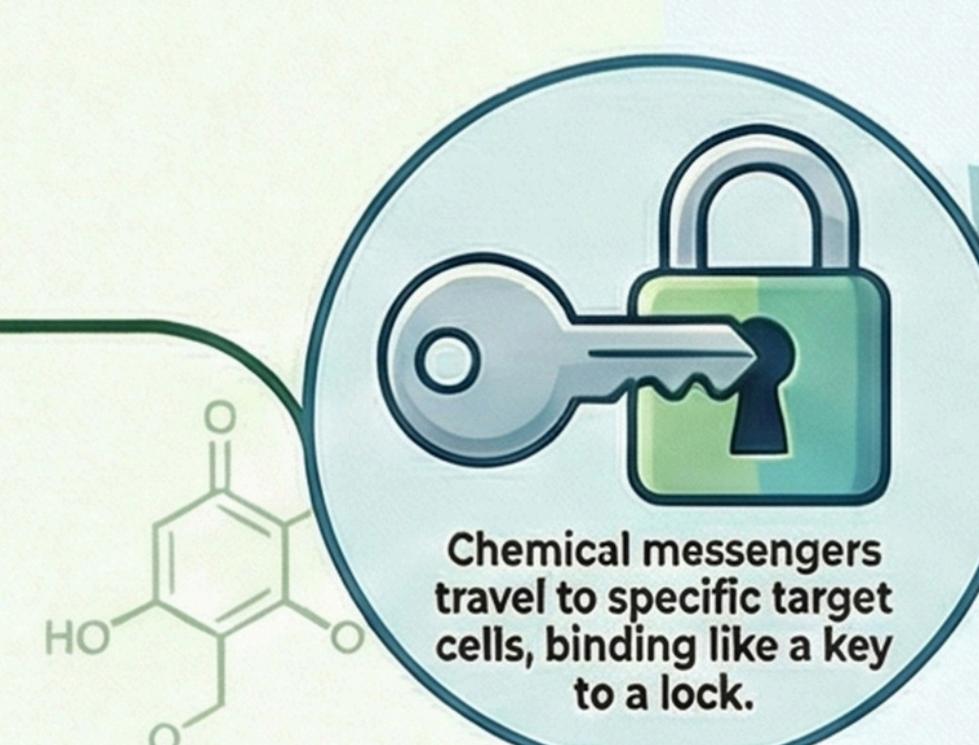
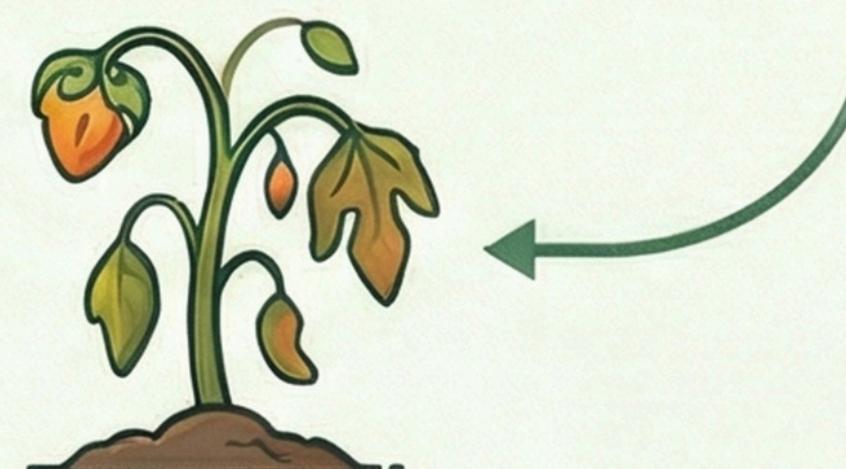
Gibberellins & Cytokinins: Growth & Division



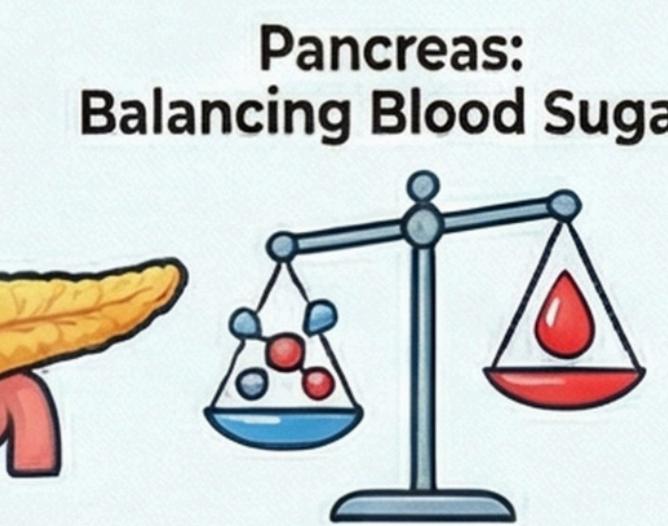
Work together to stimulate cell division, stem growth, and seed germination.



**Ethylene & Abscisic Acid:
Ripening & Resting**
Ethylene helps fruit ripen, while Abscisic Acid slows growth during stressful conditions.

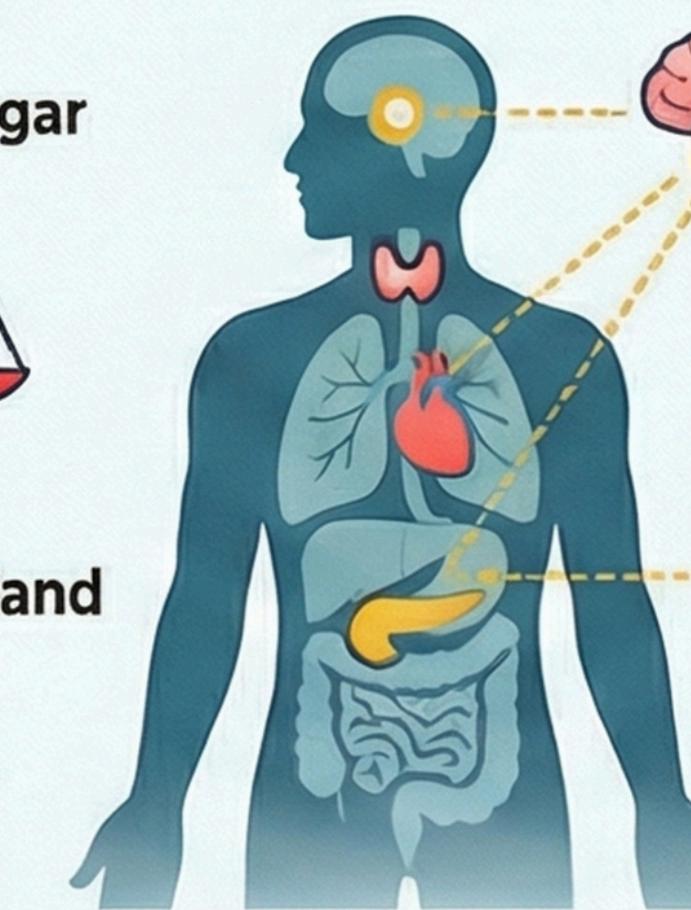


HUMAN HORMONES: The Body's Control System



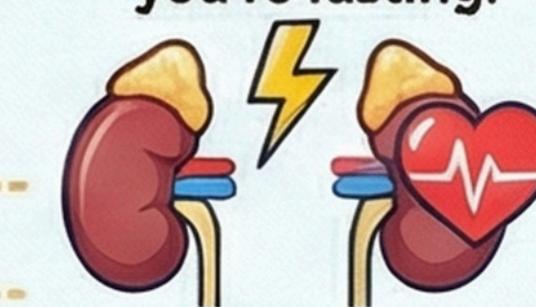
Pancreas: Balancing Blood Sugar

Insulin lowers blood sugar after a meal;
Glucagon raises it when you're fasting.

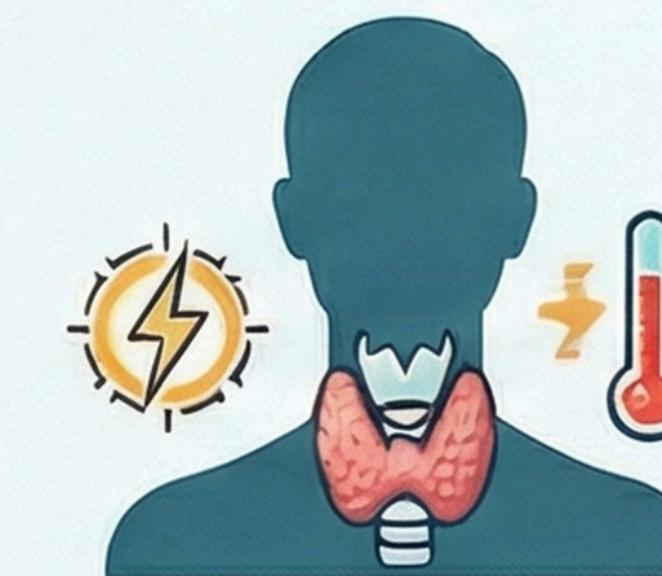


Pituitary Gland: The Master Gland

Controlled by the hypothalamus, releases hormones that manage growth, among other functions.



**Adrenal Glands:
Fight or Flight Response**
Produces epinephrine (adrenaline) to prepare the body for emergency situations.



Thyroid Gland: The Metabolism Manager

Produces thyroxine, a hormone that controls your body's energy use and temperature.

Quick Reference: Major Human Glands and Hormone Jobs

Gland	Hormone(s)	Main Job
Pancreas	Insulin & Glucagon	Manages blood sugar levels
Thyroid	Thyroxine	Regulates the body's metabolism
Adrenal	Epinephrine	Prepares the body for emergencies
Pituitary	Growth Hormone	Controls overall body growth

Body's Defenders

Our body has a powerful defense system called immunity, which protects us from harmful invaders known as pathogens. This system has different layers of defense to keep us healthy and fights off various diseases if we do get sick.

Our Immune System: The Body's Defenders

Innate Immunity: Your First Line of Defense
This is the natural protection you are born with, like skin, tears, and stomach acid.

Acquired Immunity: Your Body's Smart Defense
This immunity develops after birth, learning to fight specific germs it has met before.

Vaccination: Training Your Immune System
Vaccines use dead or weakened germs to teach your body to build defenses without causing sickness.

The Attackers: How We Get Sick

What Are Pathogens?
Pathogens are tiny organisms like bacteria and viruses that can enter the body and cause disease.

Pathogen Type	Example Disease
Bacteria	Tuberculosis
Virus	AIDS (caused by HIV)
Fungus	Ringworm
Protozoa	Malaria

Some diseases, like cancer or genetic disorders, are not caused by pathogens and cannot spread.

BIOTECHNOLOGY & GENETIC ENGINEERING

