Types of variations

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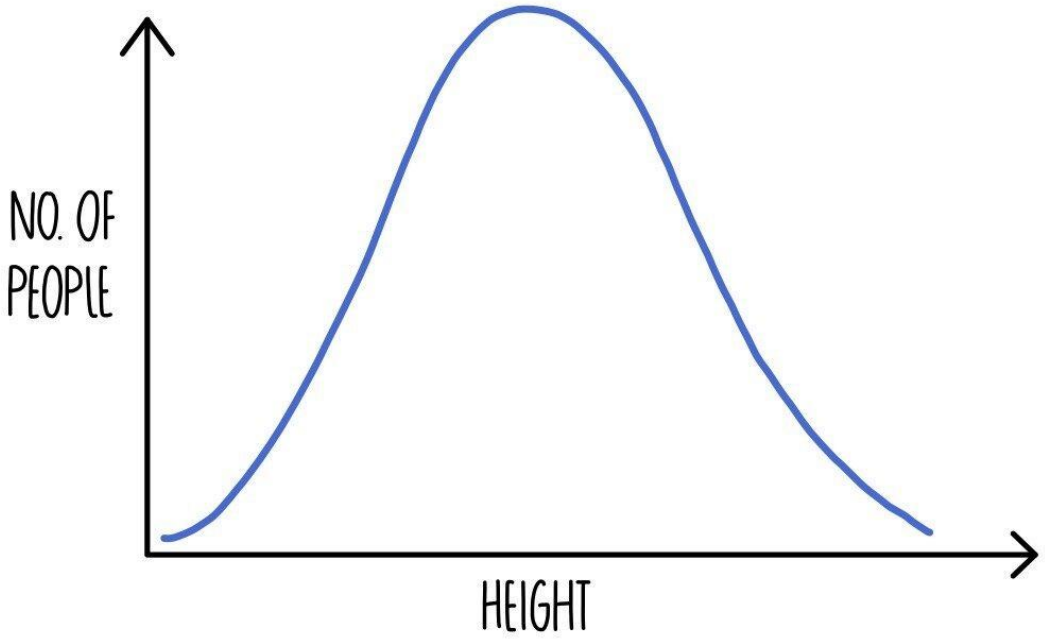
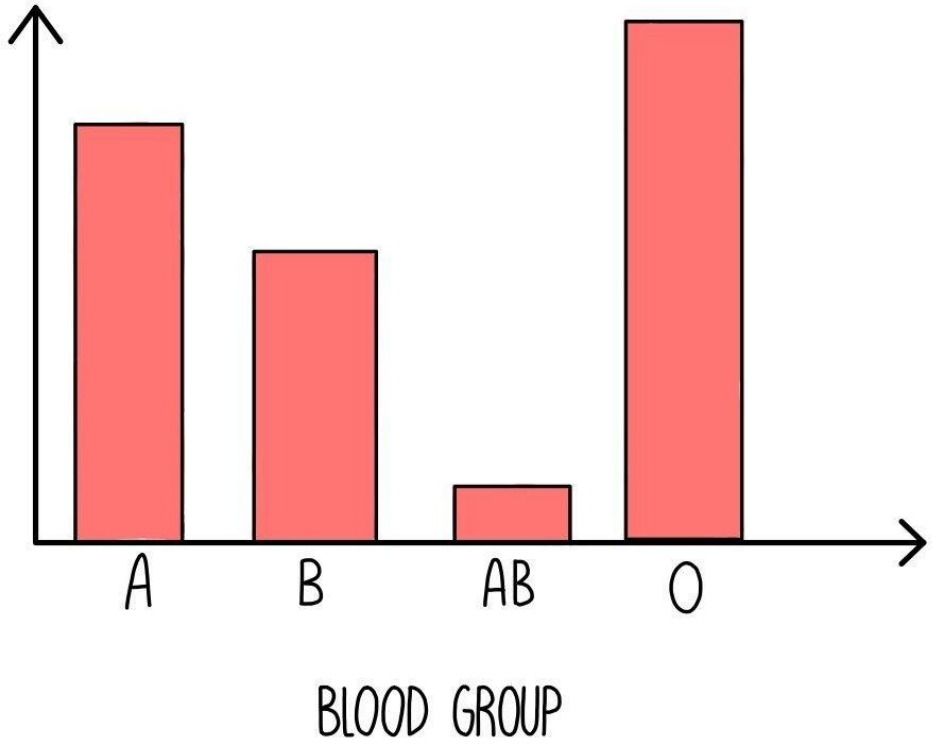
CONTINUOUS VARIATION



DISCONTINUOUS VARIATION



Discontinuous Variation

Some traits in people come in **clear groups**. You either have it one way or the other—nothing in between.

Easy Facts:

- These traits are controlled by **one or two genes**.
- You can clearly tell the difference.
- There are **no middle options**.

Examples:

- **Blood type –** You are A, B, AB, or O.
- **Tongue rolling –** You can roll your tongue or you can’t.
- **Earlobes –** Your earlobes are either attached or free.

Continuous Variation

Some traits don’t come in clear groups. They **change slowly** and can be **any value in a range**.

Easy Facts:

- These traits are controlled by **many genes** and also the **environment** (like food or exercise).
- There are **lots of in-between** values—not just one or the other.
- If you draw them on a graph, they often make a **bell-shaped curve**.

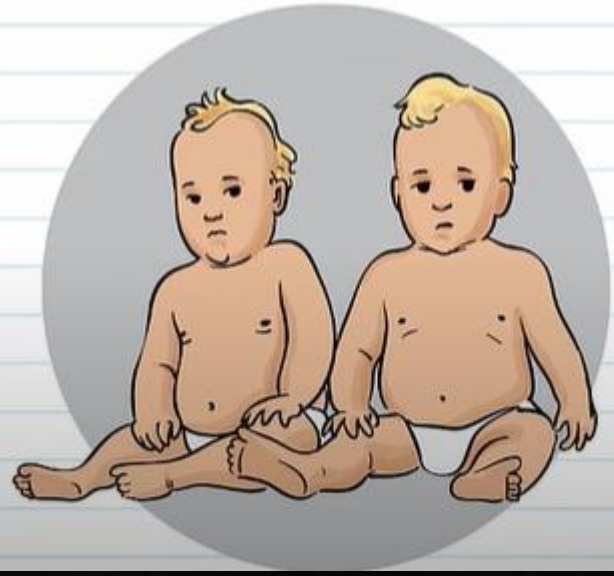
Examples:

- **Height –** People can be short, tall, or anywhere in between.
- **Weight –** Some people weigh more, some less.
- **Skin color –** There are many shades, not just light or dark.
- **Intelligence –** Everyone’s brain works a little differently.

Sources of Variation

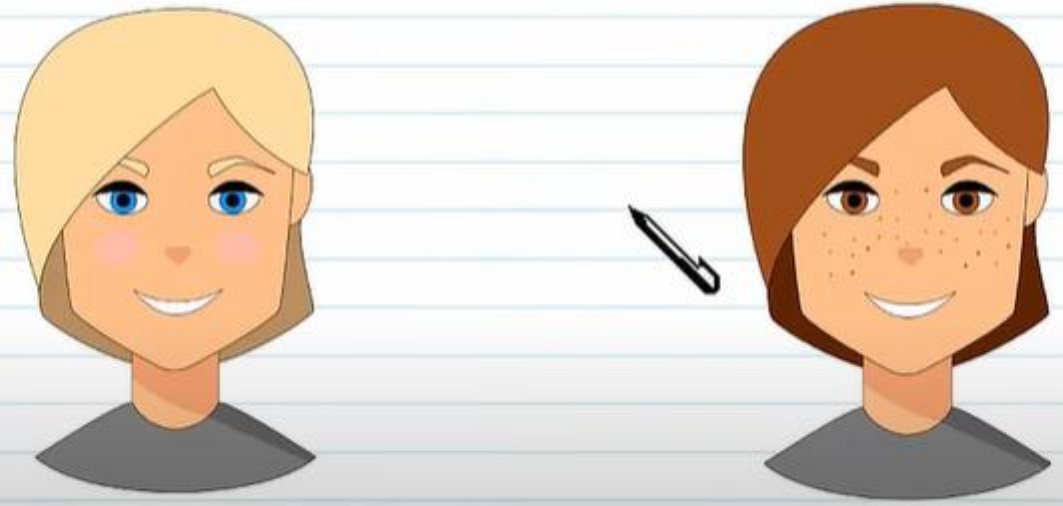
- In a **population** there is **variation between individuals** because all **organisms** are **unique**

- Even **identical twins** develop differently and end up having **slight differences** in **appearance** and their **DNA**

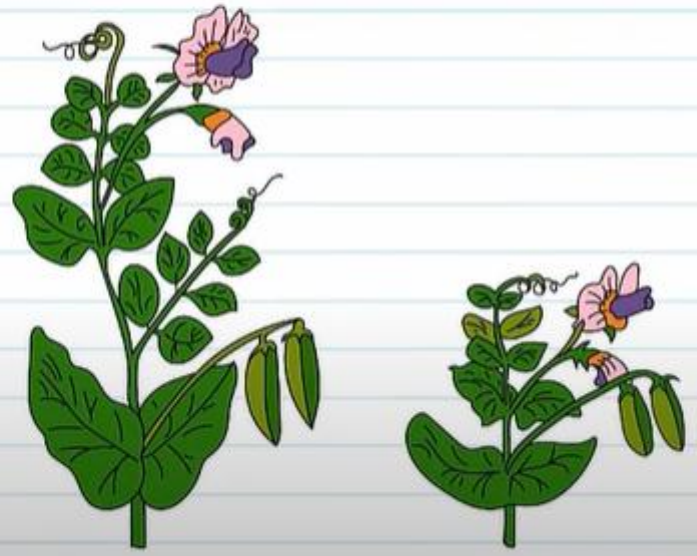


- There are **many ways** that **organisms** can **differ** from one another because there are **many possible sources** of variation

- **Variation** between individuals can be **due** to their **genetics** or their **environment**



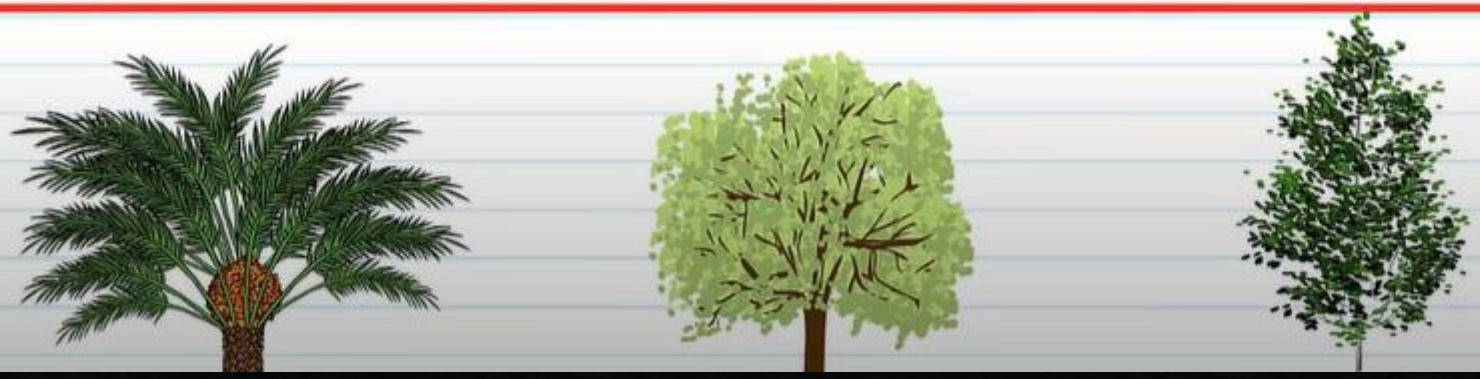
- An **individual's genetics** and **environment** can both **influence** a particular **trait** - this is **called** a **combined effect** or an **interaction**



Variation Between Individuals

- **Individuals** from **different species** tend to show a **large amount** of **interspecific variation**

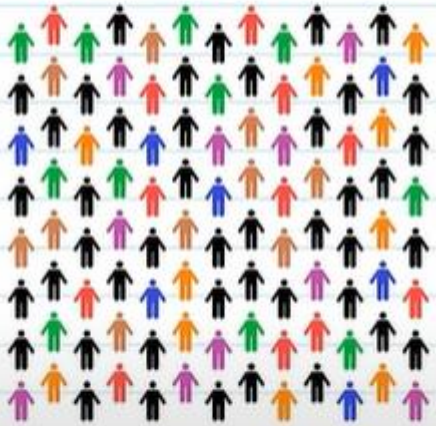
Interspecific variation is the **differences between** any two **species**

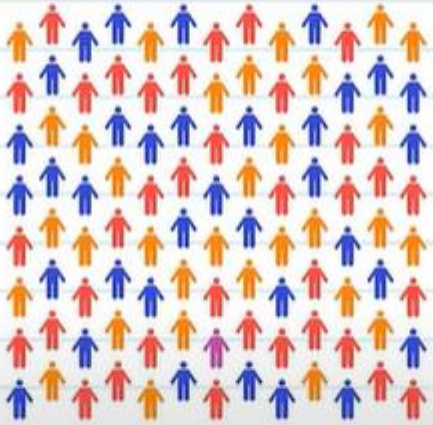


- **Individuals** of the **same species** also **differ**, and they are said to show **intraspecific variation**

Intraspecific variation is the **differences between members** of the **same species**

- A **population** with **greater genetic diversity** will show **greater intraspecific variation**





Continuous and Discontinuous Variation

- When looking at a **particular characteristic/trait** there are **two types** of **variation**:
  - Some **traits** show **continuous variation**

Continuous variation is when there are **two extremes** and a **full range** of **values** in between

- **Most individuals** are **close** to the **mean** value with **fewer** at the both **extremes**