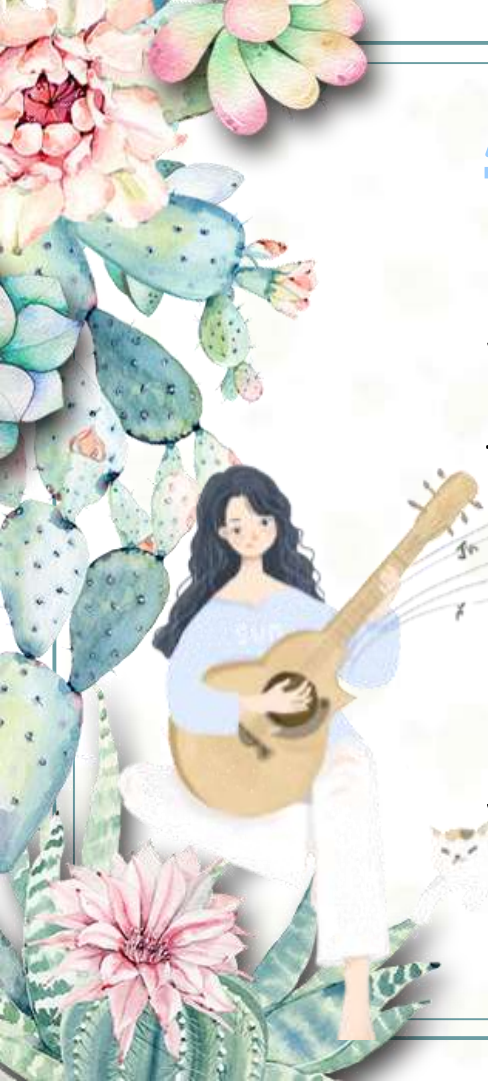
Acclimation

Acclimation Definition

Acclimation is the reversible process by which an organism adjusts to a gradual change in its environment to maintain performance across a range of conditions.

Acclimation vs. Acclimatization



While both terms describe temporary, reversible physiological adjustments made within an organism's lifetime, they differ entirely based on the environment in which they take place:

Feature	Acclimation	Acclimatization
Environment	Artificial / Controlled (e.g., laboratory, greenhouse, climate chamber)	Natural (e.g., wild ecosystems, changing seasons)
Variables	Single factor modified at a time (e.g., adjusting only temperature)	Multiple factors modified simultaneously (e.g., temperature, humidity, and oxygen)
Purpose	Scientific research or commercial preparation	Natural survival and adaptation to seasonal changes

Examples of Acclimation (Laboratory / Controlled Settings)

- **Plant Hardening:** Moving greenhouse-grown seedlings to an intermediate temperature chamber to thicken their cell walls before planting them outdoors.
- **Aquarium Fish:** Floating a new plastic bag of fish in an aquarium tank for 30 minutes to match the water temperatures before releasing them.
- **Cryopreservation Research:** Gradually lowering the storage temperature of microbes in a lab to activate cold-shock proteins without freezing the cell structure.