

Senses: Their Evolution and Function

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Sensory Receptors

Sensory receptors undergo two types of modification:

Amplification - which refers to the strengthening of stimulus energy during transduction.

Sensory Adaptation - which allows you to only see, hear, and smell *changes* in your environment.



Optical Evolution: Development & Function

The eye is considered “irreducible complexity” - it cannot function without every component.

Noses and ears are irreducibly complex, as well.



Auditory Development: Function

Most vertebrates have fluid deep inside their ears that is influenced by pressure waves.

These pressure waves produce energy that is converted into nerve impulses that the brain perceives as sound.

This type of sound reception is common amongst most mammals, including humans.

Auditory Development: Equilibrium

Embedded in the ear is a gelatine that communicates to the brain when the body is tilted, or upside-down.

This gel is responsible for detecting body movement, position, and balance.



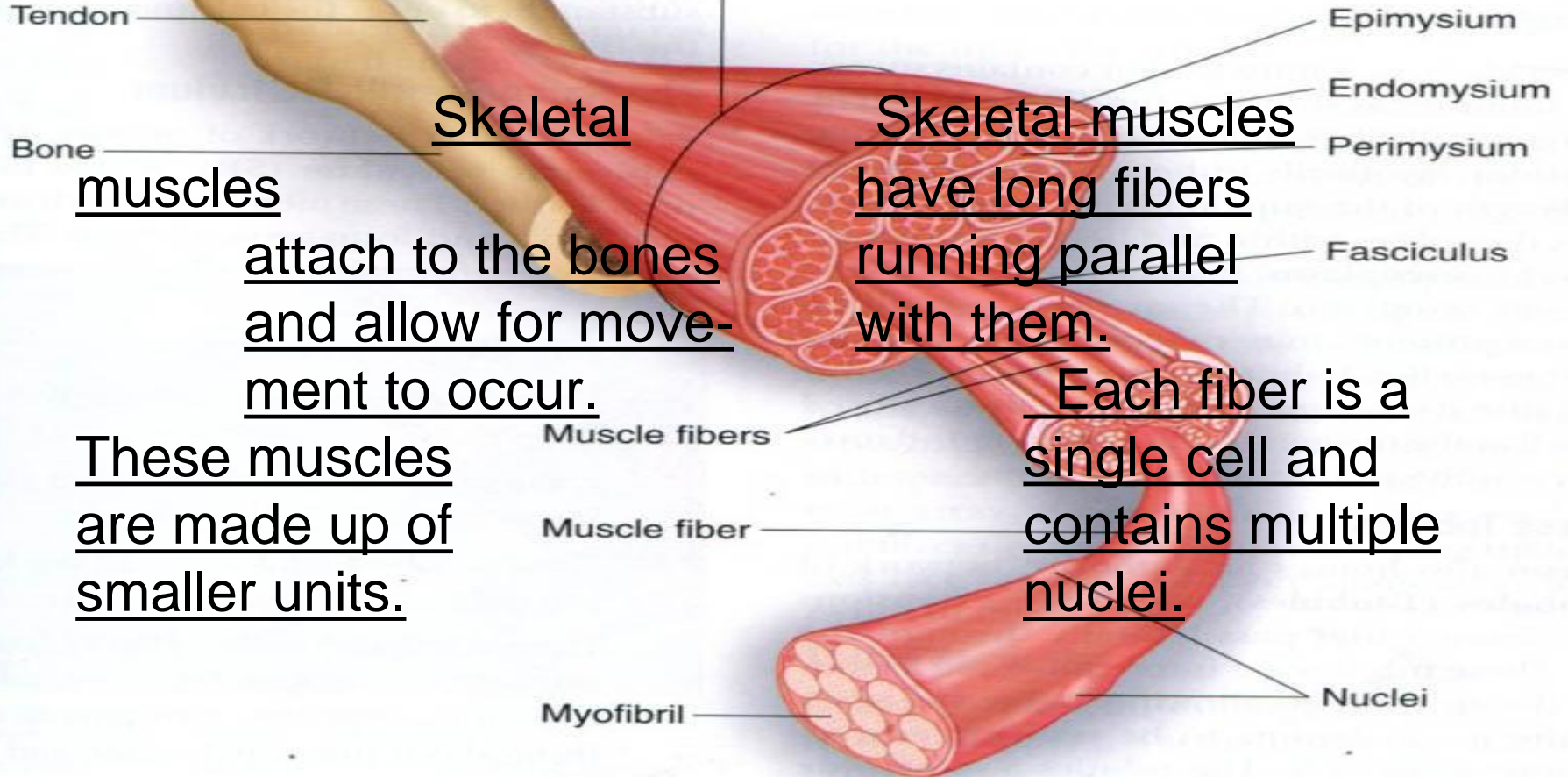
Smell and Taste: Similarities

Taste and smell both depend on chemoreceptors that detect specific chemicals and rely on similar sets of sensory receptors.

This is mostly evident in aquatic animals who have no distinction between smell and taste.

Insects use olfactory hairs on their antennae and legs to smell their environment and detect potential threats.

Muscles: Structure & Function



Skeletal muscles

attach to the bones and allow for movement to occur.

These muscles are made up of smaller units.

Skeletal muscles have long fibers running parallel with them.

Each fiber is a single cell and contains multiple nuclei.

Disorders: Sensory & Muscular

Muscular Dystrophy:

A genetic disease that drastically affects skeletal muscles and motor mechanisms. Patients with this disease suffer from muscle degeneration and paralysis.

Macular Dystrophy:

A disease linked to inherited genetic mutations that result in the loss of central vision.

Autoimmune Inner Ear Disease:

Parts of the immune system identifies the body as foreign, attacking the inner ear and leads to complete hearing loss.

