Short Range Modalities

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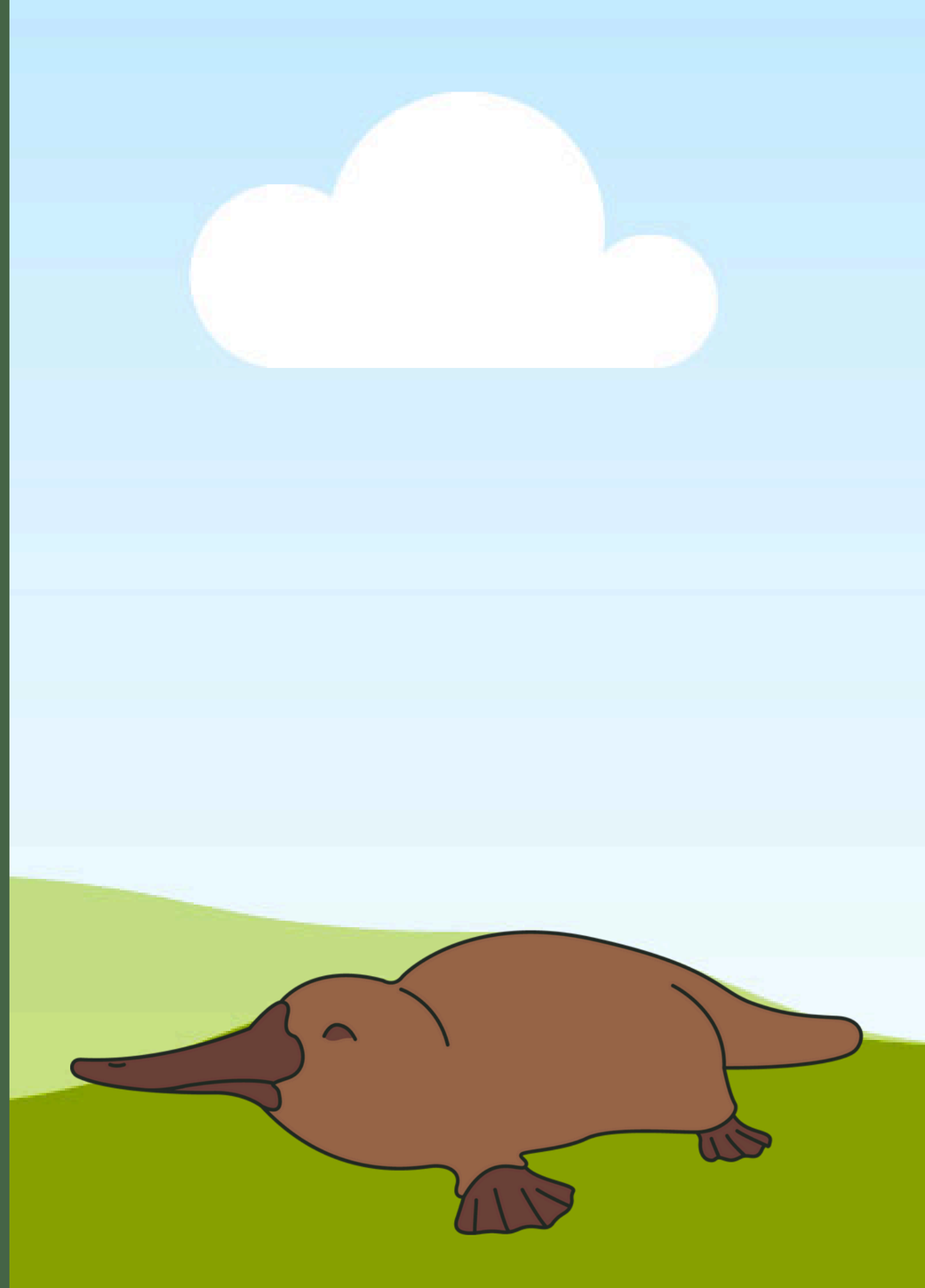
2/5/25

What is it?

- Touch Stimuli
- Hydrodynamic Stimuli
- Electrical Stimuli



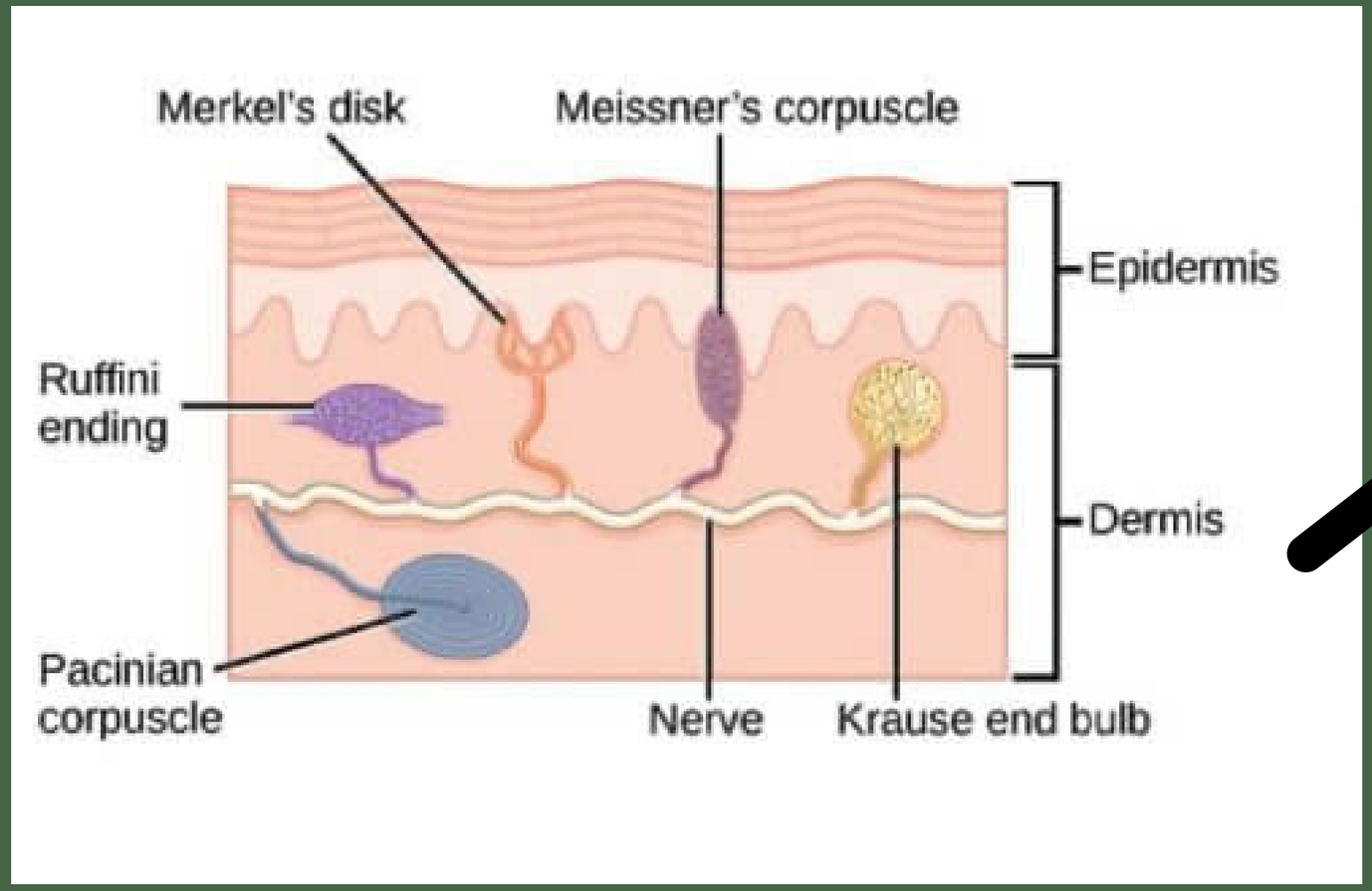
Touch Stimuli (1/3)

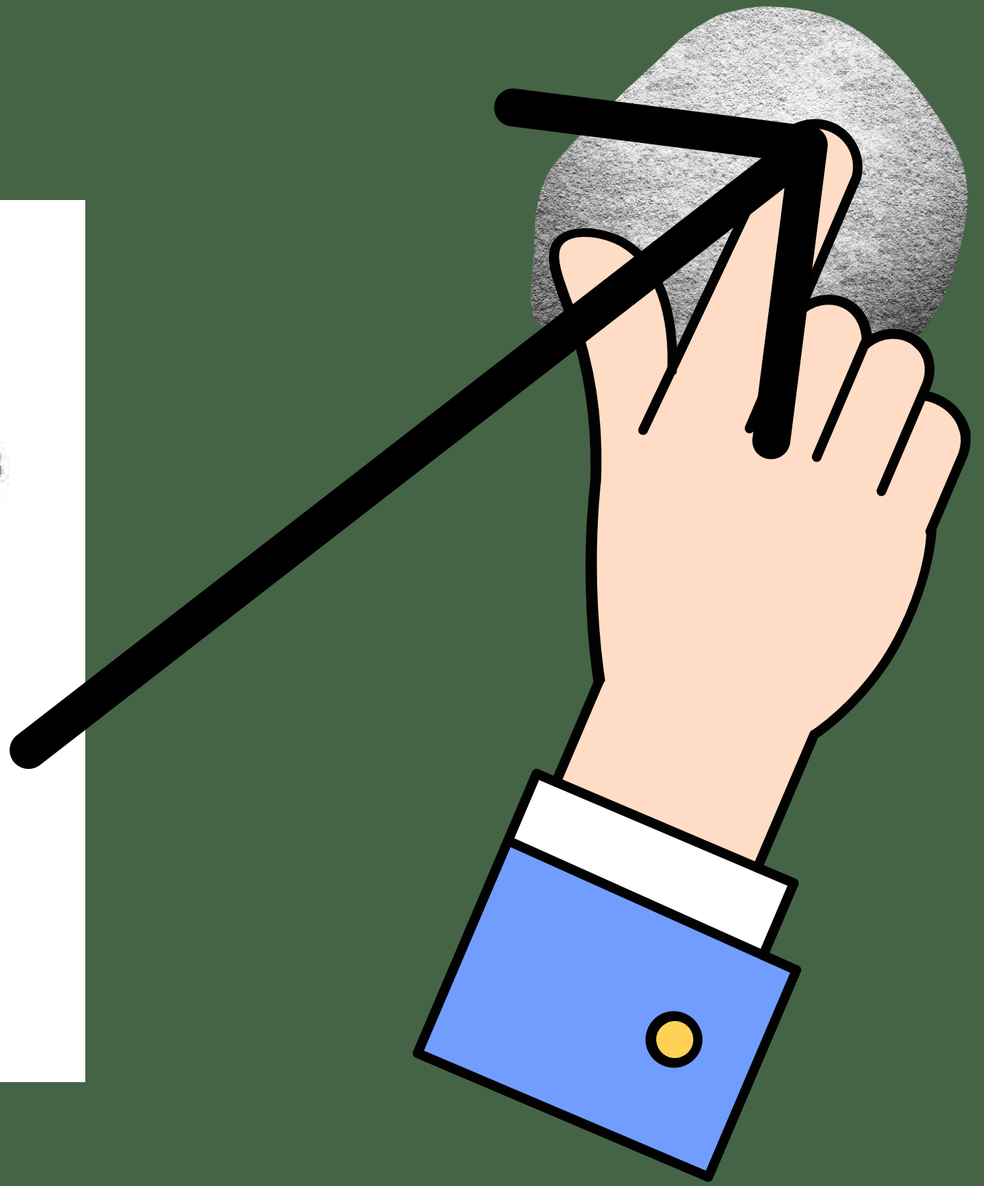
- Most common form
- two categories: Intensity and temporal pattern

Not just for detecting the environment

- Allogrooming
- Provides information
- Huddling
- Combat/preventing combat

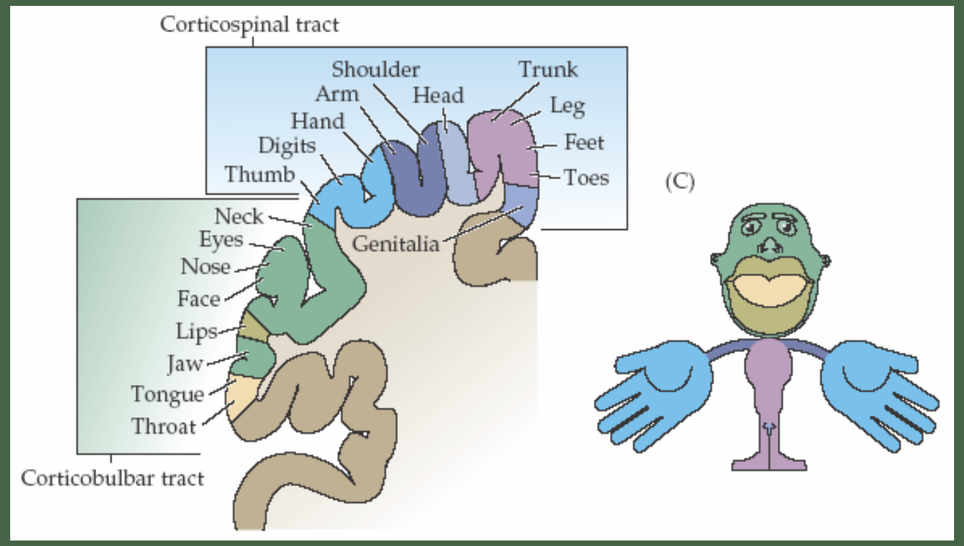
Touch Stimuli (2/3)





Touch Stimuli (3/3)

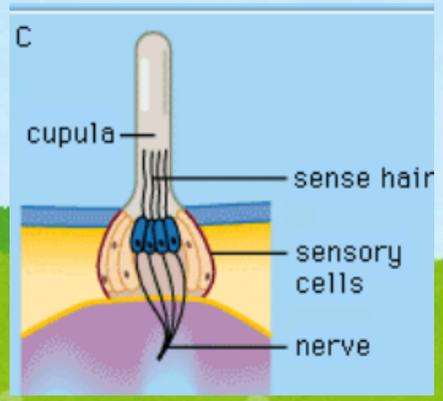
- Sent to the brain to create somatotopic maps
- Different animals have different maps
- Different amount of brain power allocated when needed



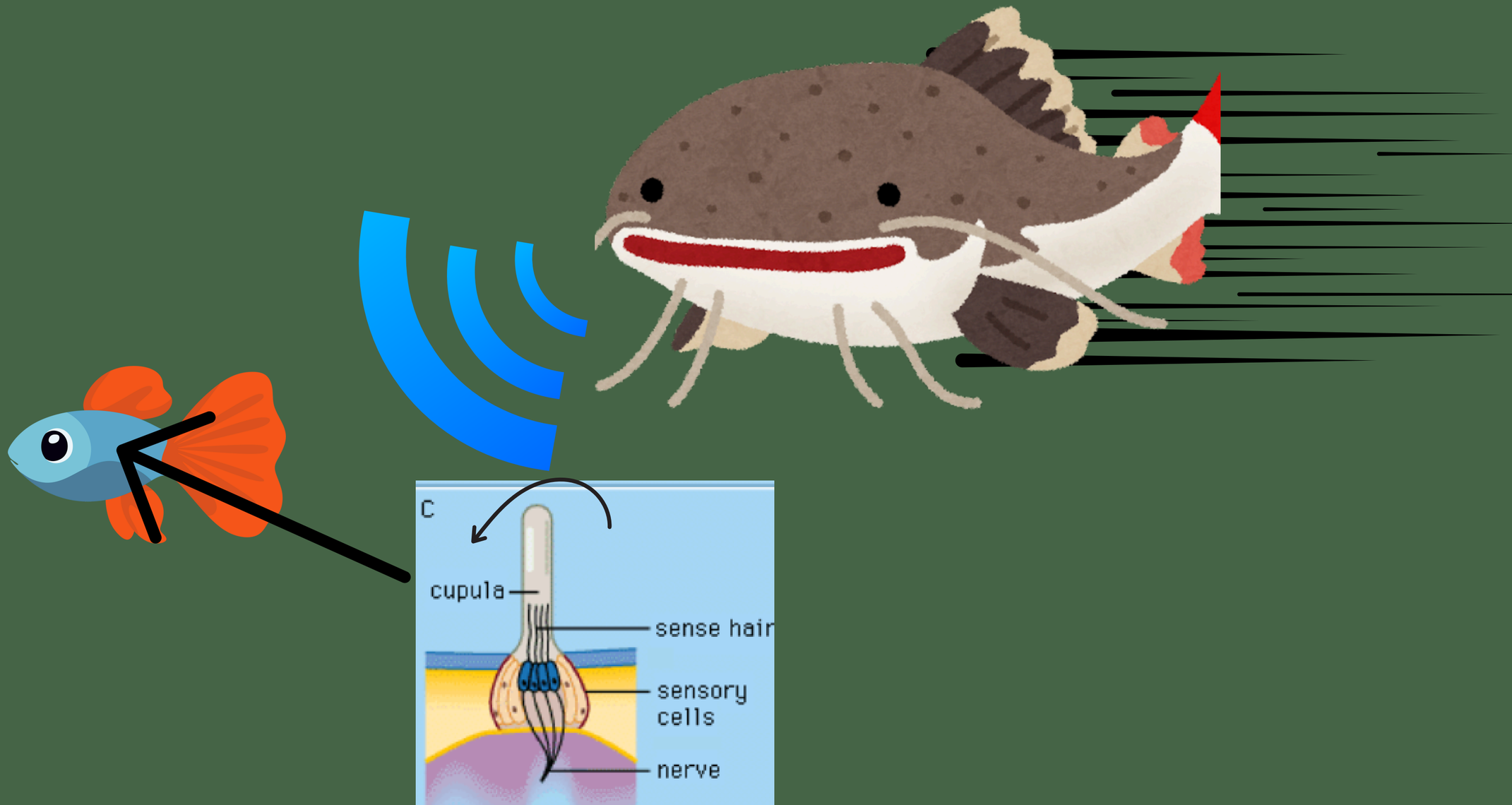
Hydrodynamic Stimuli 1/3

- Sensory receptors that detect movement and pressure in water
- Respond to water flow, vibrations, and waves
- Common in aquatic animals

- No need for light to “see” environment
- Hairs such as vibrissae (whiskers)
- Fish have a lateral line made up of capulas



Hydrodynamic Stimuli (2/3)

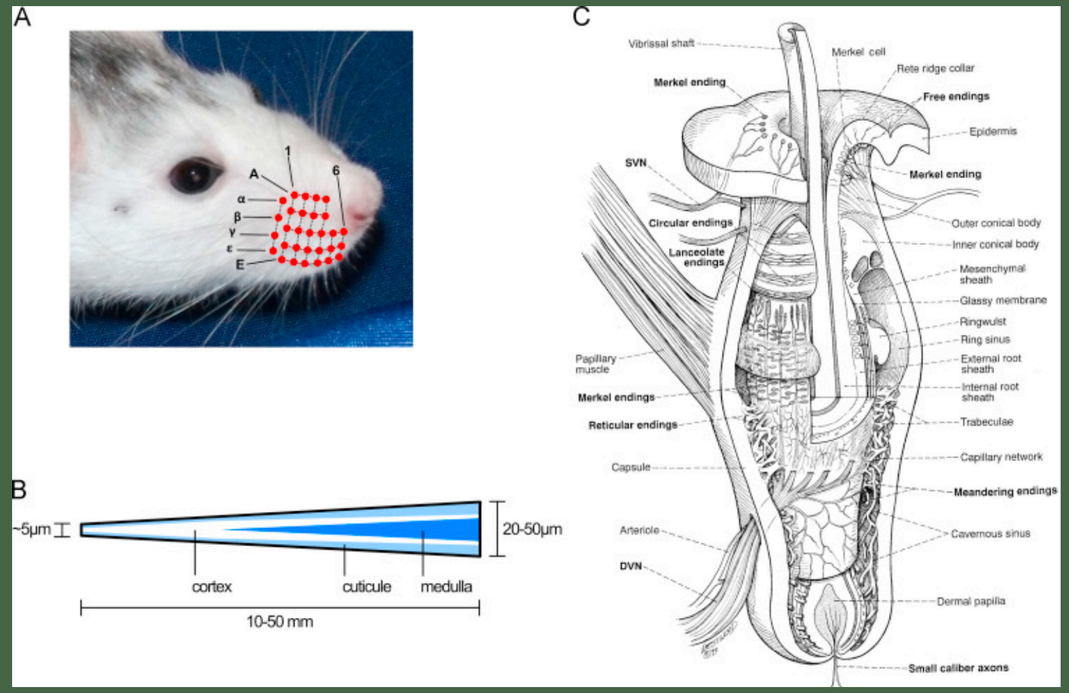


Hydrodynamic Stimuli (3/3)

- Different hairs are connected to different parts of the brain

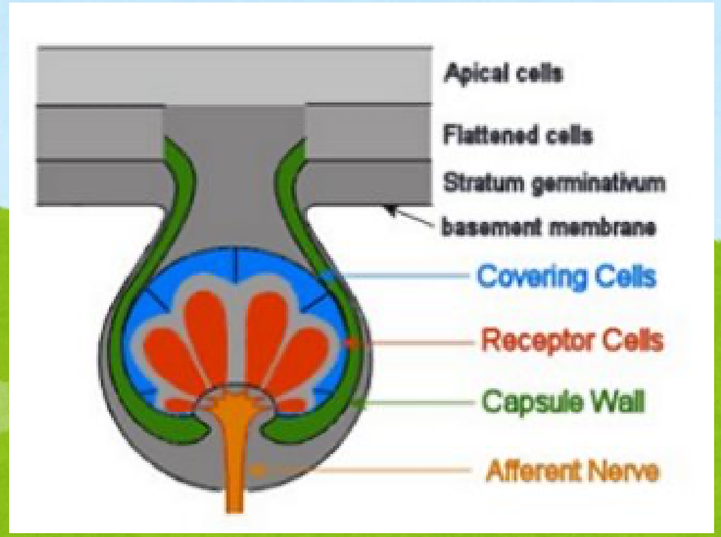
They help animals to :

- Detect predators before seeing them
- Locate prey
- Swim in schools without colliding
- Navigate around obstacles
- Maintain proper body orientation in water

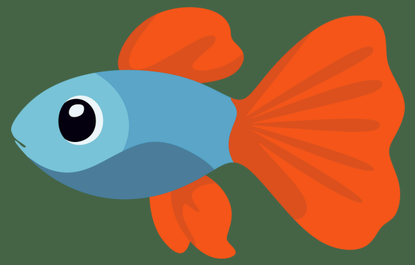


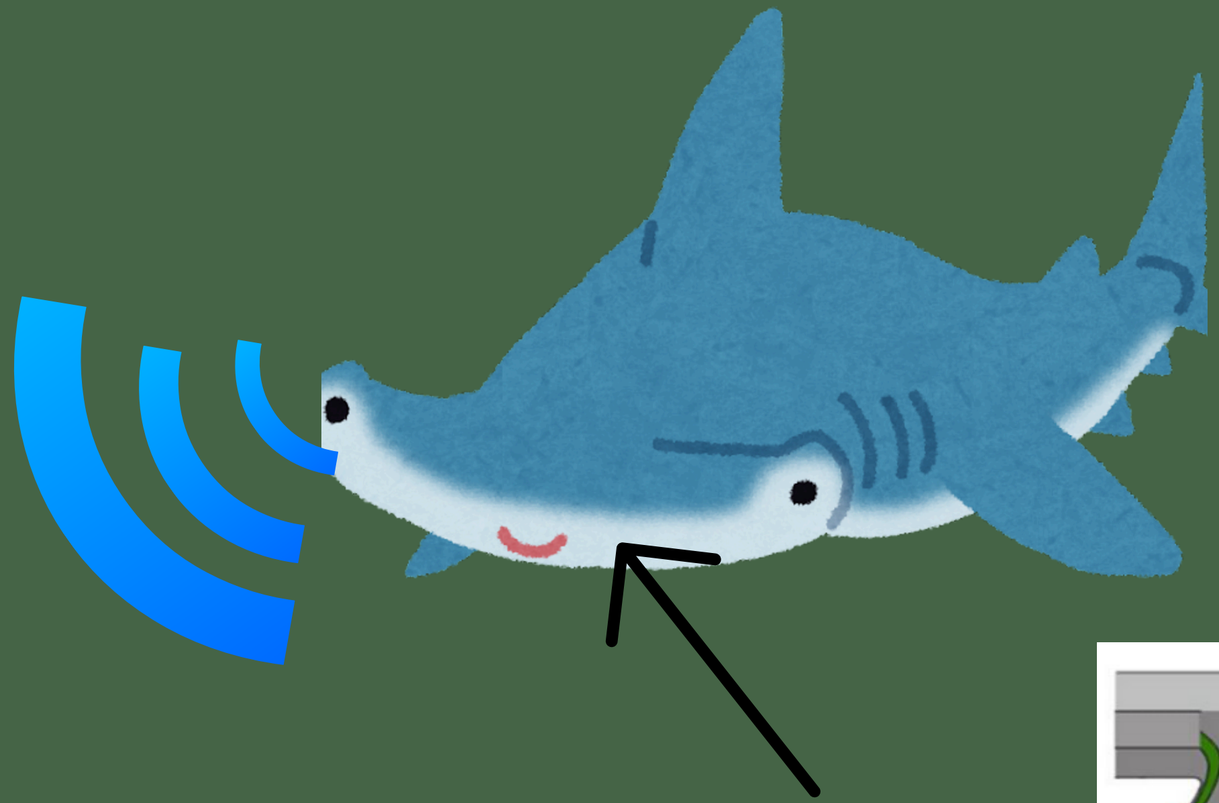
Electrical Stimuli 1/3

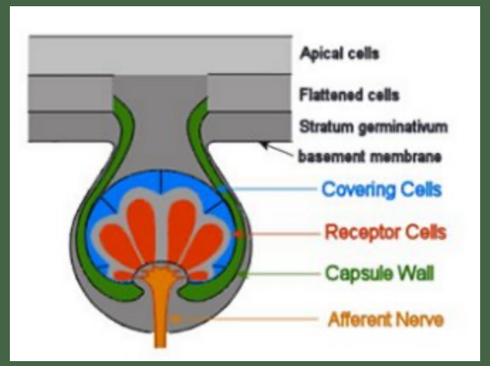
- Electrical receptors (electroreceptors) are sensory organs that detect electric fields in the environment
- Found mainly in aquatic animals like sharks, rays, electric fish, and some amphibians
- Help animals sense things that are invisible, even in dark or muddy water
- Work by detecting tiny voltage changes in water

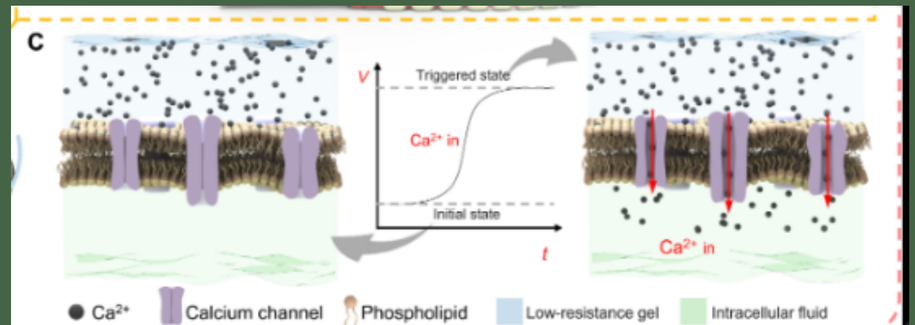


Hydrodynamic Stimuli (2/3)









Hydrodynamic Stimuli (3/3)

- Finding prey (even buried under sand)
- Navigation and orientation in water
- Communication between some electric fish
- Survival advantage in low-visibility environments

Thank you!