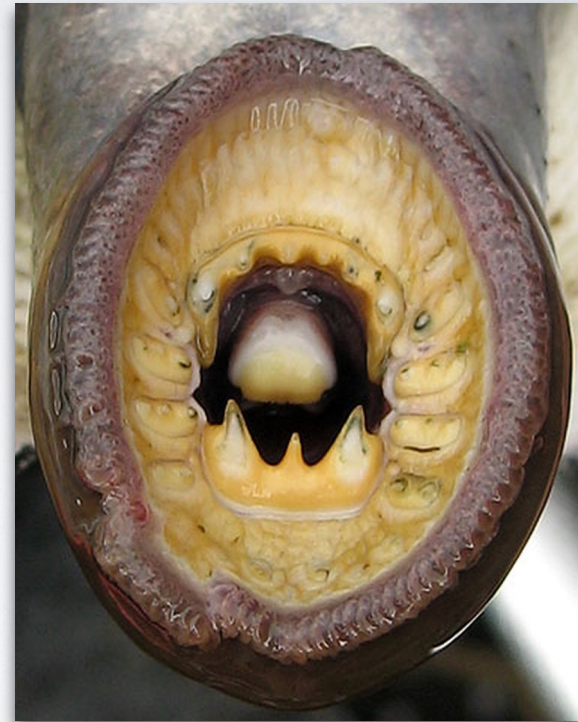


# PROTOCHORDATES & JAWLESS FISH



# PROTOCHORDATES & JAWLESS FISH

- Chordates - animals having dorsal nerve chord, notochord, and pharyngeal gill slits at some age of development
- Vertebrates - animals with a skeleton, backbone, skull, and brain



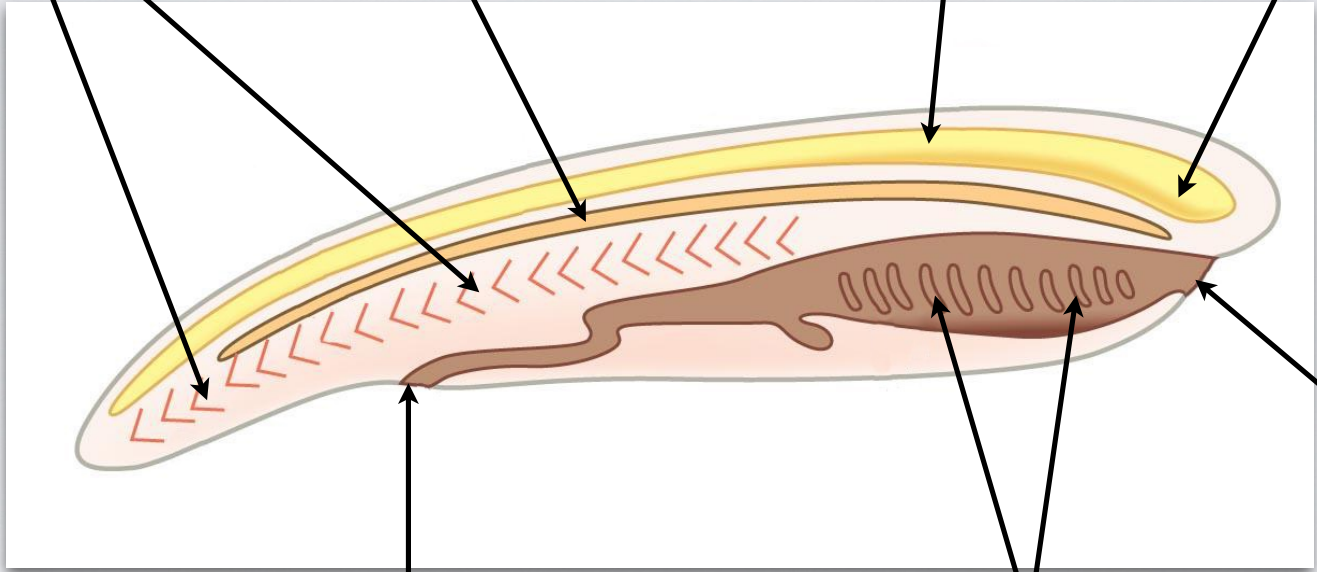


Muscle Segments

Notochord

Dorsal Nerve Chord

Brain



Anus

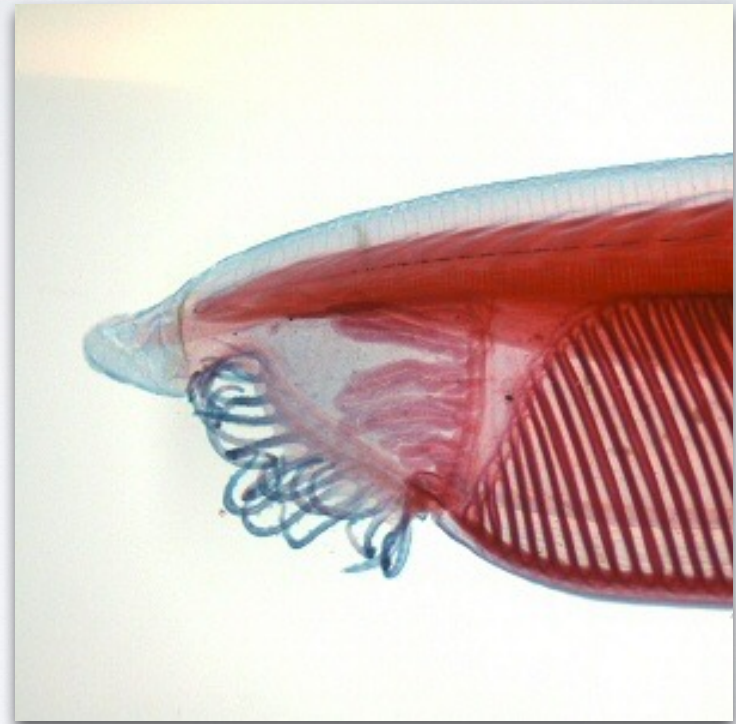
Pharyngeal Slits

Mouth

Chordate Anatomy

# PROTOCHORDATES & JAWLESS FISH

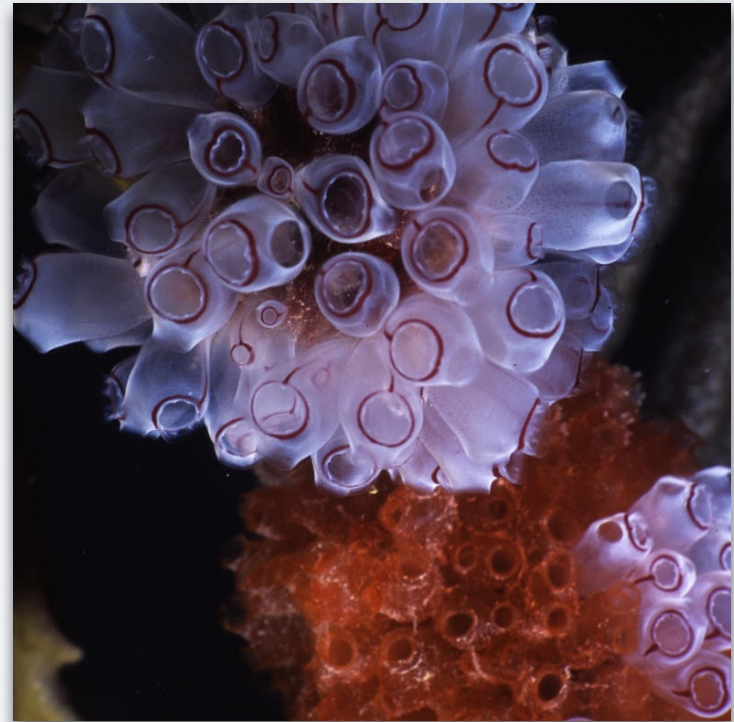
- Protochordates - animals having an early form of a vertebrate
  - “First Chords”





# PROTOCHORDATES & JAWLESS FISH

- Tunicates - primitive chordate that is covered by a clear membrane and have both male and female reproductive organs
  - Sea Squirts





Sea Squirts





Sea Squirts

# PROTOCHORDATES & JAWLESS FISH

- Lancelet - primate chordate that is transparent and fishlike
  - Lives half-buried in the sand with its head sticking out to eat plankton







Lancelet

# PROTOCHORDATES & JAWLESS FISH

- Acorn Worm - primate chordate that looks like a worm but has a dorsal nerve chord
  - Live in the sand between the intertidal and subtidal zones







Acorn Worm



Acorn Worm



# PROTOCHORDATES & JAWLESS FISH

- Jawless Fish - a fish characterized by a circular sucking mouth that lacks jaws
  - Dominant during the Silurian Period (438 - 360 mya)
  - The Lamprey and Hagfish are the only jawless fish still around today



# PROTOCHORDATES & JAWLESS FISH

- Hagfish - jawless fish that uses its sharp teeth in their round mouths to burrow into the bodies of dead fish
  - Live in the Atlantic and Pacific Oceans







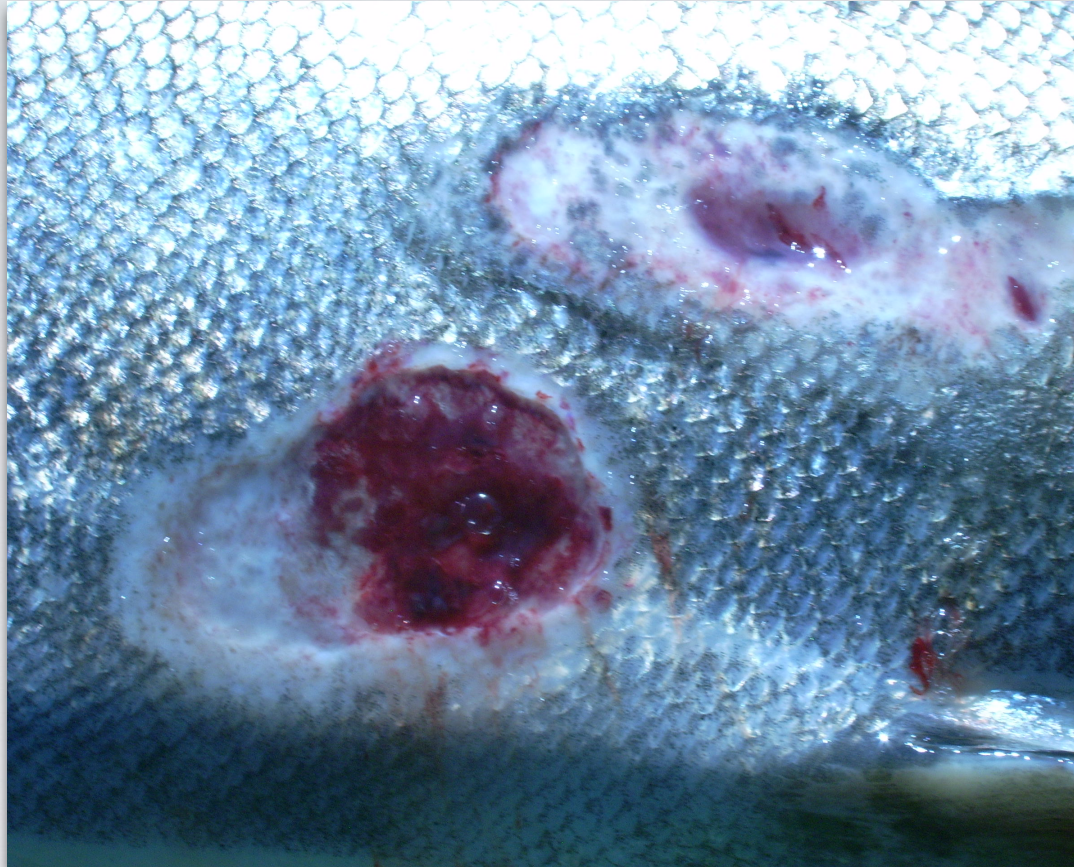
The Hagfish

# PROTOCHORDATES & JAWLESS FISH

- Lamprey - jawless fish that uses sucking disks on its mouth to attach to living trout and other fish
  - Live in estuary environments from Maine to Florida







Bites from a Lamprey on a Trout





Lamprey

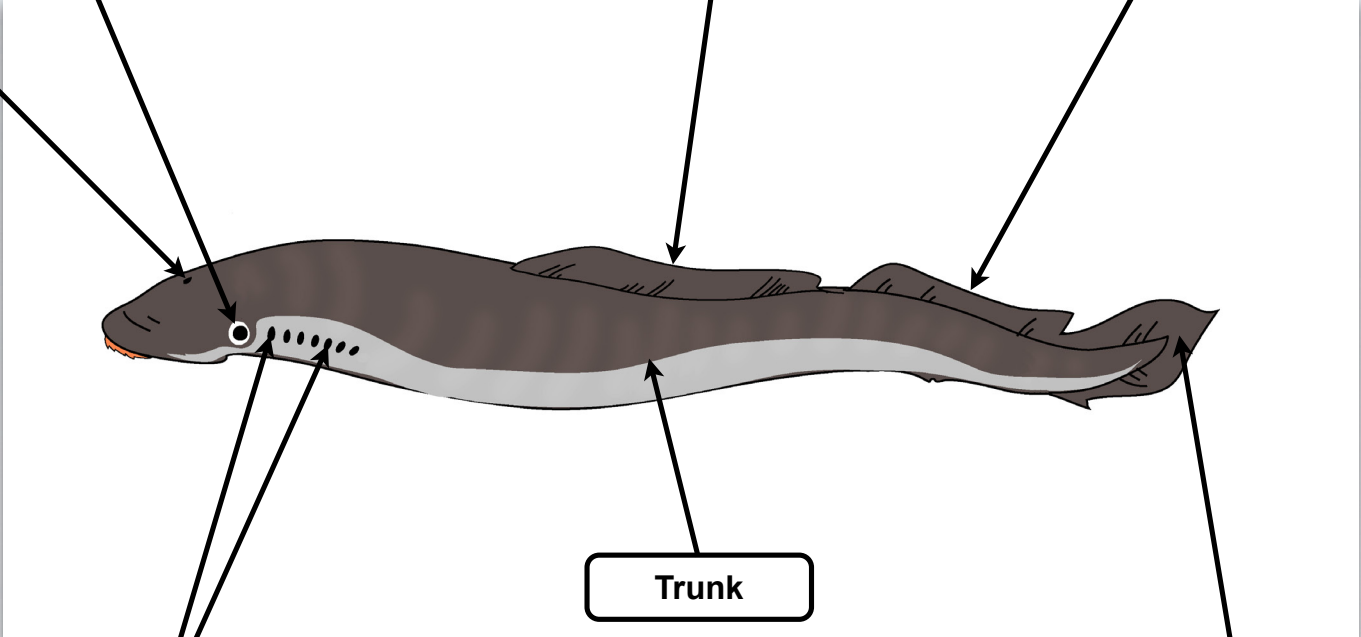


Nostril

Eye

Anterior Dorsal Fin

Posterior Dorsal Fin



Gill Slits

Trunk

Caudal Fin

Lamprey Anatomy



Lampreys Attack