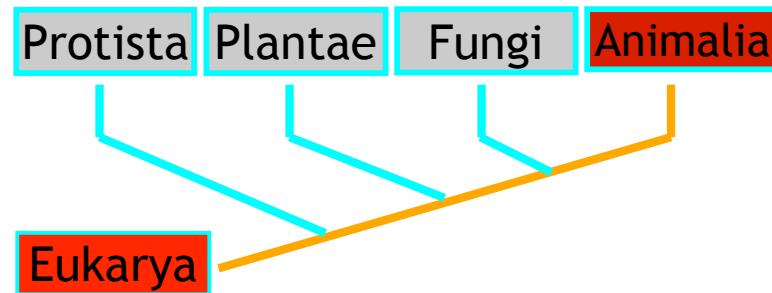


Diversity of Life - Animals

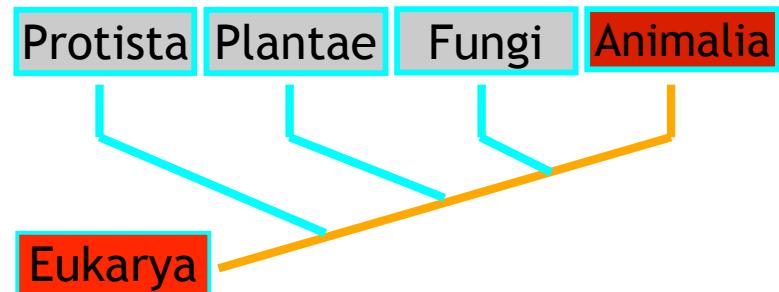
Animals

- eukaryotes
- multicellular
- heterotrophs
 - acquire nutrients by ingestion (internal digestion)
- tissues (nervous tissue and muscle tissue)

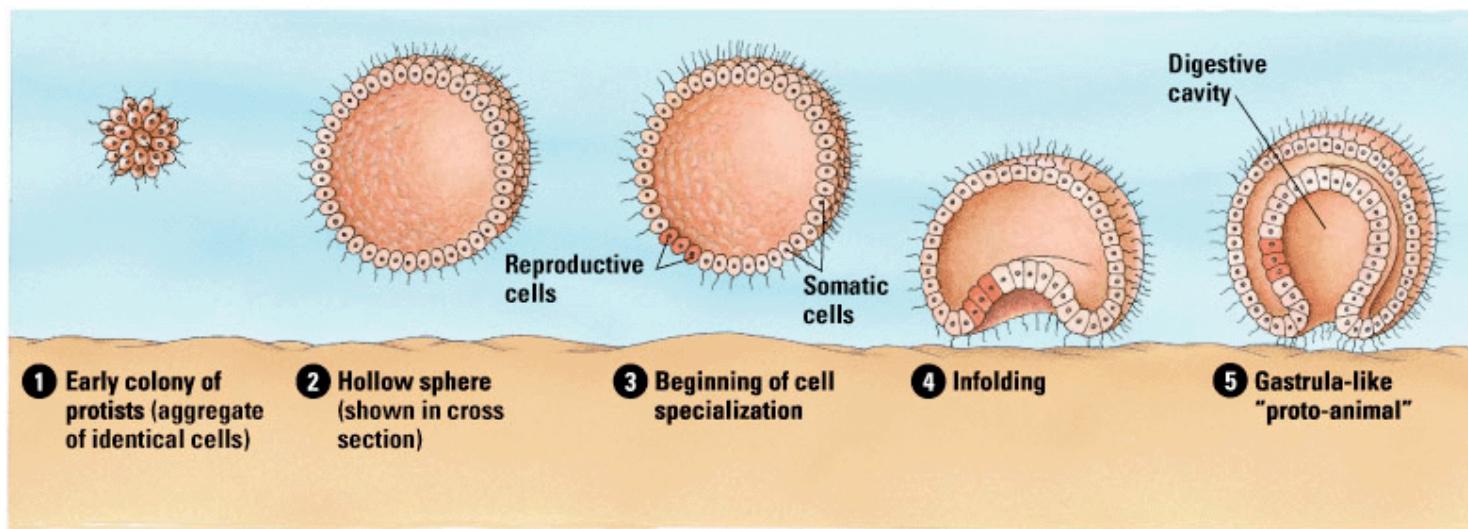


Diversity of Life - Animals

Animal Evolution



- inward folding / specialization of cells --> digestive cavity

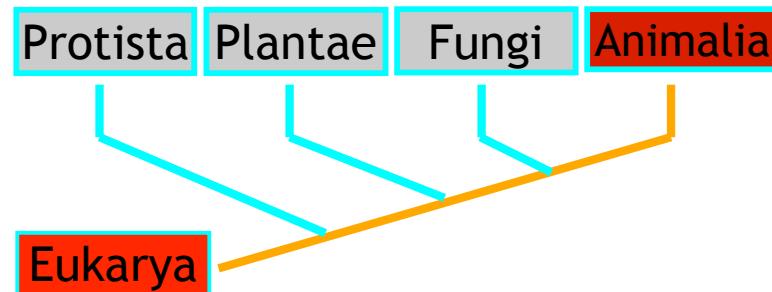


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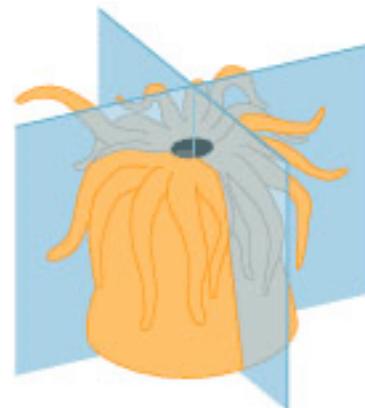
Diversity of Life - Animals

Animal “Body-Plan” Evolution

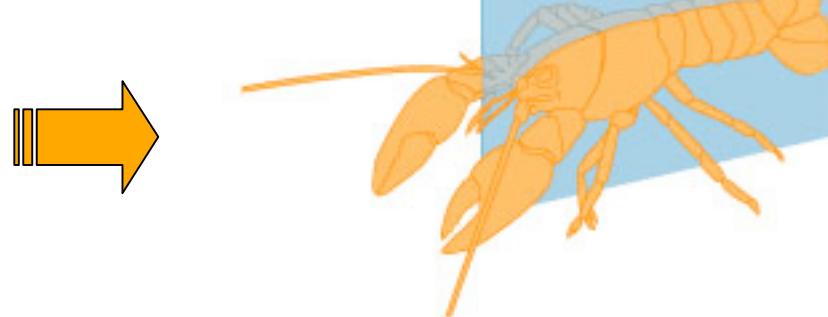
- Radial-bilateral distinction



Radial symmetry



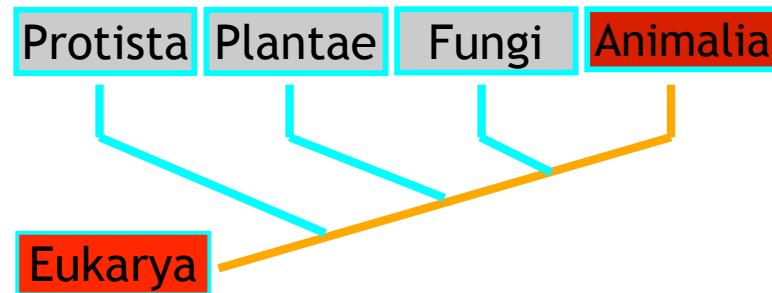
Bilateral symmetry



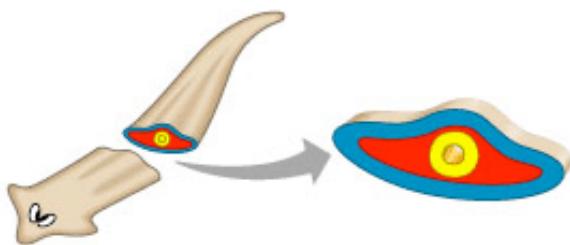
Diversity of Life - Animals

Animal “Body-Plan” Evolution

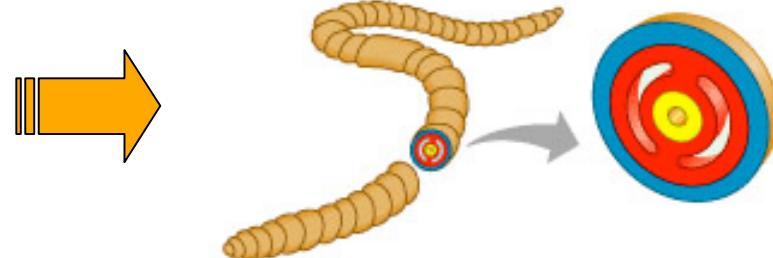
- Body Cavity



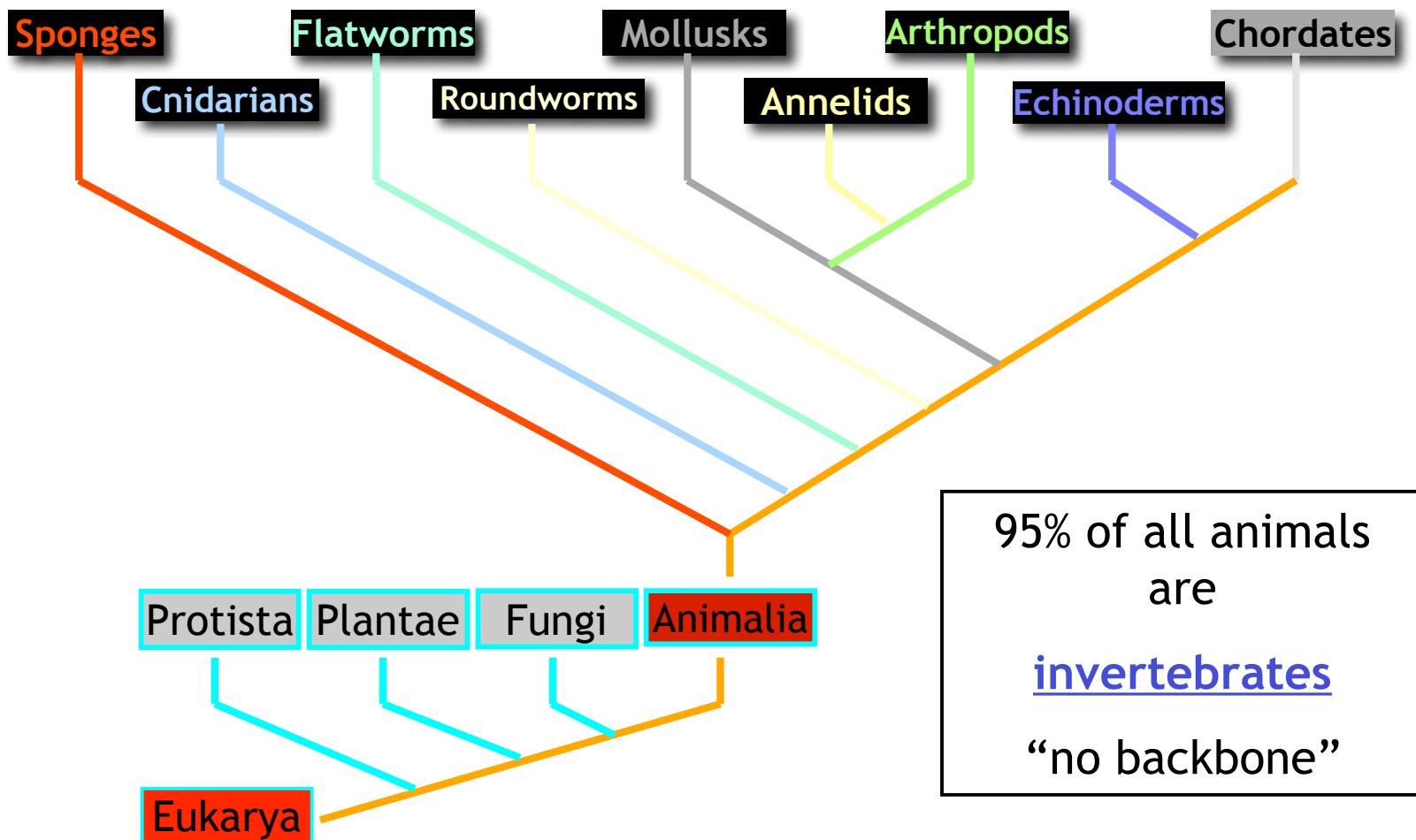
No body cavity



“True” body cavity (coelom)



Diversity of Life - Animals



Diversity of Life - Invertebrates

Phylum: Porifera “sponges”

- simplest animals
- no nerves or muscles
- 9000 species (most marine)
- Filter feeders



Sponges

Flatworms

Mollusks

Arthropods

Cnidarians

Roundworms

Annelids

Echinoderms

Sponges

Flatworms

Mollusks

Arthropods

Cnidarians

Roundworms

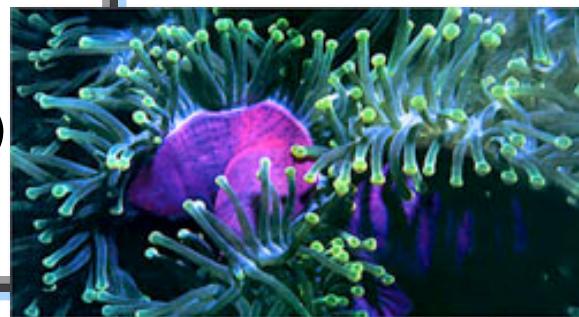
Annelids

Echinoderms

Diversity of Life - Invertebrates

Phylum: Cnidarians “Jellyfish”,
“Sea Anemones”

- show radial symmetry
- body has a single cavity
- stinging tentacles
- 10,000 species (most marine)
- carnivores



Sponges

Cnidarians

Flatworms

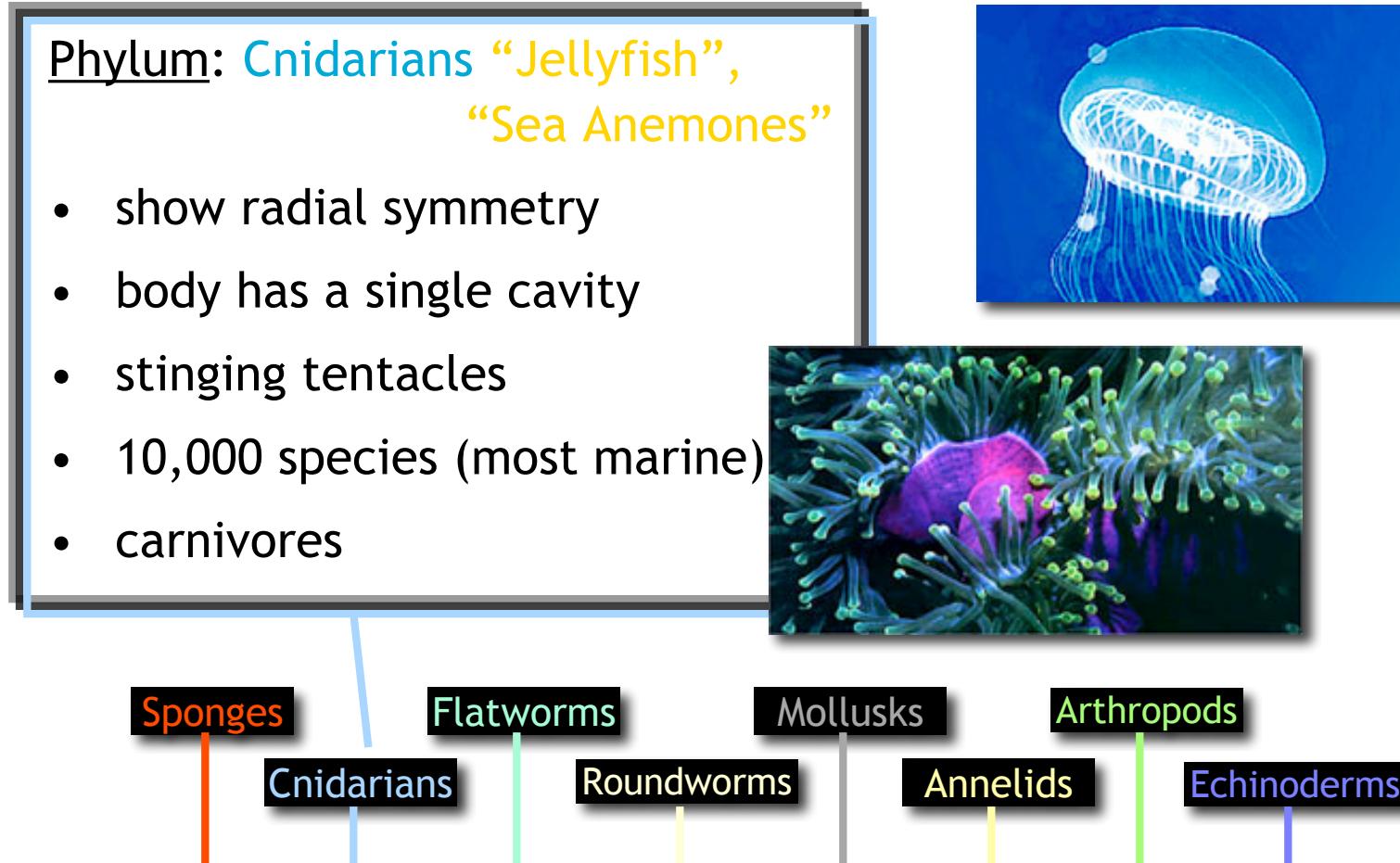
Roundworms

Mollusks

Annelids

Arthropods

Echinoderms



Diversity of Life - Invertebrates

Phylum: Platyhelminthes “Flatworms”

- bilateral symmetry
- 20,000 species
- some are parasitic
(blood flukes, tape worms)



Sponges

Flatworms

Mollusks

Arthropods

Cnidarians

Roundworms

Annelids

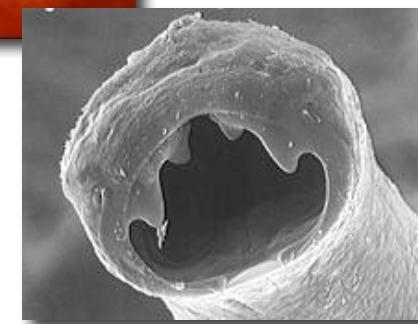
Echinoderms



Diversity of Life - Invertebrates

Phylum: Nematoda “Roundworms”

- cylindrical bodies
- 90,000 species
- some are parasitic (pinworms, hookworms)



Sponges

Cnidarians

Flatworms

Roundworms

Mollusks

Annelids

Arthropods

Echinoderms

Diversity of Life - Invertebrates

Phylum: Mollusca “Snails”,
“Clams”, “Octopuses”

- soft-bodied animals
- some protected by a hard shell
- 150,000 species (mostly marine)
- feed by scraping up food



Sponges

Cnidarians

Flatworms

Roundworms

Mollusks

Annelids

Arthropods

Echinoderms

Diversity of Life - Invertebrates

Phylum: Annelids “Earthworms”,
“Leeches”

- segmented bodies
- 15,000 species



Sponges

Cnidarians

Flatworms

Roundworms

Mollusks

Annelids

Arthropods

Echinoderms

Diversity of Life - Invertebrates

Phylum: Arthropods

“Crustaceans”, “Insects” ,
“Spiders”

- jointed appendages
- hard exoskeleton (exterior)
- 1 million species



Sponges

Cnidarians

Flatworms

Roundworms

Mollusks

Annelids

Arthropods

Echinoderms

Diversity of Life - Invertebrates

Phylum: Echinoderms “Sea Stars”,
“Sea Urchins”

- spiny surfaces
- all marine
- endoskeleton (interior)
- most closely related to chordates (vertebrates)



Sponges

Cnidarians

Flatworms

Roundworms

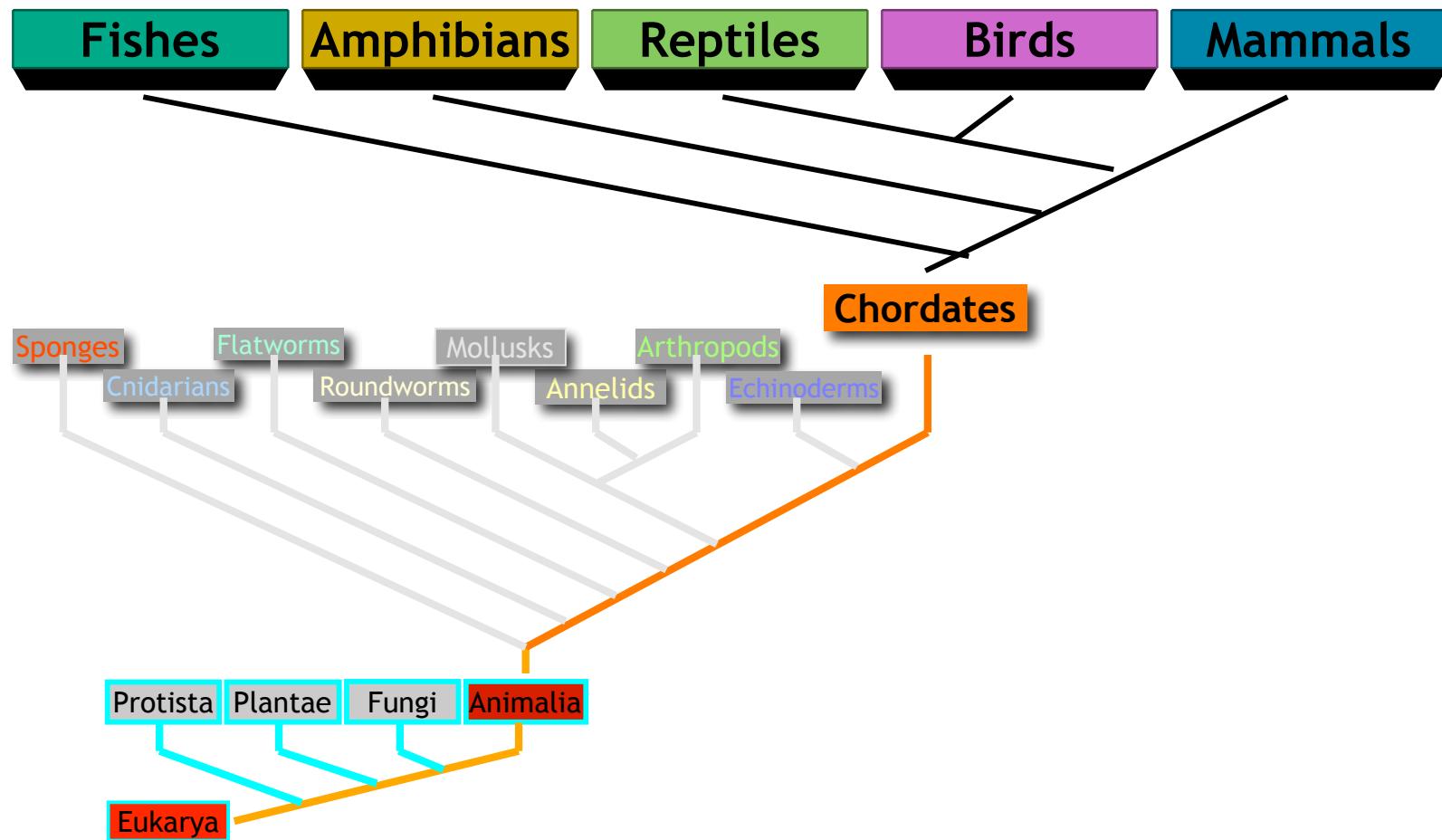
Mollusks

Annelids

Arthropods

Echinoderms

Diversity of Life - Vertebrates



Diversity of Life - Vertebrates

Fishes

Amphibians

Reptiles

Birds

Mammals

Features unique to vertebrates:

- cranium
- backbone

Diversity of Life - Vertebrates

Fishes

Amphibians

Reptiles

Birds

Mammals

Fish

- ecto-therms
- egg layers
- respire by passing water over their gills



Bony fish (Bass)

- stiff, bone skeleton
- marine / freshwater species
- swim bladder (buoyancy)



Cartilaginous fish (Sharks)

- flexible, cartilage skeleton

Diversity of Life - Vertebrates

Fishes

Amphibians

Reptiles

Birds

Mammals

Amphibians (Frogs, Salamanders)

- “two-lives”
 - tadpole (aquatic with gills)
 - adult (terrestrial with lungs)
- egg layers (eggs lack shells)
- Omnivores
- Tetrapods (four legs)



Diversity of Life - Vertebrates

Fishes

Amphibians

Reptiles

Birds

Mammals

Reptiles (Turtles, Lizards, Snakes, Alligators)

- egg layers (terrestrial, amniotic eggs)
- ectotherms
- scales
- lungs



Diversity of Life - Vertebrates

Fishes

Amphibians

Reptiles

Birds

Mammals



reptilian
traits



Birds

- terrestrial, amniotic eggs
- scales on legs
- feathers
- body modified for flight
- endotherms



Diversity of Life - Vertebrates

Fishes



Amphibians



Reptiles



Birds



Mammals

Mammals

- posses hair
- mammary glands
- diaphragm
- endotherms

Monotremes (egg layers)



Marsupials (pouched)

Eutherians (placental)