

Notochord

Evolved trait: A flexible, rod-like structure made of cartilage

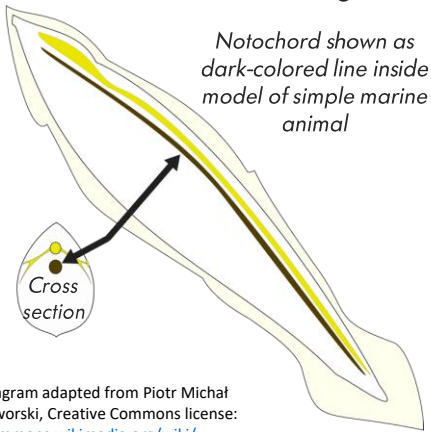


Diagram adapted from Piotr Michał Jaworski, Creative Commons license: commons.wikimedia.org/wiki/File:BranchiostomaLanceolatum_PioM.svg

Nerve Cord (Tube)

Evolved trait: Nerve tissue that runs above the notochord and sends branches of nerves into muscles and organs

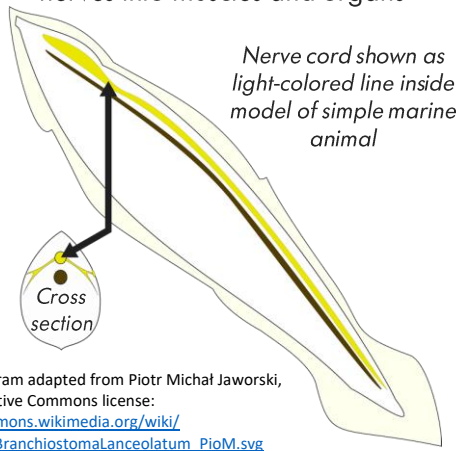


Diagram adapted from Piotr Michał Jaworski, Creative Commons license: commons.wikimedia.org/wiki/File:BranchiostomaLanceolatum_PioM.svg

Pharyngeal (Gill) Slits

Evolved trait: A series of openings between the pharynx (throat) and outside of chordate animals

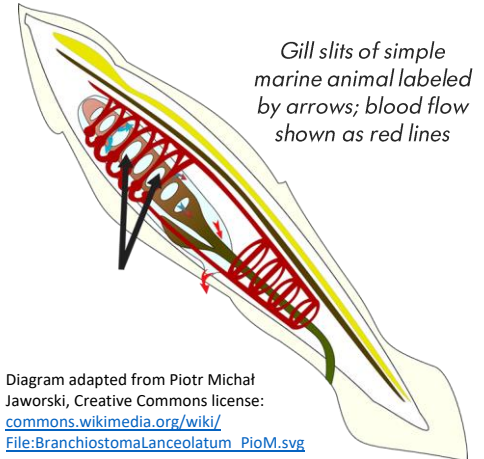


Diagram adapted from Piotr Michał Jaworski, Creative Commons license: commons.wikimedia.org/wiki/File:BranchiostomaLanceolatum_PioM.svg

Post-Anal Tail

Evolved trait: Tail located further back from the anus



Image by Chris Wolf from Pixabay: pixabay.com/photos/howler-monkey-monkey-tail-tree-1183053

More Genes

Evolved trait: More genes allowed animals to become more complex.



Public domain image from Pixabay: pixabay.com/illustrations/dna-biology-science-dna-helix-163710

Flexible Jaws Made of Cartilage + Teeth

Evolved trait: Animals could become powerful predators and increase their body size



Image by Sharkcrew, Creative Commons license: commons.wikimedia.org/wiki/File:Guadalupe_Island_Great_White_Shark_Underwater.jpg

Head with Sensory Organs

Evolved trait: Organs for seeing, hearing, taste, and smell concentrated in head near brain



Hagfish image by C. Ortlepp, Creative Commons license: flickr.com/photos/justinlindsay/242633975

Lobed Fins with Bones

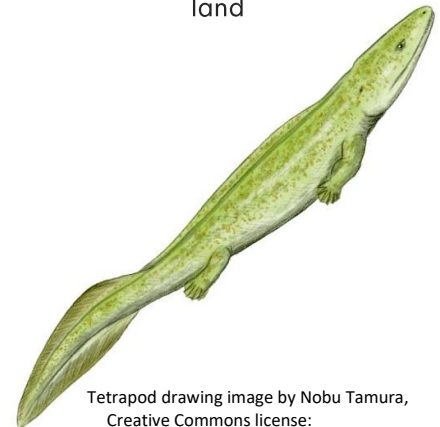
Evolved trait: Stronger limbs; more controlled movement



African coelacanth image from NOAA: fisheries.noaa.gov/species/african-coelacanth

Four Limbs

Evolved trait: Stronger limbs; tetrapods (4-footed animals) able to climb onto land



Tetrapod drawing image by Nobu Tamura, Creative Commons license: commons.wikimedia.org/wiki/File:Elginerpeton_BW.jpg

Amniotic Eggs

Evolved trait: Membrane (the amnion) surrounds embryo to retain water; allowed animals to reproduce on land



Image by Mayer Richard, Creative Commons license: commons.wikimedia.org/wiki/File:Tortoise-Hatchling.jpg

Fur / Hair

Evolved trait: Retains body heat, protects skin, etc.



Sea otter image by Peter Kraayvanger from Pixabay: pixabay.com/photos/riesen-otter-mammal-swim-fur-90026

Cartilaginous Backbone

Evolved trait: Cartilage is light, strong, flexible, and buoyant



Sea lamprey painting by Ellen Edmonson: en.wikipedia.org/wiki/Lamprey#/media/File:Petromyzon_marinus.jpg

Scales

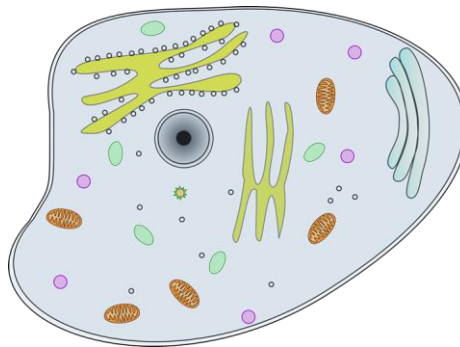
Evolved trait: Protect skin from predators and infection; help with water retention (in reptiles) and hydrodynamics (in fish and aquatic reptiles)



Goldfish Image from Pixabay: pixabay.com/photos/goldfish-freshwater-fish-365082

Cells

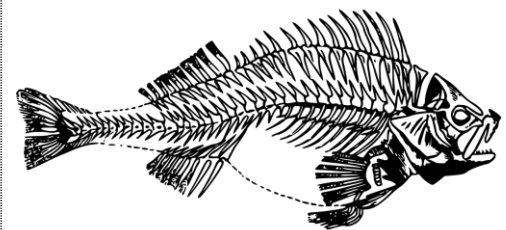
Evolved trait: Basic “building blocks” of all living things that provide structure, take in nutrients, create energy, etc.



Animal cell image from Pixabay: pixabay.com/vectors/view-cell-information-close-48543

Bony Skeleton

Evolved trait: Hard bones include the **vertebral column (spine / backbone)**, a series of flexible bones (vertebrae) that protect the spinal cord (nerve tube) and provide structural support



Perch skeleton image from Pixabay: pixabay.com/vectors/fish-perch-skeleton-1296618/

Mammary Glands

Evolved trait: Organs of mammals used to produce milk for young

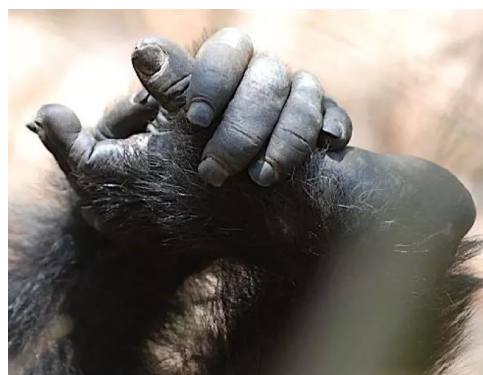


Cow udder image by Muhammad Mahdi Karim, Creative Commons license: en.wikipedia.org/wiki/Udder#/media/File:Cow_udders02.jpg

Flat Nails

(instead of claws)

Evolved trait: Helped to grasp trees, pick up objects, pick off things (like bugs), etc.



Chimpanzee image by Nils Rinaldi, Creative Commons license: pixabay.com/photos/riesen-otter-mammal-swim-fur-90026

Grasping Feet

Evolved trait: Helped primates climb trees



Image from Pixabay: pixabay.com/photos/wildlife-nature-tree-animal-wood-3188071

Bony Jaws

Evolved trait: Stronger mouth parts allow more opportunities to feed



Image by Hectonicus, Creative Commons license:
en.wikipedia.org/wiki/Megalodon#/media/File:Physeter_idea_-_Livvatan_melvillei.JPG

Bilateral Symmetry

Evolved trait: Organisms balanced by one of each type of limb or major organ on both the left and right sides



Image by Torban Stroem from Pixabay:
pixabay.com/photos/eagle-bird-bird-of-prey-natural-1753002

Vertebral Column (Spine / Backbone)

Evolved trait: A series of flexible bones (vertebrae) that protect the spinal cord (nerve tube) and provide structural support

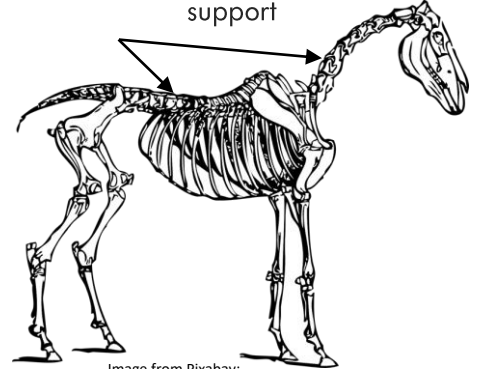


Image from Pixabay:
pixabay.com/vectors/horse-anatomy-skeleton-bones-torso-30760

Skull

Evolved trait: Bone protects soft brains as they became larger



Image adapted from Pixabay:
pixabay.com/illustrations/anatomical-anatomy-body-gut-health-2261006

Segmented Body

Evolved trait: Allows animals better movement and protection of organs



Image of bee on flower by Magnus Ohlin from Pixabay:
pixabay.com/photos/bee-wasp-spring-flower-yellow-210731

Stronger Limbs (legs)

Evolved trait: Helped animals spread over the land



Komodo dragon image by TLSPAMG from Pixabay:
pixabay.com/photos/reptile-komodo-dragon-wildlife-1984970

Large Canine Teeth

Evolved trait: Helps carnivores and omnivores catch, kill, and hold prey



Tiger image by Gellinger from Pixabay:
pixabay.com/photos/animal-tiger-big-cat-predator-1994500

Long-lasting Placenta

Evolved trait: Helps females bear offspring and protect them longer internally

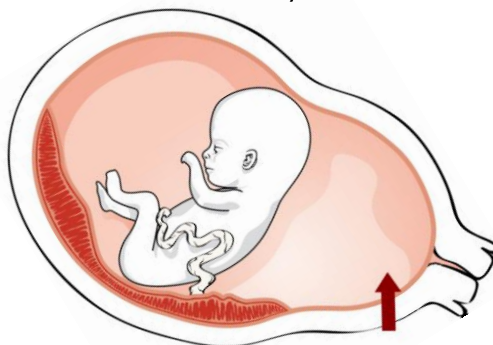


Image adapted from Wikimedia Commons, CC license:
upload.wikimedia.org/wikipedia/commons/2/23/2906_Placenta_Previa-02.jpg

Exoskeleton

Evolved trait: Protective outside layer that provides protection and retains water



Image from National Park Service:
flickr.com/photos/santamonicamtns/11954193476

Tyrannosaurus rex

Phylum: Chordata
Class: Reptilia



Image by Jill White from Pixabay:
pixabay.com/photos/tyrannosaurus-prehistoric-skeleton-447801

American Bullfrog

Lithobates catesbeianus
Phylum: Chordata
Class: Amphibia



Image by Carl D. Howe, Creative Commons license:
commons.wikimedia.org/w/index.php?curid=528421

King Cobra

Ophiophagus hannah
Phylum: Chordata
Class: Reptilia



Image by Antriksh Kumar from Pixabay:
pixabay.com/photos/king-cobra-cobra-snake-reptile-405623

Salp (Tunicate)

Phylum: Chordata
Subphylum: Tunicata



Salp colony image by Peter Southwood,
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[commons.wikimedia.org/
wiki/File:Salp_colony,_Aorangaia_PA171899.JPG](https://commons.wikimedia.org/wiki/File:Salp_colony,_Aorangaia_PA171899.JPG)

Red King Crab

Paralithodes camtschaticus
Phylum: Arthropoda, Class: Crustacea



Public domain image from NOAA:
afsc.noaa.gov/race/media/photo_gallery/photos/Crabs/redkingcrab.jpg

Human

Homo sapiens
Phylum: Chordata, Class: Mammalia



Image from Pixabay:
pixabay.com/photos/basketball-game-competition-dribble-582384

Ladybug (Ladybird beetle)

Coccinella magnifica shown below
Phylum: Arthropoda, Class: Insecta



Image by Gilles San Martin, Creative Commons license:
commons.wikimedia.org/wiki/File:Coccinella_magnifica01.jpg

Coho Salmon

Oncorhynchus kisutch
Phylum: Chordata, Class: Osteichthyes



Image from BLM, Creative Commons license:
flickr.com/photos/blmoregon/16335492972

Great White Shark

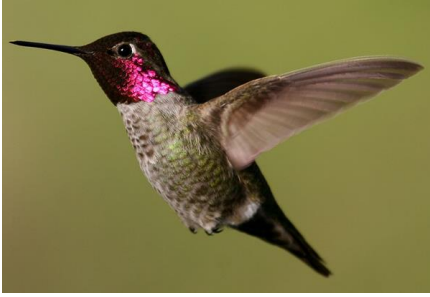
Carcharodon carcharias
Phylum: Chordata
Class: Chondrichthyes



Image from Wikimedia Commons:
[commons.wikimedia.org/wiki/File:
Guadalupe_Island_Great_White_Shark_Underwater.jpg](https://commons.wikimedia.org/wiki/File:Guadalupe_Island_Great_White_Shark_Underwater.jpg)

Anna's Hummingbird

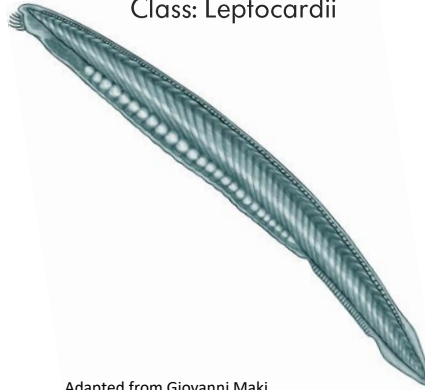
Calypte anna
Phylum: Chordata, Class: Aves



Public domain image by Robert McMorran:
https://commons.wikimedia.org/wiki/File:Anna%27s_hummingbird.jpg

Amphioxus (Lancelet)

Phylum: Chordata
Subphylum: Cephalochordata
Class: Leptocardii



Adapted from Giovanni Maki,
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<https://commons.wikimedia.org/wiki/File:Amphioxus.png>

Stomphia

Stomphia coccinea
Phylum: Cnidaria, Class: Anthoza



Image from Shape of Life video "Cnidarians:
Anemone Swims Away from Sea Star":
<https://shapeoflife.org/video/cnidarians-anemone-swims-away-sea-star>

Red Fox

Vulpes vulpes
Phylum: Chordata, Subphylum:
Vertebrata, Class: Mammalia



Image by Karen Arnold from Pixabay:
<https://pixabay.com/photos/fox-animal-wild-wildlife-red-220492>

Large-tooth Sawfish

Pristis pristis
Phylum: Chordata
Class: Chondrichthyes



Image by David Iliff, Creative Commons license:
https://commons.wikimedia.org/wiki/File:Pristis_pristis_-_Georgia_Aquarium_Jan_2006.jpg

Crocodile

Crocodylus spp.
Phylum: Chordata, Subphylum:
Vertebrata, Class: Reptilia



Image by Ridia from Pixabay:
<https://pixabay.com/photos/crocodile-mouth-lunch-thailand-1999427>

Sea Squirt

Polycarpa aurata
Phylum: Chordata, Subphylum:
Tunicata, Class: Ascidiacea



Image by Nhoogood, Creative Commons license:
[https://commons.wikimedia.org/wiki/File:Triphyllozoon_inornatum_\(Bryozoan\)_and_Polycarpa_aurata_\(Sea_squirt\).jpg](https://commons.wikimedia.org/wiki/File:Triphyllozoon_inornatum_(Bryozoan)_and_Polycarpa_aurata_(Sea_squirt).jpg)

Giant Larvacean

Bathochordaeus charon
Phylum: Chordata, Subphylum: Tunicata,
Class: Appendicularia

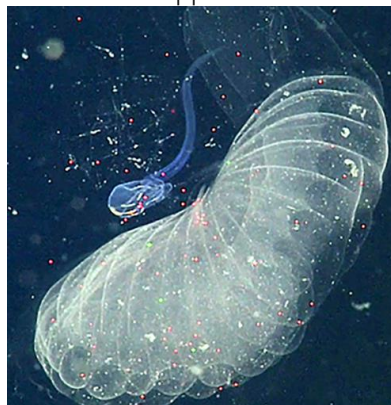


Image © 2016 MBARI: shapeoflife.org/news/featured-creature/2017/08/26/giant-larvacean-bathochordaeus

Sea Lamprey

Petromyzon marinus
Phylum: Chordata
Class: Hyperoartia



Image by Drow Male, Creative Commons license:
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