

Phylum (Class)	Key Names and Examples	Symmetry of Body Plan	Tissue Organization	Coelom	Circulatory System	Nervous System	Respiratory System	Digestive System	Excretory System	Embryonic Development	General Characteristics
<i>Porifera</i>	Sponge	Asymmetrical	No True Tissues (Parazoa)	N/A	None (Diffusion)	None	None (Diffusion)	Intracellular Digestion (Via Amoebocytes)	None (Diffusion)	-	Sessile, suspension feeders, aquatic habitats, earliest animals, can produce asexually (budding) or sexually (hermaphrodites), used in production of antibiotics
<i>Cnidaria</i>	Hydra, Jellyfish, Sea Anemone, Coral	Radial	Diploblasts, True Tissues (Eumetazoa)	N/A	None (Diffusion)	Nerve Net, No Brain	None (Diffusion)	Gastrovascular Cavity, Two-Way Digestion	None (Diffusion)	-	Aquatic habitats, some have stinging cells (nematocysts), some have life cycle that switches between polyp and medusa forms, sexual or asexual reproduction, gastrovascular cavity acts as hydrostatic skeleton to aid in movement
<i>Platyhelminths</i>	Flat Worms, Trematoda, Flukes, Tapeworm, Planarian	Bilateral W/ Cephalization	Triploblasts, Eumetazoa	Acoelomate	None (Diffusion)	Two Nerve Cords, Anterior Centralized Ganglia (Brain), Some Planarians Have Eye Spots	None (Diffusion)	Gastrovascular Cavity, Two-Way Digestion	Protonephridia and Flame Cells	-	Can reproduce sexually (hermaphrodites) or asexually (regeneration), mainly aquatic habitats, parasitic lifestyles, most primitive of triploblastic animals, has organs. Tapeworms specifically do not have a true digestive tract, they just absorb food around them.
<i>Nematoda</i>	Round Worm, Hook Worm, Trichina, C. Elegans, Ascaris	Bilateral	Triploblasts, Eumetazoa	Pseudocoelomate	None (Diffusion)	Nerve Chord and Ring	None (Diffusion)	Alimentary Canal, One Way	None (Diffusion)	-	Some have cuticle to prevent degradation by host digestive system, longitudinal muscles, no circular muscles, parasitic, not segmented
<i>Rotifera</i>	Rotifers	Bilateral	Triploblasts, Eumetazoa	Pseudocoelomate	None (Diffusion)	Cerebral Ganglia (Brain) W/ Some Nerves Extending Through Body	None (Diffusion)	Alimentary Canal, Mouth and Anus	Protonephridia and Flame Cells	-	Not truly segmented, can reproduce sexually or parthenogenetically, mostly freshwater environments. Draw food and water into mouth by beating cilia.
<i>Annelida</i>	Earthworm, Leech	Bilateral	Triploblasts, Eumetazoa	Coelomate	Closed Circulatory System, Multiple Pairs of Aortic Arches, Distinct Arteries and Veins	Ventral Nerve Chord, Anterior Ganglia (Brain)	None (Diffusion)	Alimentary Canal, Mouth and Anus	Most Have Metanephridia	Protostome	Segmented bodies, septa divide coelom, sexual (hermaphrodites) and asexual (regeneration) reproduction, longitudinal and circular muscles
<i>Mollusca</i>	Clam, Snail, Slug, Squid, Octopus, Cephalopod, Gastropod	Bilateral	Triploblasts, Eumetazoa	Coelomate	Mainly Open	Ventral Nerve Chords and Brain	Gills	Complete, Mouth and Anus, Radula	Nephridia	Protostome	Visceral mass, calcium carbonate mantle, radula (tongue), aquatic or terrestrial habitats, have hemocoel
<i>Arthropoda (Insecta)</i>	Ant, Dragonfly	Bilateral	Triploblasts, Eumetazoa	Coelomate	Open Circulatory System, Hemolymph	Fused Ganglia, Ventral Nerve Chord	Spiracles and Tracheal Tubes	One-Way Digestion, Some Have Salivary Glands	Malpighian Tubules	Protostome	Exoskeleton, jointed appendages, coelomates, three pairs of legs, chitinous exoskeleton, more species than any other phylum combined, metamorphosis
<i>Arthropoda (Arachnida)</i>	Spider, Scorpion	Bilateral	Triploblasts, Eumetazoa	Coelomate	Open Circulatory System, Hemolymph	Fused Ganglia, Ventral Nerve Chord	Trachea or Book Lungs	One-Way Digestion, Some Have Salivary Glands	Malpighian Tubules and/or Coxal Glands	Protostome	Exoskeleton, jointed appendages, coelomates, four pairs of legs, land habitats
<i>Arthropoda (Crustacea)</i>	Lobster, Crayfish, Crab	Bilateral	Triploblasts, Eumetazoa	Coelomate	Open Circulatory System, Hemolymph	Fused Ganglia, Ventral Nerve Chord	Some Have Gills	One-Way Digestion, Some Have Salivary Glands	Terrestrial: Use Malpighian; Aquatic Use Green Glands	Protostome	Exoskeleton, jointed appendages, coelomates, aquatic habitats
<i>Echinodermata</i>	Starfish, Sea Urchin, Sea Cucumber	Bilateral (Larvae), Fivefold Radial (Adult)	Triploblasts, Eumetazoa	Coelomate	Open, No Heart	Nerve Ring and Radial Nerves	None (Diffusion)	Complete, Mouth and Anus	None (Diffusion)	Deuterostome	Spiny, central disk, water vascular system, tube feet, sexual or asexual reproduction, closest related major phyla to chordates
<i>Chordata</i>	Vertebrates	Bilateral	Triploblasts, Eumetazoa	Coelomate			See Other Table			Deuterostome	See <b>Chordata Subphyla</b> Sheet

Subphylum	Class	Examples	Symmetry	Tissues	Coelom	Circulatory System	Nervous System	Respiratory System	Digestive System	General Characteristics and Key Words
<i>Urochordata and Cephalochordata (amphioxus)</i>	N/A	Tunicates, Lancelets (Amphioxus), Sea Squirts	Bilateral	Triploblasts, Eumetazoa	Coelomate	Heart	Primitive	Pharynx and Epidermis	Alimentary Canal (One Way)	Have all the developmental characteristics of other chordates, but lack vertebrae. Have extensively been studied to exam the origin of vertebrates. Tunicates live in benthic habitats. Lancelets keep notochord through adulthood, tunicates only have it as larvae.
<i>Vertebrata</i>	Fish (Jawless)	Agnatha, Lamprey, Hagfish	Bilateral	Triploblasts, Eumetazoa	Coelomate	Two Chambered Heart	Complete, Brain	Gills	Alimentary Canal	Notochord found in larvae and adult, cartilaginous skeleton
<i>Vertebrata</i>	Fish (Cartilaginous)	Shark	Bilateral	Triploblasts, Eumetazoa	Coelomate	Two Chambered Heart	Complete, Brain	Gills	Alimentary Canal (One Way)	Jaws and teeth, reduced notochord with cartilaginous vertebrae (from here on: notochord is present only in embryonic stage, replaced by vertebrae in adulthood)
<i>Vertebrata</i>	Fish (Bony)	Salmon, Halibut	Bilateral	Triploblasts, Eumetazoa	Coelomate	Two Chambered Heart	Complete, Brain	Gills	Alimentary Canal (One Way)	Scales, bony skeleton
<i>Vertebrata</i>	Amphibia	Tadpole, Frog, Toad, Salamander, Newt	Bilateral	Triploblasts, Eumetazoa	Coelomate	Three Chambered Heart	Complete, Brain	Gills (Juvenile), Lungs (Adult)	Alimentary Canal (One Way)	No scales. Tadpoles live in aquatic habitats, have tails and no legs. Adults live in land habitats, have two pairs of legs and no tail
<i>Vertebrata</i>	Mammalia (Monotremes)	Duckbill Platypus, Spiny Anteater	Bilateral	Triploblasts, Eumetazoa	Coelomate	Four Chambered Heart	Complete, Brain	Lungs	Alimentary Canal (One Way)	Warm blooded, feed young with milk, leathery eggs, mammary glands with many openings (no nipples)
<i>Vertebrata</i>	Mammalia (Marsupials)	Kangaroo, Opossum	Bilateral	Triploblasts, Eumetazoa	Coelomate	Four Chambered Heart	Complete, Brain	Lungs	Alimentary Canal (One Way)	Warm blooded (homothermic), feed young with milk
<i>Vertebrata</i>	Mammalia (Placental)	Bat, Whale, Mouse, Human	Bilateral	Triploblasts, Eumetazoa	Coelomate	Four Chambered Heart	Complete, Brain	Lungs	Alimentary Canal	Warm blooded (homothermic), fetus supported by placenta
<i>Vertebrata</i>	Reptilia	Turtle, Snake, Crocodile, Alligator	Bilateral	Triploblasts, Eumetazoa	Coelomate	Three Chambered Heart	Complete, Brain	Lungs	Alimentary Canal	Live on land, leathery eggs, internal fertilization, cold blooded (poikilothermic)
<i>Vertebrata</i>	Birds	Eagle, Blue Jay	Bilateral	Triploblasts, Eumetazoa	Coelomate	Four Chambered Heart	Complete, Brain	Lungs	Alimentary Canal	Warm blooded (homothermic), eggs in shells

4 Shared Key Characteristics of Chordates	Notochord Dorsal Hollow Nerve Cord Pharyngeal Slits Post-Anal Tail
---	---

Clade Name	Key Phyla	Examples	General Traits	Keywords
<i>Bryophytes (Nonvascular)</i>	Marchantiophyta, Bryophyta, Anthocerotophyta	Hornworts, Mosses, Liverworts	<ul style="list-style-type: none"> <li>Gametophyte dominate life cycles</li> <li>Reduced sporophyte</li> <li>All have flagellated sperm</li> <li>Sporophyte is usually dependent on and attached to gametophyte for survival</li> <li>Sporophyte consists of a seta, foot, and sporangia</li> <li>Rhizoids anchor gametophytes, not roots</li> <li>Majority have no vascular tissue</li> <li>Majority grow to minimal height</li> <li>Most exist in moist habitats</li> </ul>	
<i>Vascular Plants (Seedless)</i>	Lycophyta, Pterophyta	Club Moss, Quillworts, Fern, Horsetail	<ul style="list-style-type: none"> <li>All have flagellated sperm</li> <li>Most exist in moist habitats</li> <li>Most are heterosporous</li> <li>Formed the first forests during the Carboniferous period (ferns)</li> <li>Vascular Tissue (xylem &amp; phloem): water and nutrients could be transported and survival in more arid environments become possible.</li> </ul>	<ul style="list-style-type: none"> <li>Roots: structural support and water absorption from soil.</li> <li>Lignin: helped to support vascular tissue and allow plants to grow higher.</li> <li>Leaves: improved photosynthesis.</li> </ul>
<i>Vascular Plants (W/ Seeds)</i>	Gymnosperms	Fir, Spruce, Aspen, Red Wood, Pine, Conifers	<ul style="list-style-type: none"> <li>Seeds are not enclosed and usually found on cones</li> <li>Majority do not have flagellated sperm</li> <li>All are heterosporous</li> <li>Usually microscopic gametophyte</li> <li>Ovules</li> </ul>	<ul style="list-style-type: none"> <li>Pollen: Improved fertilization efficiency</li> <li>Seeds: Improved dispersal and durability</li> </ul>
<i>Vascular Plants (W/ Seeds)</i>	Angiosperms/"Anthophyta"	Flowering Plants, Magnoliophyta	<ul style="list-style-type: none"> <li>Flowers</li> <li>Fruits</li> <li>Seeds exist in fruit (ovaries)</li> <li>Most abundant type of plants living today</li> <li>None have flagellated sperm</li> <li>Most can exhibit double fertilization (some gymnosperms too)</li> </ul>	