Kingdom Animalia Characteristics

Phyla	Porifera	Cnidaria	Platyhelminthes	Nematoda	Molluska	Annelida	Arthropoda	Echindodermata	Chordata
Defining Traits	**Choanocyte** Osculum **Gemmules** **Cells are totipotent**	Stinging tentacles **Cnidocyte** w/ **nematocysts** Formation of gut Nerve net	Flattened bodies **Cephalization** **Lophotrochozoa**	**Ecdysozoan** **Molting to grow**	**Unsegmented** Mantle Shell (attatched) Radula **Lophotrochozoa**	**Segmented Chaetae** **Dorsal Brain** **Ventral nerve cord**	**Ecdysozoan** **Molting to grow** Exoskeleton of **Chitin** Head-Thorax-abdomen (sometimes fused)] Ventral nerve cord	**Water vascular system**	**1. Notachord** **2. Dorsal hollow nerve cord** (becomes the brain and spinal chord) **3. Pharyngeal slits** **4. Muscular postanal tail**
Symmetry	**Asymmetrical**	**Radial**	Bilateral	Bilateral	Bilateral	Bilateral	Bilateral	**Bilateral (larvae)** **Secondary 5-part radial symmetry (as adults)**	
Level of organization	**Cellular w/ some specialization**	**Tissue**	**Organ-system**	Organ system	Organ system	Organ system	Organ system	Organ system	
Germ Layers	No layers	**Dipoblastic**	**Tripoblastic**	Tripoblastic	tripoblastic	tripoblastic	tripoblastic	Tripoblastic	
Coelem	NA		**Acoelomate**	**Psuedocoelomate**	Coelomate	Coelomate	Coelomate	Coelomate	
Cephalization	NA		**Present**	**Present**	**Present**	**Present**	**Present**	Absent	
Development	NA		**Protostome** Determinant development	Protostome Determinant development	**Trochophore Protostome** **Determinant development**	**Trochophore Protostome** **Determinant development**	Protostome Determinant development	**Deuterostome** **Indeterminent development**	Deuterostome Indeterminent development
Segmentation	NA	Absent	Absent	Absent	Absent	**Segmentation**	Segmentation	**Segmentation Absent in adults**	Segmentation

Phyla	Porifera	Cnidaria	Platyhelminthes	Nematoda	Molluska	Annelida	Arthropoda	Echindodermata	Chordata
Support	Endoskeleton of **Spicules** -spongin, -collagen protein	Hydrostatic skeleton		**Hydrostatic skeleton**		Hydrostatic skeleton	Exoskeleton (covers the entire body)	**endoskeleton** of dermal **ossicles** (plates of **calcium carbonate**)	Notochord
Muscular/ movement	Sessile	Contracting cells in epidermis (epidermal and gastrodermal cells) **Polyp-** Sessile and Asexual **Medusa-** Motile and Sexual		Longitudinal layer of muscle	**Muscular foot**			Muscles from **tube feet** and **ampulla**	Sessile
Digestive/ # of openings	Phagocytosis through **Choanocytes**	Incomplete Gastrovascular cavity (GVC)	Incomplete 1 opening	Complete digestive tract 2 openings	Complete 2 openings **Visceral mass:** most digestive glands here	Complete 2 openings	Complete 2 openings	Complete 2 openings seastars have two stomachs, one extrudes into prey.	Complete 2 openings
Feeding									Filter feeder
Respitory	Diffusion	Diffusion	Diffusion	Diffusion	Gill or Lungs		gills, lungs or **tracheoles** **Spiricles**	Skin gills	
Nervous		**Nerve net;** simple sensory cells: light, tough and taste		Dorsal and ventral nerve cords •Brain forms a ring around pharynx		Doral Brain, ventral Nerve cord		oral and aboral central rings w/ radial nerves in each arm; no brain.	

Phyla	Porifera	Cnidaria	Platyhelminthes	Nematoda	Molluska	Annelida	Arthropoda	Echindodermata	Chordata
Circulatroy	None				**Open System**	**Closed System**	Open system dorsal, tubular heart		
Reproduction	**Monoecious** **Asexual:** budding & regeneration **Sexual** reproduction: -Broadcast sperm & fertilized eggs -use chemical signals to time mating. **Gemmules** are spit out when stressed or dying & external conditions are favorable	**Asexual:** Budding, fission (Polyp forms only **Sexual:** Some hermaphroditic some are Dioecious **Polyp-** Sessile and Asexual **Medusa-** Motile and Sexual	Monoecious Asexual Sexual -usually Monoecious	Dioecious and fertilization internal	Dioecious (one female, one male) but some slugs are monoecious Internal or external fertilization	**Asexual:** Some Through Fission Or fragmentation **Sexual:** Monoecious or dioecious	**Mostly dioecious** With internal fertilization	sexes usually separate (dioecious). **Asexual** reproduction possible **Regeneration** of arms.	
Excretion	Diffusion	Diffusion			Nephridia		Green glands	N/A	
Classes	**1. Calcite sponge** **2. Demospongiae** **3. Glass sponge: Hexactinellida**		Tubellaria		Cephalopoda				
Habitat	Marine	Aquatic, most marine	Marine, fresh water or Moist Terrestrial,	Marine, Freshwater, soil	Marine, freshwater, terrestrial (limited)	Marine, freshwater, terrestrial	marine, freshwater, terrestrial, aerial	All Marine	All Marine

Phyla	Porifera	Cnidaria	Platyhelminthes	Nematoda	Molluska	Annelida	Arthropoda	Echindodermata	Chordata
Miscellaneous	3 body plans: Immune system that can produce chemicals in defense of bacteria and can control cancer	2 body plans -polyp - medusa - Corals (polyp colonies) secrete external 'Skeleton' Of calcium Carbonate	Produce massive Number Of spring Free living- Turbellarians	C. Elegans is s the most studied			Highly Developed Sensory System	water-Vascular system	
Example	Sponges	Jellyfish, corals, hydra	flatworm, tapeworm, planarian	**Hookworm** (blood suckers), **pinworm** (large intestine), **Intestinal roundworm** (ascaris) **Trichian worm** (muscle), **Fliaral Roundworm** (lymph glads, circulatory system, under skin)	Clams, squid, snails, sea slugs, octopus Chiton	Earthworms, leeches	Barnacles, Crayfish	seastars, sea cucumbers, sea urchi, sand dollars, sea lilies	
Evolutionary trends				Free living species are important decomposers	True coelom Trochophore larvae All organ system present	**Metameres:** body segements			Metamerism

Phyla	Porifera	Cnidaria	Platyhelminthes	Nematoda	Molluska	Annelida	Arthropoda	Echindodermata	Chordata
Sub-Phyla							1. Chelicerata 2. Crusteacea -branched appendages 3. Myropodia -many legs 4. Hexapoda		1. Tunicata (Urochordata) - mostly sessile 2. Cephalochordata
Other			Most are parasites		Flashy mantle secretes shell & can be modified for other functions i.e. locomotion in squid, or respiration in terrestrial slugs/snails	Many have **parapodia** Excretory organs, **nephridia** in nearly every segment	Jointed appendages Reduced coelom and fusion of segments Highly developed sensory organs		Filter feeders, Herbivores Carnivores The dorsal hollow nerve cord develops into the central nervous system: the brain and spine. Pharyngeal slits are openings in the pharynx that develop into gill arches in bony fish and into the jaw and inner ear in terrestrial animals.