

Organism Data Table

Domain Archaea

Domain Summary			
Card Number	Organism Name	Phylum Name and Features	Group Name and Features

Organism Data Table

Domain Bacteria

Domain Summary		
Card Number	Organism Name	Phylum Name and Features

Domain Eukarya

Domain Summary		

Organism Data Table

Kingdom Protista

Kingdom Summary			
Card Number	Organism Name	Subkingdom Name and Features	Phylum Name and Features

Organism Data Table

Kingdom Fungi

Kingdom Summary		
Card Number	Organism Name	Phylum Name and Features

Organism Data Table

Kingdom Plantae

Kingdom Summary			
Card Number	Organism Name	Subkingdom Name and Features	Phylum Name and Features

Organism Data Table

Kingdom Animalia

Kingdom Summary			
Card Number	Organism Name	Phylum and Subphylum Name and Features	Class Name and Features

Key to the Domains of Life

Directions: Use this key to find the name of the Domain to which each organism belongs.

- 1a. Organism is a prokaryote. It is unicellular and does not contain a nucleus, membrane-bound organelles, cilia, or eukaryotic flagella. **go to 2**
- 1b. Organism is a eukaryote. It is unicellular, colonial or multicellular. Each cell contains a nucleus other membrane bound organelles. Organisms are autotrophs, heterotrophs, mutualists, commensalists, or decomposers. Genes are contained within chromosomes. Organisms may reproduce asexually, sexually, or both. Many organisms are able to produce spores. Some organisms have cell walls with either chitin or cellulose; others are without a cell wall. . . . **Domain Eukarya**
- 2a. Organism is microscopic. Organism tolerates or thrives in very harsh environments such as hot springs, hydrothermal vents, extremely salty, acidic, or basic areas. Organisms are autotrophs, absorptive-heterotrophs, mutualists, commensalists or decomposers but are not photoautotrophs. Organisms reproduce asexually via binary fission, fragmentation or budding but do not form spores. Cell walls do not contain peptidoglycan, chitin or cellulose. Organisms are all gram-negative and have a unique cell membrane. Some metabolic pathways are similar to Eukarya. **Domain Archaea**
- 2b. Organism is microscopic. Organism is an autotroph, absorptive-heterotroph, mutualist, commensalist or decomposer. Organism reproduces asexually via binary fission, fragmentation or budding but does not form spores. Cell walls contain peptidoglycan. Some organisms have a cell membrane (envelope) surrounding the cell wall. Organism may be gram-positive or gram-negative. Genes are contained within plastids. **Domain Bacteria**

Key to the Domain Archaea

Directions: Use this key to find the name of the Phylum and Group to which each organism belongs.

- 1a. Organism thrives in areas with high levels of sulfur, extreme heat or extreme cold. Most lack histones. **Phylum Crenarchaeota go to 2**
- 1b. Organism thrives in areas with high levels of salt, acid, base or heat. Many contain histones. **Phylum Euryarchaeota. . . . go to 3**
- 2a. Organism oxidizes sulfur and thrives in highly acidic, extremely hot areas where sulfur is present. **Group Thermoprotei**
- 2b. Organism reduces sulfur and thrives in extremely hot areas. **Group Archaeoglobus**
- 3a. Organism is sphere-shaped and produces methane gas as a by-product of metabolism. **Group Methanococci**
- 3b. Organism is rod-shaped and produces its own energy using the reddish pigment bacteriorhodopsin. Organism thrives in very salty areas and does not produce methane. **Group Halobacteria**

Key to the Domain Bacteria

Directions: Use this key to find the name of the Phylum to which each organism belongs.

- 1a. Organism is photoautotroph and appears as filaments in water. **Phylum Cyanobacteria**
- 1b. Organism is mutualistic, commensalistic, parasitic, or free-living. Organism has an outer membrane covering the cell wall composed of lipoglycans. This causes the organism to be gram-negative. **Phylum Proteobacteria**

Key to the Domain Eukarya

Directions: Use this key to find the name of the Kingdom to which each organism belongs.

- 1a. Organism may be unicellular, colonial, or multicellular without specialized tissues. There is no complex development from embryos or seeds. **go to 2**
- 1b. Organism is multicellular with specialized tissues. Development is from embryos or seeds. **go to 3**
- 2a. Reproduction is typically asexual via binary fission or fragmentation. Organism may be photoautotrophic or heterotrophic. **Protista**
- 2b. Organism has alteration of generations with most of its life spent in the haploid state. Organism is an absorptive heterotroph as either a decomposer or symbiotic. Organism has a cell wall composed of chitin. Asexual reproduction is in spores formed in sporangia. Organism is able to form spores when environmental conditions deteriorate. **Fungi**
- 3a. Organism is a photoautotroph with photosynthesis occurring within membrane-bound chloroplasts. The organism has a cell wall composed of cellulose, large central vacuoles, and plasmodesmata. Organism has alteration of generations plus asexual and sexual reproductive stages. **Plantae**
- 3b. Organism has no cell walls or chloroplasts. Most are ingestive heterotrophs. The organism may have asexual and sexual reproduction or only sexual reproduction. Most species have flagellated sperm and embryos pass through a blastula stage. **Animalia**

Key to the Kingdom Protista

Directions: Use this key to find the name of the subkingdom and phylum to which each organism belongs.

- 1a. Organism is a photoautotroph with a cell wall. **Subkingdom Algae** **go to 2**
- 1b. Organism is either a photoautotroph without a cell wall or a heterotroph. **go to 4**
- 2a. Organism is unicellular or forms colonies, is golden in color with either radial or bilateral symmetry. The cell wall is made of silica and is formed in two halves that fit together. **Diatoms**
- 2b. Organism has cell walls composed of cellulose. **go to 3**
- 3a. Cell wall contains cellulose and alginate. Organism undergoes alteration of generations. Cells contain the brown pigment fucoxanthin as well as chlorophyll a and c. **Phaeophyta**
- 3b. Cell wall contains cellulose and glycoproteins. Cells contain chlorophyll a and b plus the orange pigment β -carotene. **Chlorophyta**
- 4a. Organism does not have a cell wall, move via pseudopods, eukaryote flagella, or cilia. Organisms can survive for long periods as dormant cysts. **Subkingdom Protozoa** **go to 5**
- 4b. Organism has a cell wall made of chitin and is an absorptive heterotroph. **Subkingdom slime molds** **go to 7**
- 5a. Organism may be heterotroph or a photoautotroph and moves via eukaryote flagella. An eye spot allows the organism to orient itself toward light. **Euglenozoa**
- 5b. Organism is not a photoautotroph. **go to 6**
- 6a. Organism moves via pseudopods and does not have a definite shape. They are ingestive heterotrophs that ingest prey via phagocytosis. Species may be commensalistic, parasitic, or free-living. **Amoebozoa**
- 6b. Organism moves via cilia. One group includes ovoid, slipper-shaped organisms that release thin whip-like trichocysts to capture prey. **Ciliate**
- 7a. Organism moves via pseudopods. Organisms live as haploid single cells or as merged super-cells with thousands of diploid nuclei. One group includes yellow, irregular shaped patches of “slime”. **Myxomycota**
- 7b. Organisms are filament-shaped absorptive-heterotrophs with cell walls composed of cellulose and glycan. They typically live as mats of filaments with diploid nuclei. **Oomycota**

Key to the Kingdom Fungi

Directions: Use this key to find the name of the phylum to which each organism belongs.

- 1a. Septa separate the individual cells within each hypha (filament) that makes up the body of the organism. **go to 2**
- 1b. No septa separate the individual cells within each hyphae. They may be parasitic or free-living mats of dark brown, black, or green called mycelium. Sexual spores produced in zygosporangia. Most of its life cycle is spent in a haploid state. **Zygomycota**
- 2a. Mushroom-shaped body is composed of numerous fused ascocarp resulting in a honeycomb-like texture. Sexual spores are produced in sac-like asci. **Ascomycota**
- 2b. Mushroom-shaped body is composed of numerous filamentous hyphae. The pale gray-brown cap has numerous flat scales on its surface and gills on its underside. Sexual spores are produced in club-shaped basidium on the gills. **Basidiomycota**

Key to the Kingdom Plantae

Directions: Use this key to find the name of the subkingdom and phylum to which each organism belongs.

- 1a. Plant does not have vascular tissue or wood for support. Plant does not produce cones, seeds or flowers. It appears as a mat of green, thread-like filaments. It undergoes alternation of generation with most of its life spent in the haploid state. **Bryophyta**
- 1b. Plant has vascular tissue or wood for support. **go to 2**
- 2a. Plant reproduces via seeds. **go to 3**
- 2b. Plant reproduces via spores. **Pterophyta**
- 3a. Plant reproduces via naked seeds. **Subkingdom Gymnosperm. . go to 4**
- 3b. Plant reproduces via enclosed seeds. **Subkingdom Anthophyta . . . go to 5**
- 4a. The naked seeds are enclosed in cones. These evergreen trees have separate sexes and produce motile pollen. The leaves appear like those of the unrelated palm trees. They are pinnate compound leaves. **Cycadophyta**
- 4b. The naked seeds are enclosed in a fleshy outer coat that may be mistaken as a fruit. These deciduous trees have separate sexes and produce motile sperm. The vascular tissues continuously divide in two, which helps to shape the unique fan-shaped, bi-lobed leaves. These trees have deep roots and live for over a thousand years. **Ginkgophyta**
- 4c. The naked seeds are enclosed in cones. These coniferous evergreen trees have thin, scaly bark on the trunk and green or bluish needle-like leaves. The trees produce both pollen and seed cones and their pollen is not motile. The vascular tissue is composed of only tracheids and sieve cells. **Pinophyta**
- 5a. The embryo of this plant has a single cotyledon. The flower parts occur in multiples of three. Leaf veins are parallel to each other. The vascular bundles within the stem are scattered but appear as a ring within the fibrous roots. **Monocot**
- 5b. The embryo of this plant has two cotyledons. The flower parts occur in multiples of four or five. Leaf veins form an interlocking net of tissue. The vascular bundles within the stem appear as a ring but are located in the center of the roots. **Dicot**

Key to the Kingdom Animalia

Directions: Use this key to find the name of the phylum and subphylum to which each organism belongs.

- 1a. Organism does not have organs or organ systems. Its specialized cells can transform into other types of specialized cells. Organism has amorphous symmetry, is sessile, is an aquatic filter feeder, and has both sexual and asexual reproduction. **Phylum Porifera** **go to 2**
- 1b. Organism has organs or organ systems. **go to 3**
- 2a. Sponge has spicules made out of calcium carbonate. **Calcarea**
- 2b. Sponge has spicules made out of silicon dioxide. **Hexactinellid**
- 2c. Sponge has spicules made out of the protein spongin. **Demosponge**
- 3a. The organism has radial symmetry, is aquatic, and has both sexual and asexual reproduction. **go to 4**
- 3b. The organism has bilateral symmetry. **go to 7**
- 4a. The organism has simple organ systems, external fertilization, and has specialized cells that fire venomous whip-like structures called cnidocytes. Some species have separate sexes; others are hermaphrodites. **Phylum Cnidarian** **go to 5**
- 4b. The organism has organ systems, external fertilization, separate sexes, a single oral opening, and a water vascular system. The organism is able to regenerate lost body parts. **Phylum Echinodermata** **go to 6**
- 5a. The organism does not progress through a medusa (appearance similar to a jelly fish) stage. Larva and adults are sessile (do not move). **Anthozoa**
- 5b. The organism has an asexual polyp stage and a sexual medusa stage. The polyp attaches to substrate via a basal disc. **Hydrozoa**
- 6a. The organism has five thin arms emanating from a central disc. **Ophiuroidea**
- 6b. The organism has five or more thick arms emanating from a central disk. Bumps and spines are present on the surface opposite the oral opening. **Asteroidea**
- 6c. The organism has a spiny, globular body and moves using tube feet. **Echinoidea**
- 7a. The organism has organ systems, an exoskeleton, and jointed appendages but no jaws. A separate mouth and anus are present. **Phylum Arthropoda** **go to The Key to the Phylum Arthropoda**
- 7b. The organism has organ systems but no exoskeleton. **go to 8**
- 8a. The organism has pharyngeal slits, a post-anal tail, and a dorsal nerve cord surrounded by a notochord. A separate mouth and anus as well as head, trunk, and tail regions are present. **Phylum Chordata** **go to The Key to the Phylum Chordata**
- 8b. The organism does not have pharyngeal slits, a post-anal tail, and a dorsal nerve cord surrounded by a notochord. **go to 9**
- 9a. The organism has a body with a head, foot, and visceral mass. A mantle and body cavity are also present. **Phylum Mollusca** **go to 10**
- 9b. The organism does not have either an internal or external skeleton and its body is long and thin. **go to 11**
- 10a. The organism has a distinct head region, simple eyes, eats using a rough radula, and has olfactory organs located on head tentacles. Most species in this class have a single external shell and a body that undergoes torsion so that the head is located above the body. **Gastropoda**

- 10b. The organism has a two part hinged external shell and is a filter feeder. The head and foot regions of the body are only present at the larva stage of development. **Bivalvia**
- 10c. The organism has tentacles with suckers, complex eyes, a complex brain and a muscular body. Most species in this class do not have an external shell; instead, many species have a flexible internal shell called a pen. Many species have skin that is able to change color for camouflage and warning coloration. **Cephalopoda**
- 11a. The organism has a round body with many repeating segments and is able to regenerate posterior segments. **Phylum Annelida** **go to 12**
- 11b. The organism has a flattened body with no body cavity and no respiratory or circulatory systems are present. **Phylum Platyhelminthes** **go to 13**
- 12a. The organism has a prostomium on its first segment, four setae (hairs) on each segment, no complex brain, and five aortic arches that function as its heart. **Oligochaeta**
- 12b. The organism has a pair of fleshy projections called parapodia extending from each segment. Each segment also has numerous setae giving the organism a bristly appearance. **Polychaeta**
- 13a. The organism is not parasitic. The body is not visibly segmented, and it has two eyespots. **Tubellaria**
- 13b. The organism is an internal parasite that attaches to its host using a scolex. Most of the body is composed of numerous repeating proglottids that are primarily composed of male and female reproductive organs. **Cestoda**

Key to the Phylum Arthropoda

Directions: Use this key to find the name of the subphylum and class to which each organism belongs.

- 1a. The organism has a two part body and four pairs of walking legs. **Subphylum Chelicerata** **go to 2**
- 1b. The organism has a three part body. **go to 3**
- 2a. The organism is aquatic and can regenerate lost appendages including its tail (telson).
Respiration is via gill books. **Xiphosura**
- 2b. Many species in this class are venomous and are able to produce silk and spin webs.
Respiration is via book lungs not gills. **Arachnida**
- 3a. The organism breathes through spiracle holes in its exoskeleton. **Subphylum Unirama** **go to 4**
- 3b. The organism breathes via gills attached to its appendages. **Subphylum Crustacea** **go to 5**
- 4a. The organism has eleven or more body segments, one pair of antenna, two pairs of walking legs per segment, and a round body shape. The organism is an herbivore. **Diplopoda**
- 4b. The organism has fifteen or more body segments, one pair of antenna, one pair of walking legs per segment, and a flattened-round body shape. The organism is a carnivore. **Chilopoda**
- 4c. The organism has one pair of antenna and three pairs of walking legs. **Insecta**
- 5a. The organism has two pairs of antenna and five pairs of jointed legs. Many species in this class are aquatic **Branchiopoda**
- 5b. The organism has a rounded body shape and two pairs of antenna. Species in this class have between seven and ten pairs of walking legs **Malacostraca**
- 5c. The organism has two pairs of antenna—one long pair and one short pair. Its body shape is similar to that of a bowling pin. **Copepoda**

Key to the Phylum Chordata

Directions: Use this key to find the name of the subphylum and class to which each organism belongs.

- 1a. The organism has vertebra and skull. **Subphylum Vertebrata** go to 2
- 1b. The organism has a simple brain, poorly developed sense organs, no scales or paired fins, and a skeleton made of cartilage. **Subphylum Cephalochordata Class Leptocardia**
- 2a. The organism is poikilothermic. go to 3
- 2b. The organism is homeothermic. go to 6
- 3a. The organism has vertebra and skull made of cartilage. go to 4
- 3b. The organism has vertebra and skull made of bone. go to 5
- 4a. The organism does not have paired fins or a jaw. It has smooth skin, a two-chambered heart, and a complex brain. Respiration is via gills. **Agnatha**
- 4b. The organism has paired fins and nares, a two-chambered heart, and a complex brain. Its skin is covered with placoid scales. Respiration is via gills. **Chondrichthyes**
- 5a. The organism has paired fins and nares, a complex brain, and a two-chambered heart. Its skin is covered in scales. Respiration is via gills. **Osteichthyes**
- 5b. The organism has a complex brain, smooth skin, and a three-chambered heart. Juveniles from this class undergo metamorphosis from an aquatic juvenile to a terrestrial adult. Adult respiration is via lungs. **Amphibia**
- 5c. The organism has a complex brain, scaly skin, and a three-chambered heart. Females lay soft shelled eggs on land. Respiration is via lungs. **Reptilia**
- 6a. The organism has a complex brain, a four-chambered heart and it respire via lungs. Animals from this class have beaks, feathers, and wings. Females lay hard shelled eggs. **Aves**
- 6b. The organism has a complex brain, a four-chambered heart and it respire via lungs. Animals from this class have skin with hair and mammary glands from which milk is excreted to feed the young. **Mammalia**