Sponges are very important to the ecology of coral reefs, among other things. Their large, irregular shape helps them provide protection for the creatures living in them such as snails, starfish, sea cucumbers, and shrimp. Sometimes sponges have mutually beneficial relationships with photosynthetic organisms such as algae and bacteria. The algae absorbs carbon dioxide waste from the sponge and its occupants and releases oxygen and other nutrients. Some sponges live fairly deep in the ocean and photosynthesis is only possible because the spicules of the sponge magnify the sunlight.

 Porifera (sponges) and cnidarians (jellyfish) have a lot in common because they are so close on the Tree of Life, but in some ways they are very different. While porifera are asymmetrical, cnidarians have radial symmetry. Sponges have walls around a body cavity that water is pumped through. Jellyfish have a bell fringed by tentacles and arms (that most people think are tentacles) to help scoop food through the mouth and into the gastrovascular cavity. Both sponges and jellyfish reproduce both sexually and asexually. Jellyfish, unlike sponges, have a net of nerves to help them react to stimuli.

 Annelida (earthworms) are much more advanced than both porifera and cnidarians in a few ways. Earthworms, unlike more primitive organisms, actually have the first organ systems. Along their length, they have bilateral symmetry and they have digestive, circulatory, and nervous systems. Their digestive system includes a gizzard so they are able to mechanically break down their food. Their circulatory systems are closed and consist of two main vessels. Their nervous system has both cephalization, with more specialized nerve clusters, and centralization, which means they actually have a brain. Earthworms are hermaphrodites (both male and female sex organs), but they still cross-breed with other worms. Annelida have a lot more specialized cells than porifera and cnidarians.

 Mollusca (squids) are more advanced than porifera, cnidarians, and annelida. To feed, squids use their tentacles to pull their food into their mouths through the beak. They have gills to absorb oxygen and release carbon dioxide. They are the first to have fully developed hearts. In terms of the nervous system, squids have better eyes and other sensory neurons throughout the body. They have bilateral symmetry. They reproduce sexually and have external fertilization. And there is a clear distinction between the male and female squids.

 Arthropoda (grasshoppers) are very different from the others in a lot of ways. They have a bunch of moving parts in the mouth to help them chew their food, which makes the digestive process more efficient. They have trachea to breathe through. They have an open circulatory system, though they do have one dorsal vessel. They have a more developed excretory system. Their nervous system is very similar to that of the squid, but their eyes are different. They reproduce sexually, and they use internal fertilization. Grasshoppers have two different types of eyes: compound eyes that detect motion, and simple eyes that detect light.