

The third advantage of multicellular organisms is the potential for variety in architectural body forms. Instead of mere single cells that sometimes group into clusters, a fantastic variety of body forms can be constructed: from an elongated worm, to a compact clam, to the more complicated crab and lobster.

Whereas multicelled life in its plant form is thought to have made its appearance more than 1 billion years ago in the form of red, green, and brown algae, the first hints of animals did not arrive until 700 million years ago. These traces of animals consist of casts of worm-like burrows and impressions of jellyfish. These traces or images are rare until the beginning of the Cambrian period in geologic history, 570 million years ago. At this point in history and during the next 50 million years, almost all phyla of invertebrate animals appear abundantly in the fossil record, including sponges; corals and jellyfish; brachiopods (lamp shells); mollusks -- snails, clams, and squids; arthropods -- insects, trilobites, and crustaceans (crabs, etc.); and echinoderms -- sea lilies, starfish, and sea urchins.

These categories of marine animals, with the exception of the

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## THE CLASSIFICATION OF MULTICELLULAR PLANTS AND ANIMALS

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Multicellular organisms are classified into three kingdoms: Metaphyta (plants), Fungi, and Metazoa (animals). This grouping is based on broad differences in modes of life, and in particular the method of obtaining energy. Plants require only organic compounds for nutrients (autotrophy) and utilize the energy from the Sun to create living matter (photosynthesis). Fungi such as mushrooms are plant-like but ingest complex organic material already synthesized for growth and maintenance. Animals (Metazoa) rely on organic material, especially plants, for nutrition. They have nerve cells that coordinate the most obvious characteristic of members of

the Animal Kingdom -- movement of appendages, which often results in locomotion.

It is useful to note that the prefix "meta" means changed or altered. Thus, Metazoa means "changed animal." A "metamorphic" rock means one that has been changed or altered in form from its original state which could have been either sedimentary (deposited by water or wind) or igneous (of volcanic or melted origin). The "Metazoa" or changed animals are thought by evolutionists to have arisen from the unicelled (single-celled) Protozoa, although there is no fossil evidence to support this hypothesis.

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**Table 8.1**