



Most Living Animal Species are in Bilateria, a Clade Whose Members have a Bilaterally Symmetric Body Plan

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Received date: September 02, 2021; Accepted date: September 19, 2021; Published date: September 26, 2021

Description

Animals (also called Metazoa) are multicellular, eukaryotic organisms in the biological kingdom Animalia. With few exceptions, animals consume organic material, breathe oxygen, are able to move, can reproduce sexually, and go through an ontogenetic stage in which their body consists of a hollow sphere of cells, the blastula, during embryonic development. Over 1.5 million living animal species have been described—of which around 1 million are insects—but it has been estimated there are over 7 million animal species in total. Animals range in length from 8.5 micrometres (0.00033 in) to 33.6 metres (110 ft). They have complex interactions with each other and their environments, forming intricate food webs. The scientific study of animals is known as zoology. Most living animal species are in Bilateria, a clade whose members have a bilaterally symmetric body plan. The Bilateria include the protostomes, containing invertebrates such as nematodes, arthropods, and molluscs, and the deuterostomes, containing the echinoderms and the chordates, the latter including the vertebrates. Life forms interpreted as early animals were present in the Ediacaran biota of the late Precambrian. Many modern animal phyla became clearly established in the fossil record as marine species during the Cambrian explosion, which began around 542 million years ago. 6,331 groups of genes common to all living animals have been identified; these may have arisen from a single common ancestor that lived 650 million years ago. Historically, Aristotle divided animals into those with blood and those without. Carl Linnaeus created the first hierarchical biological classification for animals in 1758 with his *Systema Naturae*, which Jean-Baptiste Lamarck expanded into 14 phyla by 1809. In 1874, Ernst Haeckel divided the animal kingdom into the multicellular Metazoa (now synonymous for Animalia) and the Protozoa, single-celled organisms no longer considered animals. In modern times, the biological classification of animals relies on advanced techniques, such as molecular phylogenetics, which are effective at demonstrating the evolutionary relationships between taxa.

Holoblastic Humans make use of many animal species, such as for food (including meat, milk, and eggs), for materials (such as leather and wool), as pets, and as working animals including for transport. Dogs have been used in hunting, as have birds of prey, while many terrestrial and aquatic animals were hunted for sports. Nonhuman animals have appeared in art from the earliest times and are featured in mythology and religion.

Structure

All animals are composed of cells, surrounded by a characteristic extracellular matrix composed of collagen and elastic glycoproteins. During development, the animal extracellular matrix forms a relatively flexible framework upon which cells can move about and be reorganised, making the formation of complex structures possible. This may be calcified, forming structures such as shells, bones, and spicules. In contrast, the cells of other multicellular organisms (primarily algae, plants, and fungi) are held in place by cell walls, and so develop by progressive growth. Animal cells uniquely possess the cell junctions called tight junctions, gap junctions, and desmosomes. With few exceptions in particular, the sponges and placozoans animal bodies are differentiated into tissues.

Ecology

Animals are categorised into ecological groups depending on how they obtain or consume organic material, including carnivores, herbivores, omnivores, detritivores, and parasites. Interactions between animals form complex food webs. In carnivorous or omnivorous species, predation is a consumer–resource interaction where a predator feeds on another organism (called its prey). Selective pressures imposed on one another lead to an evolutionary arms race between predator and prey, resulting in various anti-predator adaptations. Almost all multicellular predators are animals. Some consumers use multiple methods; for example, in parasitoid wasps, the larvae feed on the hosts' living tissues, killing them in the process, but the adults primarily consume nectar from flowers. Other animals may have very specific feeding behaviour, such as hawksbill sea turtles primarily eating sponges.

Citation: Dazai Osamu (2021) Most Living Animal Species are in Bilateria, a Clade Whose Members have a Bilaterally Symmetric Body Plan. Res J Zool 3:5.