

Diversity of Life Part3: Animals

Adapted by J. Choi-Dan for Hagerstown Community College from Author: tvaca@citytech.cuny.edu

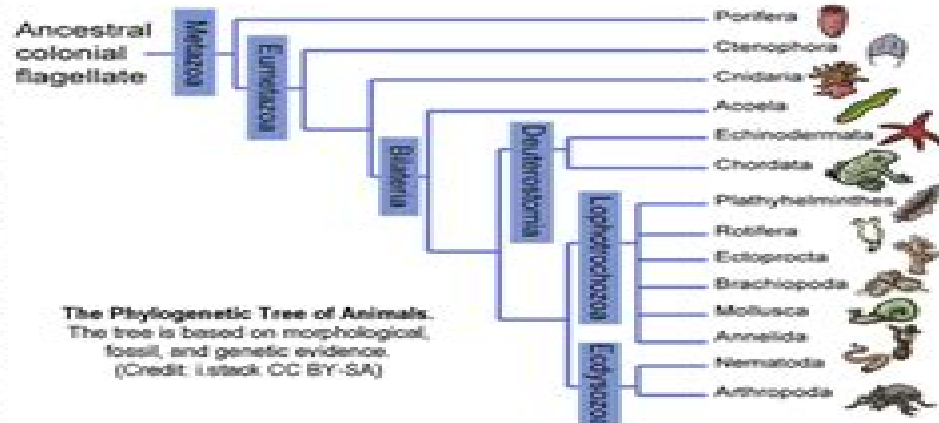


LEARNING OBJECTIVES

- Discuss the general classification of animals.
- Describe the key features and diversity of animals.
- Compare and contrast features in different animal groups highlighted.

Part1: [Introduction](#)

Animals are multicellular eukaryotic heterotrophs that **ingest** other organisms, to acquire organic molecules and energy. Most animals are **motile**, they typically reproduce sexually and their cells lack a cell wall. Unique features of this kingdom are the nervous tissue with electrical impulse conduction, muscle tissue and an advanced **body plan**. More than 90% of animals are invertebrates, i.e. they lack a backbone. Yet, when we think of animals, we have in mind a few vertebrates, like us, which represent a small portion of animals. Biologists recognize more than 35 phyla determined from major evolutionary changes in the body plan of animals. One of the first innovations is the evolution of tissues; animals with true tissues are called **eumetazoans**. Then **symmetry** separates animals with three possibilities: asymmetry, radial symmetry or bilateral symmetry. The presence of a true body cavity called the **coelom** is then used as a character to group or separate species, followed by the type of embryonic development and function of the gut. Animals will be either **protostomes** (mouth, 'stoma', forms first) or **deuterostomes** (mouth forms second and anus first). Finally, larvae characteristics, presence or absence of **segmentation** and a shedding outside (Ecdysozoa) are considered for proper classification.



The Phylogenetic Tree of Animals.
The tree is based on morphological, fossil, and genetic evidence.
(Credit: Listack CC BY-SA)

The Colonial Flagellate Hypothesis

In 1841, Felix Dujardin, a French biologist interested in protozoan evolution, recorded the morphological similarities of **choanoflagellates**, colonial protists, and sponge collar cells (choanocytes) and had already proposed the possibility of a close relationship. Recent molecular tools have allowed DNA analyses supporting a relationship between these protists and animals and, genome sequencing shows that, among living organisms, the choanoflagellates are most closely related to animals. Although there are numerous variations of the hypothesis and not all scientists adhere to it, the idea currently favored by zoologists believe that, more than six hundred million years ago, a group of colonial flagellated protists evolved the capacity for complex multicellularity and eventually spawned the full diversity of modern animals.



Origins of Animals. Cells of the protist choanoflagellate resemble sponge choanocyte cells. Beating of choanocyte flagella draws water through the sponge so that nutrients can be extracted and waste removed. (Credit: CNX OpenStax [CC BY 4.0](#)).

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B.A.S.I.C., 1964 *Lab Studies Animal Diversity* Cleveland P. Hickman, HICKMAN, JR. (CLEVELAND. KATS, LEE.), Lee B. Kats, Susan L. Keen, 2018-01-20 *Laboratory Studies for Animal Diversity* Cleveland P. Hickman, Lee B. Kats, Susan L. Keen, David J. Eisenhour, 2021 **Laboratory Studies in Animal Diversity** Cleveland P. Hickman, Lee B. Kats, William C. Ober, Claire W. Garrison, 2006-01-01 Laboratory Studies in Animal Diversity offers students hands on experience in learning about the diversity of life It provides students the opportunity to become acquainted with the principal groups of animals and to recognize the unique anatomical features that characterize each group as well as the patterns that link animal groups to each other **Laboratory Studies for Animal Diversity** Cleveland P Hickman, Jr., Emeritus, Lee Kats, 2014-10-17

Animal Diversity-Lab. Activities Manual Glencoe, 2004-08-01 *Animal Diversity with Laboratory Studies* Jr. Hickman, Cleveland, 2015-03-11 *Laboratory Studies in Integrated Principles of Zoology* Helen I'Anson, Cleveland P Hickman, Jr., Emeritus, Larry S Roberts, Allan Larson, 2019-10-08 **An Introduction to Animal Diversity** Walter Reinhardt Tschinkel, 1986 **An Introduction to Animal Diversity** Walter Reinhardt Tschinkel, 1980 **Animal Diversity** Hickman, 2014-12-16 *Animal Diversity* GLENCOE, McGraw-Hill Companies, Inc., 2005-06-30

The Top Books of the Year Animal Diversity Lab Usc Chordate Summary The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous engrossing novels enthralling the hearts of readers worldwide. Lets delve into the realm of bestselling books, exploring the fascinating narratives that have captivated audiences this year. The Must-Read : Colleen Hoover "It Ends with Us" This touching tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover masterfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can prevail. Animal Diversity Lab Usc Chordate Summary : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids absorbing storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Discover the Magic : Delia Owens "Where the Crawdads Sing" This captivating coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens weaves a tale of resilience, survival, and the transformative power of nature, captivating readers with its evocative prose and mesmerizing setting. These top-selling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of captivating stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a exceptional and gripping novel that will keep you guessing until the very end. The novel is a cautionary tale about the dangers of obsession and the power of evil.

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