

Branches of Biology

Biology, the study of life, has many aspects to it and many specializations within this broad field. Below is an alphabetical list of many of the branches of biology.

1. **Agriculture** - study of producing crops from the land, with an emphasis on practical applications
2. **Anatomy** - the study of the animal form, with an emphasis on human bodies
3. **Biochemistry** - the study of the chemical reactions required for life to exist and function, usually a focus on the cellular level
4. **Bioengineering** - the study of biology through the means of engineering with an emphasis on applied knowledge and especially related to biotechnology.
5. **Bioinformatics** - also classified as a branch of information technology (IT) it is the study, collection, and storage of genomic data
6. **Biomathematics or Mathematical Biology** - the study of biological processes through mathematics, with an emphasis on modeling.
7. **Biomechanics** - often considered a branch of medicine, the study of the mechanics of living beings, with an emphasis on applied use through artificial limbs, etc.
8. **Biophysics** - the study of biological processes through physics, by applying the theories and methods traditionally used in the physical sciences
9. **Biotechnology** - a new and sometimes controversial branch of biology that studies the manipulation of living matter, including genetic modification
10. **Botany** - the study of plants
11. **Cell Biology** - the study of the cell as a complete unit, and the molecular and chemical interactions that occur within a living cell.
12. **Conservation Biology** - the study of the preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife.
13. **Cryobiology** - the study of the effects of lower than normally preferred temperatures on living beings.
14. **Developmental Biology** - the study of the processes through which an organism develops, from zygote to full structure.
15. **Ecology** - the study of the ecosystem as a complete unit, with an emphasis on how species and groups of species interact with other living beings and non-living elements.
16. **Entomology** - the study of insects
17. **Environmental Biology** - the study of the natural world, as a whole or in a particular area, especially as affected by human activity
18. **Epidemiology** - a major component of public health research, it is the study of factors affecting the health and illness of populations
19. **Ethology** - the study of animal behavior.
20. **Evolution or Evolutionary Biology** - the study of the origin and descent of species over time.
21. **Genetics** - the study of genes and heredity.
22. **Herpetology** - the study of reptiles and amphibians.
23. **Histology** - The study of cells and tissue, a microscopic branch of anatomy.
24. **Ichthyology** - the study of fish
25. **Macrobiology** - the study of biology on the level of the macroscopic individual (plant, animal, or other living being) as a complete unit.
26. **Mammology** - the study of mammals
27. **Marine Biology** - the study of ocean ecosystems, plants, animals, and other living beings.
28. **Medicine** - the study of the human body in health and disease, with allopathic medicine focusing on alleviating or curing the body from states of disease
29. **Microbiology** - the study of microscopic organisms (microorganisms) and their interactions with other living things
30. **Molecular Biology** - the study of biology and biological functions at the molecular level, some cross over with biochemistry
31. **Mycology** - the study of fungi
32. **Neurobiology** - the study of the nervous system, including anatomy, physiology, even pathology
33. **Oceanography** - the study of the ocean, including ocean life, environment, geography, weather, and other aspects influencing the ocean. See Marine Biology
34. **Ornithology** - the study of birds
35. **Paleontology** - the study of fossils and sometimes geographic evidence of prehistoric life
36. **Pathobiology or pathology** - the study of diseases, and the causes, processes, nature, and development of disease
37. **Parasitology** - the study of parasites and parasitism
38. **Pharmacology** - the study and practical application of preparation, use, and effects of drugs and synthetic medicines.
39. **Physiology** - the study of the functioning of living organisms and the organs and parts of living organisms
40. **Phytopathology** - the study of plant diseases
41. **Pre-medicine** - a college major that covers the general aspects of biology as well as specific classes relevant to the study of medicine
42. **Virology** - the study of viruses and some other virus-like agents, usually considered part of microbiology or pathology
43. **Zoology** - the study of animals and animal life, including classification, physiology, development, and behavior (See also Entomology, Ethology, Herpetology, Ichthyology, Mammology, Ornithology)

Branches of biology dealing with animals:

- **Entomology** — The study of insects.
- **Ethology** — The study of animal behavior.
- **Herpetology** — The study of reptiles and amphibians.
- **Ichthyology** — The study of fish.
- **Mammalogy** — The study of mammals.
- **Ornithology** — The study of birds.
- **Primatology** — The study of primates.
- **Veterinary Science** — Animal medicine.
- **Zoology** — The study of animals.

Branches of biology relevant to the study of evolution:

- **Biogeography** — The study of the geographic distributions of living organisms.
- **Developmental Biology** — The study of the processes by which an organism changes from a zygote into a mature, multicellular individual.
- **Evolutionary Biology** — The branch of biology concerned with the modes of origin of new forms of life.
- **Ichnology** — The scientific study of the traces of animal activity, such as footprints, burrows, trails, and borings.
- **Morphology** — The branch of biology concerned with the form and structure of living organisms.
- **Paleontology** — The study of prehistoric life by means of fossils.

Environmental disciplines:

- **Astrobiology** — The branch of biology concerned with the effects of outer space on living organisms and with the search for extraterrestrial life.
- **Bioclimatology** — The study of the influence of climate on living organisms.
- **Chronobiology** — The study of time-dependent phenomena in living organisms.
- **Conservation Biology** — The branches of biology concerned with habitat preservation, the prevention of extinction, and conservation of biodiversity.
- **Cryobiology** — The study of the effects of low temperatures on living organisms.
- **Ecology** — The study of the interaction of organisms with each other and with their environment.
- **Geobiology** — A science that combines geology and biology to study the interactions of organisms with their environment.

Chemistry-based branches of biology:

- **Biochemistry** — The study of life at the chemical level, in particular the chemistry of proteins, carbohydrates, and nucleic acids.
- **Bioengineering** — A hybrid field of scientific research that uses the principles of biology and the techniques of engineering to produce useful products.
- **Molecular Biology** — The branch of biology that studies the formation, structure, and function of macromolecules found in living organisms, particularly nucleic acids and proteins.

Branches of biology dealing with microorganisms and microscopic structure:

- **Cytology** — The study of living cells, in particular, their physiological properties, structures, organelles, and method of division.
- **Histology** — The study of the microscopic structure of cellular tissue.
- **Microbiology** — The branch of biology that studies microorganisms and their effects on other organisms.
- **Protistology** — The study of protists.

Medical branches of biology:

- **Anatomy** — The study of the macroscopic structure of multicellular organisms.
- **Embryology** — The study of embryos.
- **Endocrinology** — The study of the endocrine glands.
- **Esthesiology** — The scientific study of sensation.
- **Genetics** — The study of heredity, especially the mechanisms of hereditary transmission and variation of inherited characteristics.
- **Immunology** & The study of the structure and function of the immune system, innate and acquired immunity, the bodily distinction of self from nonself, and laboratory techniques involving the interaction of antigens with specific antibodies.
- **Koniology** & The study of dust in relation to its effects on health.
- **Mastology** — The scientific study of the breasts.
- **Medicine** — The art and study of the prevention, cure, and alleviation of disease, and the care of the injured.
- **Neurology** — The branch of biology that studies the nervous system and its diseases.

- **Parasitology** — The study of parasites.
- **Pathology** — The study of the nature of disease and its causes, processes, development, and consequences.
- **Physiology** & The study of the physical function of living organisms.
- **Psychology** — The study of human behavior.
- **Splanchnology** & The study of the internal organs.
- **Surgery** — The branch of medicine dealing with operative procedures.
- **Toxicology** — The study of toxins.
- **Urology** — The study and treatment of disorders of the urogenital organs.
- **Virology** — The study of viruses.

Miscellaneous branches of biology:

- **Agriculture** — The science of crop and livestock production.
- **Bioinformatics** — The use of computers to manage and analyze biological data.
- **Biomathematics** — An interdisciplinary field of study that attempts to model biological processes using mathematical techniques.
- **Biophysics** — An interdisciplinary science that applies the theories and methods of physics to biological questions.
- **Botany** — The study of plants.
- **Marine Biology** — The study of marine organisms.
- **Mycology** — The study of fungi.

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