crypto-

See also: **crypto**

Contents

Translingual

Prefix

crypto-

1. Hidden

Derived terms

Translingual words prefixed with crypto-

English

Alternative forms

- crypt- (*prevocalic*)

Etymology

From Ancient Greek κρυπτός (*kruptós*, “hidden, secret”).

Pronunciation

- (*General American*) IPA(key): /kɹɪptoʊ-/

Prefix

crypto-

1. Hidden, invisible.

   crypto*crystalline*

2. Secret.

   crypto*fascist*

3. Cryptographic.

   crypto*function;* ***crypto****variable*

Derived terms

English words prefixed with crypto-

- crypto
- cryptoclastic
- cryptococcosis
- cryptococcus
- cryptogam
- crypto-Jew
- cryptomeria
- cryptorchism
- cryptosporidiosis
- cryptosporidium
- cryptozoite
- encryption

Translations

Translations

- Afrikaans: kripto-
- Basque: kripto-
- Catalan: cripto-
- Czech: krypto- (cs)
- Danish: krypto- (da)
- Dutch: crypto- (nl)
- Estonian: krüpto-
- Finnish: krypto-
- French: crypto- (fr)
- Galician: cripto-
- Georgian: კრიპტო- (ḳripṭo-)
- German: krypto- (de)
- Greek: κρυπτο- (el) (krypto-)
- Hungarian: kripto-
- Italian: cripto-
- Japanese: 隠れ (ja) (kakure)
- Kurdish: krîpto- (ku)
- Latvian: kripto-
- Lithuanian: kripto-
- Norwegian: krypto-
- Occitan: cripto-
- Polish: krypto-
- Portuguese: cripto-
- Romanian: cripto-
- Russian: крипто- (kripto-)
- Serbo-Croatian: крипто-
- Slovak: krypto-
- Slovene: kripto-
- Spanish: cripto-
- Swedish: krypto-
- Ukrainian: крипто- (krypto-)

French

Etymology

From Ancient Greek κρυπτός (*kruptós*, “hidden, secret”).

Prefix

crypto-

1. crypto-

Derived terms

French words prefixed with crypto-

- cryptage
- cryptanalyse
- cryptanalyste
- cryptand
- cryptant
- cryptarithmétique
- cryptate
- crypte
- cryptement
- crypténamine
- cryptenveloppe
- crypter
- cryptesthésie
- crypteur
- cryptie
- cryptique
- crypto-analyse
- cryptoanalyse
- cryptoanalyste
- cryptoanalytique
- crypto-anarchisme
- crypto-anarchiste
- cryptobatholitique
- cryptobiose
- cryptobium
- cryptobranche
- cryptocalvinisme
- cryptocalviniste
- cryptocentre
- cryptocéphale
- cryptocérate
- cryptochimère
- cryptochrome
- cryptoclimat
- cryptoclimatologie
- cryptoclimatologique
- cryptococcose
- crypto-communisme
- cryptocommunisme
- cryptocommuniste
- crypto-communiste
- cryptocorpocollinite
- cryptocotylédone
- cryptocristal
- cryptocristallin
- cryptocyste
- cryptodate
- cryptodère
- cryptodicyclique
- cryptodire
- cryptodiversité
- cryptodroite
- cryptoefflorescence
- crypto-efflorescence
- crypto-empreinte
- crypto-endomitose
- crypto-fascisme
- crypto-fasciste
- cryptofaune
- cryptogame
- cryptogamie
- cryptogamique
- cryptogamiste
- cryptogélocollinite
- cryptogénétique
- cryptogénique
- cryptogonomérie
- cryptogramme
- cryptographe
- cryptographie
- cryptographier
- cryptographique
- cryptographiquement
- cryptohalite
- crypto-haplomitose
- cryptolapiés
- cryptolite
- cryptologie
- cryptologique
- cryptologue
- cryptoloppe
- cryptomacéral
- cryptomane
- cryptomaniaque
- cryptomanie
- cryptoménorrhée
- cryptomère
- cryptomérie
- cryptomérique
- cryptomètre
- cryptomitose
- cryptomnésie
- cryptomonade
- cryptonyme
- cryptopartie
- cryptopériode
- cryptoperthite
- cryptophage
- cryptophagidé
- cryptophone
- cryptophonie
- cryptophonique
- cryptophyte
- cryptopine
- cryptopode
- cryptopolyploïde
- cryptopolyploïdie
- cryptoportique
- crypto-portique
- cryptoprocte
- crypto-protectionnisme
- cryptoprotectionnisme
- cryptoprotectionniste
- cryptoradariste
- cryptorchide
- cryptorchidie
- cryptorchidisme
- cryptorhynque
- cryptorithme
- cryptosporidie
- cryptosporidiose
- cryptostome
- cryptosystème

- cryptotélégraphie
- cryptotélégraphique
- cryptotélinite
- cryptoténie
- cryptotoxine
- cryptovitrodétrinite
- cryptoxanthène
- cryptoxanthine
- cryptozoïte
- cryptozoologie
- cryptozoologique
- cryptozoologiste
- décrypter

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Zoology

Zoology (/zoʊˈɒlədʒi, zu-/)[note 1] is the branch of biology that studies the animal kingdom, including the structure, embryology, evolution, classification, habits, and distribution of all animals, both living and extinct, and how they interact with their ecosystems. The term is derived from Ancient Greek ζῷον, *zōion*, i.e. "animal" and λόγος, *logos*, i.e. "knowledge, study".[1]

Contents

History

Ancient History to Darwin

The history of zoology traces the study of the animal kingdom from ancient to modern times. Although the concept of *zoology* as a single coherent field arose much later, the zoological sciences emerged from natural history reaching back to the biological works of Aristotle and Galen in the ancient Greco-Roman world. This ancient work was further developed in the Middle Ages by Muslim physicians and scholars such as Albertus Magnus.[2][3][4] During the Renaissance and early modern period, zoological thought was revolutionized in Europe by a renewed interest in empiricism and the discovery of many novel organisms. Prominent in this movement were Vesalius and William Harvey, who used experimentation and careful observation in physiology, and naturalists such as Carl Linnaeus, Jean-Baptiste Lamarck, and Buffon who began to classify the diversity of life and the fossil record, as well as the development and behavior of organisms. Microscopy revealed the previously unknown world of microorganisms, laying the groundwork for cell theory.[5] The growing importance of natural theology, partly a response to the rise of mechanical philosophy, encouraged the growth of natural history (although it entrenched the argument from design).

Over the 18th, 19th, and 20th centuries, zoology became an increasingly professional scientific discipline. Explorer-naturalists such as Alexander von Humboldt investigated the interaction between organisms and their environment, and the ways this relationship depends on geography, laying the foundations for biogeography, ecology and ethology. Naturalists began to reject essentialism and consider the importance of extinction and the mutability of species. Cell theory provided a new perspective on the fundamental basis of life.[6][7]

Conrad Gesner (1516–1565). His *Historiae animalium* is considered the beginning of modern zoology.

Post-Darwin

These developments, as well as the results from embryology and paleontology, were synthesized in Charles Darwin's theory of evolution by natural selection. In 1859, Darwin placed the theory of organic evolution on a new footing, by his discovery of a process by which organic evolution can occur, and provided observational evidence that it had done so.[8]

Darwin gave a new direction to morphology and physiology, by uniting them in a common biological theory: the theory of organic evolution. The result was a reconstruction of the classification of animals upon a genealogical basis, fresh investigation of the development of animals, and early attempts to determine their genetic relationships. The end of the 19th century saw the fall of spontaneous generation and the rise of the germ theory of disease, though the mechanism of inheritance remained a mystery. In the early 20th century, the rediscovery of Mendel's work led to the rapid development of genetics, and by the 1930s the combination of population genetics and natural selection in the modern synthesis created evolutionary biology.[9]

Research

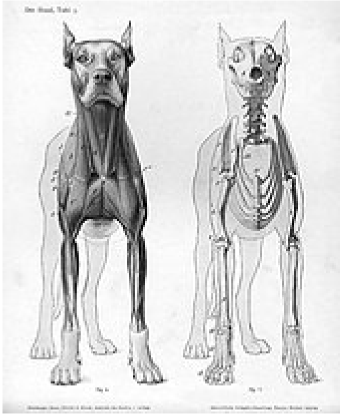
Structural

Cell biology studies the structural and physiological properties of cells, including their behavior, interactions, and environment. This is done on both the microscopic and molecular levels, for single-celled organisms such as bacteria as well as the specialized cells in multicellular organisms such as humans. Understanding the structure and function of cells is fundamental to all of the biological sciences. The similarities and differences between cell types are particularly relevant to molecular biology.

Anatomy considers the forms of macroscopic structures such as organs and organ systems.[10] It focuses on how organs and organ systems work together in the bodies of humans and animals, in addition to how they work independently. Anatomy and cell biology are two studies that are closely related, and can be categorized under "structural" studies.

Physiological

Physiology studies the mechanical, physical, and biochemical processes of living organisms by attempting to understand how all of the structures function as a whole. The theme of "structure to function" is central to biology. Physiological studies have traditionally been divided into plant physiology and animal physiology, but some principles of physiology are universal, no matter what particular organism is being studied. For example, what is learned about the physiology of yeast cells can also apply to human cells. The field of animal physiology extends the tools and methods of human physiology to non-human species. Physiology studies how for example nervous, immune, endocrine, respiratory, and circulatory systems, function and interact.



Animal anatomical engraving from *Handbuch der Anatomie der Tiere für Künstler*.

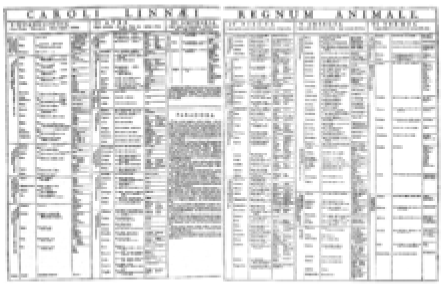
Evolutionary

Evolutionary research is concerned with the origin and descent of species, as well as their change over time, and includes scientists from many taxonomically oriented disciplines. For example, it generally involves scientists who have special training in particular organisms such as mammalogy, ornithology, herpetology, or entomology, but use those organisms as systems to answer general questions about evolution.

Evolutionary biology is partly based on paleontology, which uses the fossil record to answer questions about the mode and tempo of evolution,[11] and partly on the developments in areas such as population genetics[12] and evolutionary theory. Following the development of DNA fingerprinting techniques in the late 20th century, the application of these techniques in zoology has increased the understanding of animal populations.[13] In the 1980s, developmental biology re-entered evolutionary biology from its initial exclusion from the modern synthesis through the study of evolutionary developmental biology.[14] Related fields often considered part of evolutionary biology are phylogenetics, systematics, and taxonomy.

Classification

Scientific classification in zoology, is a method by which zoologists group and categorize organisms by biological type, such as genus or species. Biological classification is a form of scientific taxonomy. Modern biological classification has its root in the work of Carl Linnaeus, who grouped species according to shared physical characteristics. These groupings have since been revised to improve consistency with the Darwinian principle of common descent. Molecular phylogenetics, which uses DNA sequences as data, has driven many recent revisions and is likely to continue to do so. Biological classification belongs to the science of zoological systematics.



Linnaeus's table of the animal kingdom from the first edition of *Systema Naturae* (1735).

Many scientists now consider the five-kingdom system outdated. Modern alternative classification systems generally start with the three-domain system: Archaea (originally Archaebacteria); Bacteria (originally Eubacteria); Eukaryota (including protists, fungi, plants, and animals)[15] These domains reflect whether the cells have nuclei or not, as well as differences in the chemical composition of the cell exteriors.[15]

Further, each kingdom is broken down recursively until each species is separately classified. The order is: Domain; kingdom; phylum; class; order; family; genus; species. The scientific name of an organism is generated from its genus and species. For example, humans are listed as *Homo sapiens*. *Homo* is the genus, and *sapiens* the specific epithet, both of them combined make up the species name. When writing the scientific name of an organism, it is proper to capitalize the first letter in the genus and put all of the specific epithet in lowercase. Additionally, the entire term may be italicized or underlined.[16]

The dominant classification system is called the Linnaean taxonomy. It includes ranks and binomial nomenclature. The classification, taxonomy, and nomenclature of zoological organisms is administered by the International Code of Zoological Nomenclature. A merging draft, BioCode, was published in 1997 in an attempt to standardize nomenclature, but has yet to be formally adopted.[17]

Ethology

Ethology is the scientific and objective study of animal behavior under natural conditions,[18] as opposed to behaviourism, which focuses on behavioral response studies in a laboratory setting. Ethologists have been particularly concerned with the evolution of behavior and the understanding of behavior in terms of the theory of natural selection. In one sense, the first modern ethologist was Charles Darwin, whose book, *The Expression of the Emotions in Man and Animals,* influenced many future ethologists.[19]

Kelp gull chicks peck at red spot on mother's beak to stimulate the regurgitating reflex.

Biogeography

Biogeography studies the spatial distribution of organisms on the Earth,[20] focusing on topics like plate tectonics, climate change, dispersal and migration, and cladistics. The creation of this study is widely accredited to Alfred Russel Wallace, a British biologist who had some of his work jointly published with Charles Darwin.

Branches of zoology

Although the study of animal life is ancient, its scientific incarnation is relatively modern. This mirrors the transition from natural history to biology at the start of the 19th century. Since Hunter and Cuvier, comparative anatomical study has been associated with morphography, shaping the modern areas of zoological investigation: anatomy, physiology, histology, embryology, teratology and ethology.[21] Modern zoology first arose in German and British universities. In Britain, Thomas Henry Huxley was a prominent figure. His ideas were centered on the morphology of animals. Many consider him the greatest comparative anatomist of the latter half of the 19th century. Similar to Hunter, his courses were composed of lectures and laboratory practical classes in contrast to the previous format of lectures only.

Gradually zoology expanded beyond Huxley's comparative anatomy to include the following sub-disciplines:

- Zoography, also known as *descriptive zoology*, is the applied science of describing animals and their habitats
- Comparative anatomy studies the structure of animals
- Animal physiology
- Behavioral ecology

- Ethology studies animal behavior
- Invertebrate zoology
- Vertebrate zoology
- Soil zoology
- The various taxonomically oriented disciplines such as mammalogy, biological anthropology, herpetology, ornithology, ichthyology, and entomology identify and classify species and study the structures and mechanisms specific to those groups.

Related fields:

- Evolutionary biology: Development of both animals and plants is considered in the articles on evolution, population genetics, heredity, variation, Mendelism, and reproduction.
- Molecular biology studies the common genetic and developmental mechanisms of animals and plants
- Palaeontology: Study of fossils of the life forms that are now extinct.
- Systematics, cladistics, phylogenetics, phylogeography, biogeography, and taxonomy classify and group species via common descent and regional associations.

See also

- Animal science, the biology of domesticated animals
- Astrobiology
- List of zoologists
- Outline of zoology
- Timeline of zoology
- Zoological distribution
- Mammalogy

Notes

1. The pronunciation of zoology as /zuˈɒlədʒi/ is typically regarded as nonstandard, though is not uncommon.

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External links

- Books on Zoology (http://www.gutenberg.org/browse/loccs/ql) at Project Gutenberg
- *Online Dictionary of Invertebrate Zoology (http://digitalcommons.unl.edu/onlinedictinvertzoology/)*

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