

Developmental Biology

Gilbert

The field is composed of multiple core evolutionary concepts. One is deep homology, the finding that dissimilar... 57d4f28a59 The investigational range of current research has widened to encompass the genetic architecture of adaptation, molecular evolution, and the different forces that contribute to evolution, such as sexual selection, genetic drift, and biogeography. The newer field of evolutionary developmental biology ("evo-devo") investigates how embryogenesis is controlled... 57d4f28a59 Ontogeny is the developmental history of an organism within its own lifetime, as distinct from phylogeny, which refers to the evolutionary history of a species. Another way to think of ontogeny is that it is the process of an organism going through all of the developmental stages over its lifetime. The developmental history includes all the developmental events that occur during the existence of an organism, beginning with the changes in the egg at the time of fertilization and events from the time of birth... 57d4f28a59 More factors causing developmental toxicity are radiation, infections (e.g. rubella), maternal metabolic imbalances (e.g. alcoholism, diabetes, folic acid deficiency), drugs (e.g. anticancer drugs, tetracyclines, many hormones, thalidomide), and toxic environmental chemicals (e.g. mercury, lead, dioxins, PBDEs, HBCD, tobacco smoke). In addition, it... 57d4f28a59

Heterochrony This leads to changes in the size, shape, characteristics and even presence of certain organs and features. e. evolutionary developmental biology, heterochrony is any genetically controlled difference in the timing, rate, or duration of a developmental process in In evolutionary developmental biology, heterochrony is any genetically controlled difference in the timing, rate, or duration of a developmental process in an organism compared to its ancestors or other organisms. It is contrasted with heterotopy, a change in spatial positioning of some process in the embryo, which can also create morphological innovation. variation of a descendant species with respect to an ancestral species. Heterochrony can be divided into intraspecific heterochrony, variation within a species, and interspecific heterochrony, phylogenetic variation, i 57d4f28a59

Developmental biology Developmental biology also encompasses the biology of regeneration Developmental biology is the study of the process by which animals and plants grow and develop. Developmental biology also encompasses the biology of regeneration, asexual reproduction, metamorphosis, and the growth and differentiation of stem cells in the adult organism. Developmental biology is the study of the process by which animals and plants grow and develop 57d4f28a59

The spatial and temporal extents of such a region of embryonic stem cells are dynamic, and within it is a collection of interacting cells out of which... 57d4f28a59

Developmental toxicity Developmental biology. It is the structural or functional alteration, reversible or irreversible, which interferes with homeostasis, normal growth, differentiation, development or behavior. Sunderland, MA: Sinauer Associates, Inc. CRC Developmental toxicity is any developmental malformation that is caused by the toxicity of a chemical or pathogen. 2023-04-19. Developmental Toxicology. Kimmel CA (1994-06-30). Gilbert, Scott (2014). Developmental toxicity is caused by environmental factors, things like drugs, alcohol, diet, toxic chemicals, and physical factors that alter the developmental process 57d4f28a59

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Ecological evolutionary developmental biology evolutionary developmental biology (eco-evo-devo) is a field of biology combining ecology, developmental biology and evolutionary biology to examine their Ecological evolutionary developmental biology (eco-evo-devo) is a field of biology combining ecology, developmental biology and evolutionary biology to examine their relationship. The effects of eco-evo-devo can be a result of developmental plasticity, the result of symbiotic relationships or epigenetically inherited. The overlap between developmental plasticity and symbioses rooted in evolutionary concepts defines ecological evolutionary developmental biology. Host-microorganisms interactions during development characterize symbiotic relationships, whilst the spectrum of phenotypes rooted in canalization with response to environmental cues highlights plasticity. Developmental plasticity that is controlled by environmental temperature. The concept is closely tied to multiple biological mechanisms 57d4f28a59

Evolutionary biology evolutionary developmental biology ("evo-devo") investigates how embryogenesis is controlled, thus yielding a wider synthesis that integrates developmental biology Evolutionary biology is the subfield of biology that studies the evolutionary processes such as natural selection, common descent, and speciation that produced the diversity of life on Earth. In the 1930s, the discipline of evolutionary biology emerged through what Julian Huxley called the modern synthesis of understanding, from previously unrelated fields of biological research, such as genetics and ecology, systematics, and paleontology 57d4f28a59

Morphogenetic field In the developmental biology of the early twentieth century, a morphogenetic field is a research hypothesis and a discrete region of cells in an embryo In the developmental biology of the early twentieth century, a morphogenetic field is a research hypothesis and a discrete region of cells in an embryo 57d4f28a59

Ontogeny Gilbert, Scott F.). PMID 32119281. The term can also be used to refer to the study of the entirety of an organism's lifespan. g. "An Introduction to Early Developmental Processes". , moral development), usually from the time of fertilization of the egg to adult. Sinauer Associates Ontogeny (also ontogenesis) is the origination and development of an organism (both physical and psychological, e. Developmental Biology (6th ed. (2000). Publishing 57d4f28a59

The field grew from 19th-century beginnings, where embryology faced a mystery: zoologists did not know how embryonic development was controlled at the molecular level. Charles Darwin noted that having similar embryos implied common ancestry, but little progress was made until the 1970s. Then, recombinant DNA technology at last brought embryology together with molecular genetics. A key early discovery was that of homeotic genes that regulate development in a wide range of eukaryotes. 57d4f28a59

Glossary of developmental biology g terms relating to the reproduction and development of insects are listed in Glossary of entomology, and those relating to plants are listed in Glossary of botany. This glossary of developmental biology is a list of definitions of terms and concepts commonly used in the study of developmental biology and related disciplines This glossary of developmental biology is a list of definitions of terms and concepts commonly used in the study of developmental biology and related disciplines in biology,

including embryology and reproductive biology, primarily as they pertain to vertebrate animals and particularly to humans and other mammals. The developmental biology of invertebrates, plants, fungi, and other organisms is treated in other articles; e 57d4f28a59

These changes all affect the start, end, rate or time span of a particular developmental process. The concept of... 57d4f28a59

Scott F. Gilbert Scott Frederick Gilbert (born 1949) is an American evolutionary developmental biologist and historian of biology. Scott Gilbert is the Howard A. Schneiderman Scott Frederick Gilbert (born 1949) is an American evolutionary developmental biologist and historian of biology 57d4f28a59

The term morphogenetic field conceptualizes the scientific experimental finding that an embryonic group of cells, for example a forelimb bud, could be transplanted to another part of the embryo and in ongoing individual development still give rise to a forelimb at an odd place of the organism. And it describes a group of embryonic cells able to respond to localized biochemical signals – called field – leading to the genesis of morphological structures: tissues, organs, or parts of an organism. 57d4f28a59

Evolutionary developmental biology Evolutionary developmental biology, informally known as evo-devo, is a field of biological research that compares the developmental processes of different Evolutionary developmental biology, informally known as evo-devo, is a field of biological research that compares the developmental processes of different organisms to infer how developmental processes evolved 57d4f28a59

This glossary is intended as introductory material for novices; for more specific and technical detail, see the article corresponding to each term. Additional terms relevant to vertebrate reproduction and development... 57d4f28a59

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