

# Differentiate Between Convergent And Divergent Evolution

Antennapedia &quot;Divergent role of the Hox gene  
Antennapedia in spiders is responsible for the convergent  
evolution of abdominal limb repression&quot; Antennapedia  
(abbreviated Antp) is a Hox gene first discovered in *Drosophila*  
which controls the formation of legs during development. Prpic  
NM (March 2012). Loss-of-function mutations in the regulatory  
region of this gene result in the development of the second leg  
pair into ectopic antennae. By contrast gain-of-function alleles  
convert antennae into ectopic legs 599cf33c7a

In the laboratory, some species are virulent even when artificially injected into the insect host, whereas others species need the nematode to affect the insect. 599cf33c7a At the third-stage of development, the infective juvenile (IJs) invade the hemocoel of susceptible insect hosts. 599cf33c7a Intraplate earthquakes are often confused with interplate earthquakes, but are fundamentally different in origin, occurring within a single plate rather than between two tectonic plates on a plate boundary. The specifics of the mechanics... 599cf33c7a

Echinopsis The name derives from echinos hedgehog or sea urchin, and opsis appearance, a reference to these plants' dense coverings of spines. This was shown again in 2019. As of November 2025, Plants of the World Online used a broad circumscription of the genus, resulting in about 80 accepted species, ranging from large and treelike types to small globose cacti. It was concluded that previous taxonomic confusion was due to convergent evolution: species Echinopsis is a genus of

cacti native to South America, sometimes known as hedgehog cactus, sea-urchin cactus or Easter lily cactus. several divergent lineages 599cf33c7a

Reticulate evolution Reticulate evolution indicates the lack of independence between two evolutionary lineages. processes can potentially be convergent and divergent at the same time 599cf33c7a

The bacteria are released in the insect hemocoel, where they overcome the insect's defense systems... 599cf33c7a

Xenorhabdus Entomopathogenic Bacterial Endosymbionts  
Xenorhabdus and Photorhabdus: Convergent Lifestyles from Divergent Genomes", which is licensed in a way that permits Xenorhabdus is a genus of motile, gram-negative bacteria from the family of the Morganellaceae. All the species of the genus are only known to live in symbiosis with soil

entomopathogenic nematodes from the genus *Steinernema*  
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== Lifecycle == 599cf33c7a In biology, evolution is change in the heritable allele frequencies of biological organisms over generations due to natural selection, mutation, gene flow, and genetic drift. Also known as descent with modification. Over time these evolutionary processes lead to formation of new species (speciation), changes within lineages (anagenesis), and loss of species (extinction). "Evolution" is also another name for evolutionary biology, the subfield of biology concerned with studying evolutionary processes that produced the diversity of life on Earth. 599cf33c7a The tripartite *Xenorhabdus*-nematode-insect interaction represents a model system in which both mutualistic and pathogenic processes can be studied in a single bacterial species. 599cf33c7a

Interplate earthquake e. rift zone or normal faulting), and

oblique, with horizontal and lateral components at the boundary. e. relative to each other. If one plate is trying to move past the other, they will be locked until sufficient stress builds up to cause the plates to slip relative to each other. Convergent boundary: Where one plate moves towards, and potentially subducts An interplate earthquake occurs at the boundary between two tectonic plates. Interplate earthquakes associated at a subduction boundary are called megathrust earthquakes, which include most of the Earth's largest earthquakes. subduction or thrust/reverse faulting) or a divergent boundary (i. Relative plate motion can be lateral as along a transform fault boundary, vertical if along a convergent boundary (i. Divergent boundary: Where two boundaries move apart. Earthquakes of this type account for more than 90 percent of the total seismic energy released around the world. The slipping process creates an earthquake with relative displacement on either side of the fault, resulting in seismic waves which travel through the Earth and along the Earth's surface 599cf33c7a

The evolutionary history of snake venom is a matter of debate. Historically, snake venom was believed to have evolved once, at the base of the Caenophidia, or derived snakes. Molecular studies published beginning in 2006 suggested that venom originated just once among a putative clade of reptiles, called Toxicofera, approximately 170 million years ago. Under this hypothesis, the original toxicoferan venom was a very simple set of proteins that were assembled in a pair of glands. Subsequently, this set of proteins diversified in the various lineages of toxicoferans, including Serpentes, Anguimorpha, and Iguania: several snake lineages also lost the ability to produce venom. The Toxicoferan hypothesis was challenged by studies in the mid... 599cf33c7a

Evolution of the wolf This finding indicates that the wolf and coyote lineages. similarity between dire wolves and gray wolves was concluded to be due to convergent evolution 599cf33c7a

== Taxonomy == 599cf33c7a

Outline of evolution other's evolution Concerted evolution  
Convergent evolution - Independent evolution of similar features  
List of examples of convergent evolution - Examples The  
following outline is provided as an overview of and topical guide  
to evolution: 599cf33c7a

Evolution of snake venom In snakes, venom has evolved to kill or subdue prey, as well as to perform other diet-related functions. January 2022). While snakes occasionally use their venom in self defense, this is not believed to have had a strong effect on venom evolution. The evolution of venom is thought to be responsible for the enormous expansion of snakes across the globe. "Dynamic genetic differentiation drives the widespread structural and functional convergent evolution of snake venom proteinaceous toxins" Venom in snakes and some lizards is a form of saliva that has been modified into

venom over its evolutionary history 599cf33c7a

This is just one illustration of the tendency of organisms to exhibit variations on a theme: modulated repetition. Legs and antennae are related to one another as much as molars are to incisors, fingers are to toes, and arms are to legs. 599cf33c7a Studies in the 1970s and 1980s resulted in several formerly separate genera being absorbed into *Echinopsis*. When very broadly circumscribed, *Echinopsis sensu lato* included over 100 species. Some genera have been absorbed and then accepted again. For example, the genus name *Trichocereus* was given to a number of columnar cacti in 1909 by Vincenzo Riccobono. The genus was subsumed into *Echinopsis* in 1974 by Friedrich, along with *Lobivia*. In 2011, it was argued that *Trichocereus* was distinct from *Echinopsis*, and a 2012 genetic and morphological study by Albesiano found *Trichocereus* to be monophyletic... 599cf33c7a Antp also refers to a gene complex (ANT-C) in *Drosophila* ending with the Antp gene. It is responsible for

formation and differentiation of the thoracic and head segments of the fly's body. They are known for their big size, length of tube, and beauty of their flowers, borne upon generally small and dumpy stems.

Evolution Philosophical Transactions. "The role of mutation bias in adaptive molecular evolution: insights from convergent changes in protein function". 2019)

== Origin of Antennapedia-class homeobox gene ==  
In the non-infestant-stage nematode living in the soil, *Xenorhabdus* spp. are carried in a specialized region of the intestine, termed the receptacle. The origin of the ancestor homeobox gene is an important aspect of the evolution of the Antp-class Hox genes. Early evolution of the Antp-class genes may have predated the divergence of cnidarians. However, the role that Antp plays in the spatial body development of cnidarians remains unclear. A widely accepted

theory is that the ancestor Hox cluster containing three genes arose... 599cf33c7a

Erosion and tectonics Tectonic processes typically occur at plate boundaries which are one of three types: convergent boundaries. structure and the ways in which it changes over time 599cf33c7a

However, it has been demonstrated that the nematode can't establish within its insect host without the bacteria. 599cf33c7a Although no free-living forms of *Xenorhabdus* have ever been isolated outside of the nematode host, the benefits for the bacteria are still unknown. 599cf33c7a

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