

Evo-devo and an expanding evolutionary synthesis: a genetic theory of morphological evolution.

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Evo-Devo and an Expanding Evolutionary Synthesis: A Genetic Theory of Morphological Evolution

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Biologists have long sought to understand which genes and what kinds of changes in their sequences are responsible for the evolution of morphological diversity. Here, I outline eight principles derived from molecular and evolutionary developmental biology and review recent studies of species divergence that have led to a genetic theory of morphological evolution, which states that (1) form evolves largely by altering the expression of functionally conserved proteins, and (2) such changes largely occur through mutations in the *cis*-regulatory sequences of pleiotropic developmental regulatory loci and of the target genes within the vast networks they control.



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