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Evo Devo

Unter Evo Devo firmieren die neueren Theorien über den Zusammenhang von Entwicklung und Evolution. Edward Ziff und Israel Rosenfield stellen in der Ausgabe der New York Review of Books vom 11. Mai 2006 auf äußerst anregende und leicht verständliche Weise drei neuere Arbeiten zu diesem Thema ausführlich vor.Angesichts der Tatsache, dass Menschen über nicht viel mehr Gene als Spulwürmer verfügen, stellt sich die Frage, welche Prozesse für die Entwicklung organismischer Komplexität eigentlich verantwortlich sind. Die Antwort scheint im Interaktionsverhalten der Gene zu liegen bzw. in der Generierung bestimmter Muster der Regulation genetischer Aktivitäten. Eine enttäuschende Nachricht für alle, die immer noch auf der Suche nach den ultimativen Genen für Schizophrenie, Legasthenie und Homosexualität sind. Auszüge aus dem Text:
"Evolution, then, depends on new patterns of gene regulation rather than the creation of new genes. Indeed, it is not meaningful to talk about the function of a single gene in isolation. Genes only function in the context of the organism. There is no single gene for an eye, a limb, or language, much less such tendencies as homosexuality. Genes function in relation to other genes and intercellular signals, much as words vary in meaning and function depending on the way they are used in sentences and the contexts in which they are spoken. It is the combinations of gene activity, which may be different in different species, that create the form of the organism. "We can begin to think of individual groups—insects, spiders, and centipedes, or birds, mammals, and reptiles, as well as their long extinct fossil relatives—not so much in terms of their uniqueness, but as variations on a common theme," Carroll writes. And surprising, too, is the evidence that all animals, from worms to humans, probably descend from one or a few primitive bacteria. Darwin would have been pleased to discover molecular evidence for his "common descent."…While Carroll argues—a claim that is at the heart of Evo Devo—that embryological development gives us the deepest clues to the mechanisms of evolution, Kirschner and Gerhart move beyond embryology to show that metabolic and physiological processes are also critical to evolutionary change. Their approach, which they call the theory of "facilitated variation," attempts to show how the regulation of genes inside the embryo, as described by Carroll, is part of a larger set of processes that allow organisms to experiment with evolution in a tightly controlled way. According to this theory, the mutations, or variations, needed to drive evolutionary change can occur with little disruption either to the basic organization of an organism or to the core processes that make its cells function.We now have a far deeper understanding of evolution than even a decade ago. And although our knowledge is still incomplete, our new understanding, as the books under review admirably show, has opened the way toward a comprehensive account of evolution and has supplied solid answers to the critics of evolutionary theory."Der Link zum vollständigen Artikel

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