The Philosophy of Molecular and Developmental Biology

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Abstract

Philosophical discussion of molecular and developmental biology began in the late 1960s with the use of genetics as a test case for models of theory reduction. With this exception, the theory of natural selection remained the main focus of philosophy of biology until the late 1970s. It was controversies in evolutionary theory over punctuated equilibrium and adaptationism that first led philosophers to examine the concept of developmental constraint. Developmental biology also gained in prominence in the 1980s as part of a broader interest in the new sciences of self-organization and complexity. The current literature in the philosophy of molecular and developmental biology has grown out of these earlier discussions under the influence of twenty years of rapid and exciting growth of empirical knowledge. Philosophers have examined the concepts of genetic information and genetic program, competing definitions of the gene itself and competing accounts of the role of the gene as a developmental cause. The debate over the relationship between development and evolution has been enriched by theories and results from the new field of 'evolutionary developmental biology'. Future developments seem likely to include an exchange of ideas with the philosophy of psychology, where debates over the concept of innateness have created an interest in genetics and development.

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