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# Parental Effects: Development, Heredity, and Evolution

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## Abstract

Parental effects mean different things to different biologists – from developmental induction of novel phenotypic variation to an evolved adaptation, and from epigenetic transference of essential developmental resources to a stage in ecological inheritance. This diversity of perspectives comes from the fact that parental effects combine aspects of development, heredity, and selection. This makes parental effects research central for evaluating the need for an extended evolutionary synthesis. Here I outline the challenges of parental effects for standard evolutionary theory and show how these are conceptually related to similar discussions in the literature on developmental plasticity, non-genetic inheritance and niche construction. This analysis clarifies the evolutionary implications of parental effects and suggests the need to rephrase heredity and selection in developmental terms.

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