



## Invertebrate taxonomy and evolutionary developmental biology\*

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\*In: Zhang, Z.-Q. & Shear, W.A. (Eds) (2007) Linnaeus Tercentenary: Progress in Invertebrate Taxonomy. *Zootaxa*, 1668, 1–766.

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### Abstract

Evolutionary developmental biology (evo-devo) is a new research area where the traditions of evolutionary biology and developmental biology merge together. As in the past there has been a fruitful two-way exchange between evolutionary biology and taxonomy, and also between developmental biology and taxonomy, now the way is open for two-way exchanges between taxonomy and evolutionary developmental biology.

**Key words:** Evo-devo, evolvability, heterochrony, model species, taxonomy

### Introduction

Evolutionary developmental biology (henceforth, evo-devo, as it is usually called today) is a young, lively biological discipline. Evo-devo has its twin roots in two disciplines—evolutionary biology and developmental biology—which until recently have been progressing along independent routes. Comprehensive overviews of its origins, aims and methods are provided by Hall (1998) and Hall and Olson (2003); other useful book-size accounts, more selective in their approach, are Wilkins (2001), Minelli (2003), Carroll et al. (2005), Minelli & Fusco (2008).

As one should expect for a new, or newly re-established field of study, evo-devo is still struggling to define its own identity; the internal debate emerges clearly, for example, from the excellent overviews of Arthur (2002) and Müller (2008).

To some researchers (e.g., Carroll et al., 2005), this discipline is in essence comparative developmental genetics, that is, the comparative study of the spatial and temporal expression patterns of genes with major effects in controlling the processes leading to the establishment of body architecture (antero-posterior and dorso-ventral polarity, segmentation, appendages, and so on) in an adequate sample of model species. But