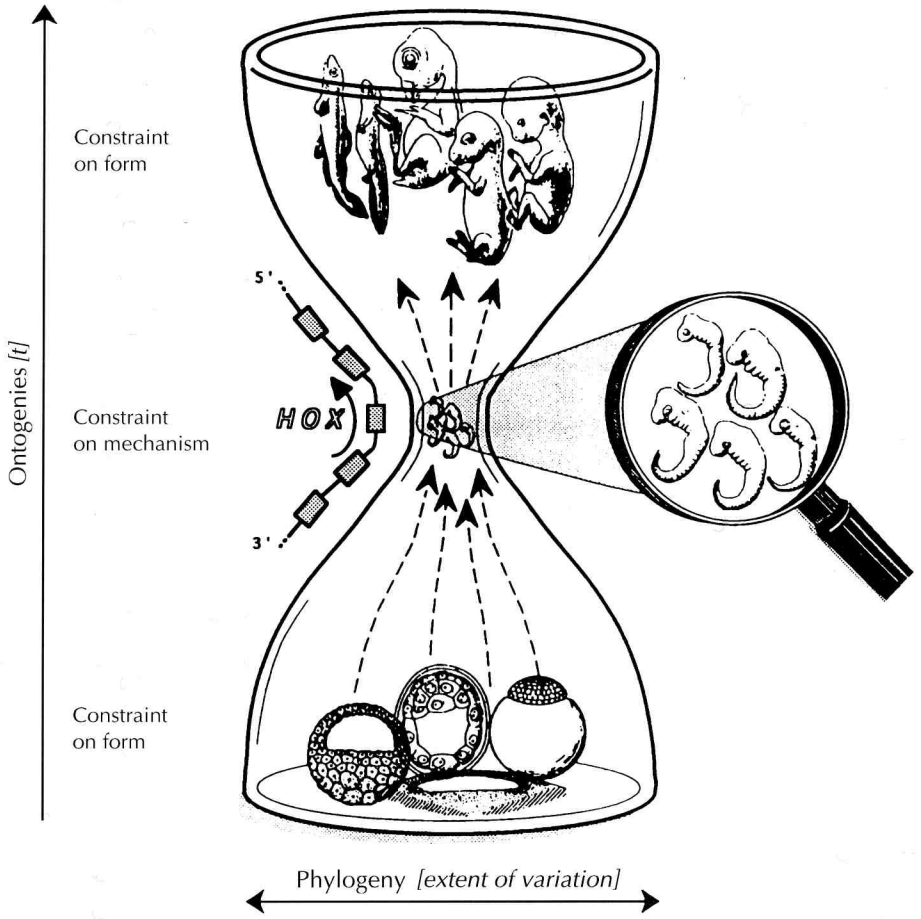

Figure 10.6. The phylotypic egg timer. This scheme illustrates the convergence of vertebrate developmental strategies toward the phylotypic progression, the acquisition of a stable *Bauplan*. Such a mechanism results in the progressive temporal activation of *Hox* genes along the axis of the chromosome and the anterior–posterior axis of the body. This coincides with the period of most active cell proliferation. Reprinted from *Development* (Duboule, Supplement 1994), Company of Biologists Ltd.

Hox genes in chordates

The number of *Hox* genes reflects the number and complexity of developmental pathways that can be controlled. This is clearly shown by the number of different cell types present in different groups of organisms. *Drosophila,* with eight genes in the homeobox cluster, has approximately fifty cell types, whereas jawed vertebrates, with thirty-eight *Hox* genes, have more than a hundred (Bonner 1988). All jawed vertebrates that have been studied to date have four clusters of *Hox* genes, although only mice and humans have been exhaustively mapped (Ruddle et al. 1994a). Not all craniates have been studied in detail, but *Hox A, B,* and *D* clusters contain the same set of genes in birds, mammals, and teleost fish, and in the same linear sequence (Holland and Garcia-Fernàndez 1996). This indicates a high degree of constancy in the primary system for the control of gene expression that governs the body plan of all terrestrial vertebrates as well as the extremely diverse assemblage of bony fish.