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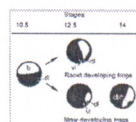
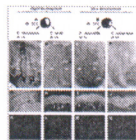
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## Differentiation

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Cilia in Development and Disease



## The gastrocoel roof plate in embryos of different frogs

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## Abstract

The morphology of the gastrocoel roof plate and the presence of cilia in this structure were examined in embryos of four species of frogs. Embryos of *Ceratophrys stolzmanni* (Ceratophryidae) and *Engystomops randi* (Leiuperidae) develop rapidly, provide comparison for the analysis of gastrocoel roof plate development in the slow-developing embryos of *Epipedobates machalilla* (Dendrobatidae) and *Gastrotheca riobambae* (Hemiphractidae). Embryos of the analyzed frogs develop from eggs of different sizes, and display different reproductive and developmental strategies. In particular, dorsal convergence and extension and archenteron elongation begin during gastrulation in embryos of rapidly developing frogs, as in *Xenopus laevis*. In contrast, cells that involute during gastrulation are stored in the large circumblastoporal collar that develops around the closed blastopore in embryos of slow-developing frogs. Dorsal convergence and extension only start after blastopore closure in slow-developing frog embryos. However, in the neurulae, a gastrocoel roof plate develops, despite the accumulation of superficial mesodermal cells in the circumblastoporal collar. Embryos of all four species develop a ciliated gastrocoel roof plate at the beginning of neurulation. Accordingly, fluid-flow across the gastrocoel roof plate is likely the mechanism of left-right asymmetry patterning in these frogs, as in *X. laevis* and other vertebrates. A ciliated gastrocoel roof plate, with a likely origin as superficial mesoderm, is conserved in frogs belonging to four different families and with different modes of gastrulation.

## Abbreviations

cbc, Circumblastoporal collar; dce, Dorsal convergence and extension; grp, Gastrocoel roof plate; lec, lateral endodermal crests.

## Keywords

Cilia; Circumblastoporal collar; Gastrocoel roof plate; Notochord

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