

# Evolutionary divergence of the reptilian and the mammalian brains:

## Considerations on connectivity and development

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The isocortex is a distinctive feature of the mammalian brain, with no clear counterpart in other amniotes. There have been long controversies regarding possible homologues of this structure in reptiles and birds. The brains of the latter are characterized by the presence of a structure termed dorsal ventricular ridge (DVR), which receives ascending auditory and visual projections, and has been postulated to be homologous to parts of the mammalian isocortex (i.e., the auditory and the extrastriate visual cortices). Dissenting views, now supported by molecular evidence, claim that the DVR originates from a region termed ventral pallium, while the isocortex may arise mostly from the dorsal pallium (in mammals, the ventral pallium relates to the claustramygdaloid complex).

Although it is possible that in mammals the embryonic ventral pallium contributes cells to the developing isocortex, there is no evidence yet supporting this alternative. The possibility is raised that the expansion of