

Abstract

Structural organization of the telencephalon differs starkly among mammals, birds and non-avian reptiles. No clear homologue of the mammalian six-layered cerebral cortex has been identified in other vertebrate groups. In the last century, this topic has sparked heated discussions in the field of comparative neurobiology. Available data point to clear homologies between telencephalic subpallial regions among all amniotes. Many hypotheses have been proposed about homologies within the pallium that offer contrasting reconstructions of the evolution of the amniote telencephalon. While earlier hypotheses suggest homologies at the level of neural circuits and embryological territories, the most recent hypothesis suggests homology at the level of individual cell types possessed by a last common ancestor of reptiles, birds and mammals. The resulting diametrically different structures have been organized by different developmental mechanisms. However, recent transcriptomic data are in direct conflict with these claims, and support the hypothesis which assumes that higher cognitive functions in both major lineages of amniotes evolved independently by expansion of different embryonic fields. The aim of this bachelor's thesis is to provide comprehensive information about the proposed homologies and hypotheses across amniotes, to critically review them and to suggest directions for future research.

Keywords: cerebral cortex, pallium, subpallium, homology, comparative analysis, *Amniota*.