

# Phylogenesis of the cortex-basal-ganglia loop in decision making

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場所： 神戸大学大学院医学研究科 研究棟B・2階 共同会議室



The mammalian cortex makes a loop circuit with the basal ganglia (BG) and the thalamus known to control and adapt behavior but the who's who of the functional roles of these structures is still debated. We proposed to revalue the function of this network in light of the current experimental evidence concerning its anatomy and physiology in vertebrates. I will summarize the evolution of the anatomical and physiological substrate of skill learning and performance among vertebrates and show it supports the hypothesis that the development of automatized skills relies on the BG teaching cortical circuits and is actually a late feature linked with the development of a specialized cortex (or equivalent) that evolved in parallel in different taxa. I will finally propose a minimal computational framework where this hypothesis can be explicitly implemented and tested.

1. Boraud T, Leblois A, Rougier NP. (2018) A natural history of skills. *Prog Neurobiol* 171. 114–124.
2. **Boraud T. (2020) How the brain makes decisions. Oxford Univ Press.**
3. Nioche A, Rougier NP, Deffains M, Bourgeois-Gironde S, Ballesta S, Boraud T. (2021) The adaptive value of probability distortion and risk-seeking in macaques' decision-making. *Philos Trans B* 376. 20190668.