The primate cortico-cerebellar system: Anatomy, evolution and the brain

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The general focus of the talk will be on the anatomical organisation of the primate cortico-cerebellar system, its evolution, the information processing that it is engaged in, and its contributions to behaviour. More specifically, I will use some recent comparative anatomical findings to argue that the prefrontal cortex and interconnected parts of the cerebellum have been subjected to the same evolutionary selection pressures and have consequently expanded in a concerted manner. I will also use evidence from functional MRI to argue that this particular sub-system system has a role in the learning and execution of cognitive skills (e.g. the automation of rule-related information processing). Finally, I will report some recent fMRI findings on the information flow between the cortex and cerebellum and the ways in which it changes during learning.