

Evolution of the cerebellar sense of self

Montgomery, John C., author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20470242&lokasi=lokal>

Abstrak

The cerebellum is an intriguing component of the brain. In humans, it occupies only 10% of the brain volume, yet has approximately 69 billion neurons, i.e. 80% of the nerve cells in the brain! A functional understanding of the cerebellum is enabled by the fact it is made up of a repeated array of neuronal networks, or motifs, each of which may function as an adaptive filter. In short, the cerebellum can be thought of a massive array of adaptive filters that can contribute across a wide range of brain tasks and functionality. Understanding the evolutionary origins of the cerebellum supports this overview of cerebellar function. The cerebellum first arose in jawed vertebrates such as sharks, and sharks have an additional cerebellum-like structure that clearly works as an adaptive filter. The function of shark cerebellum-like structures is to discriminate self from other in sensory inputs. With the evolution of the true cerebellum, the adaptive filter functionality was adopted for motor control and paved the way for athleticism and movement finesse that we see in swimming, running, climbing, and flying vertebrates. Distinguishing self from other in our interactions with the physical world extends to the identified role of the cerebellum in model systems, but also into some aspects of cognitive function. It is this view of the cerebellar function that defines the cerebellar sense of self.