RUHR-UNIVERSITÄT BOCHUM

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IGSN - COLLOQUIUM

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Avian navigators and the evolution of a cartographic brain

Brain organization and its relationship to behavior in any group of animals is a reflection of a long evolutionary history of adaptive change. Therefore, it follows that the relationship between the hippocampus and spatial cognition in any one species would be characterized by features adapted to its spatial ecology. Birds are the animal world's supreme navigators, and aspects of their navigational and spatial memory ability are dependent on the integrity of the hippocampal formation. Using the homing pigeon as a model species, I will present data indicating that the avian hippocampus is functionally lateralized. The spatial response properties of left hippocampal neurons differ from the response properties of right hippocampal neurons. Left and right hippocampal lesions can have dramatically different effects on a variety of field and laboratory spatial tasks. The available data support the hypothesis of a left hippocampus more involved in navigational processes, and a right hippocampus perhaps more involved in processing space as a contextual cue for memory. But whatever the nature of the observed hippocampal lateralization, it is likely one adaptive property of avian brain organization that contributes to the extraordinary spatial behavior of birds.

Host:

Onur Güntürkün

Biopsychology, Faculty of Psychology, Ruhr-University Bochum

Guests are welcome !

International Graduate School of Neuroscience
Ruhr-University Bochum