

서울대학교 인지과학연구소

초청강연회

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제목	Network properties in motor cortical areas

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발표 개요

The term small world network refers to a network structure with locally clustered, closely connected (small shortest path length on average) nodes. It has been shown that this network structure is resistant to damage and fast to convey information from one node to another in a network of large size. Due to its robustness and efficiency, it has been suggested that the functional structure of the brain is analogous to that of small world network. Indeed, a large number of anatomical and physiological studies across different species have shown that the brain has these characteristics. However, the small world network phenomenon has rarely been reported in an awake animal at the neuronal level. Therefore, I have investigated the small world phenomenon from simultaneously recorded neuronal spikes while a Rhesus monkey performed a 26-target center-out reaching task in a virtual reality environment. For single cell recording, two 96-channel Utah arrays were implanted, one of which was placed in the M1 hand area, another of which was placed in the ventral premotor area. To construct a network, I estimated the functional connectivity between neurons using a generalized linear model (GLM) for each neuron. This motor network turned out to be a small world network. In this talk, furthermore, I will discuss network properties of motor cortical areas emphasizing the role of hub neurons and the community structure.



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