脳神経科学/先進感覚器研究 コアセンター・ジョイントセミナー

（第52回 脳神経科学コアセンターセミナー）

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星陵会館（Ｂ１０）2F【大講義室】

"How the cone photoreceptor synapse encodes the visual scene"

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Under conditions of daylight, the cone outer segment converts the light input from a visual scene into a time-varying electrical signal. In order for a conscious visual percept to occur, this signal must be re-encoded as a rate of vesicle release at the cone synapse, which is among the most structurally complex synapses in the CNS. The spatiotemporal glutamate gradient in the cone synaptic cleft is sampled by the dendritic contacts of more than 12 different bipolar cell types. These types start the process of breaking down the visual scene into different parallel components for subsequent processing in the retina and higher visual centers. The functional dichotomy between bipolar cell types that depolarize at light-on (On cone bipolar cells) and light-off (Off cone bipolar cells) is well understood. Instead, my lab focuses on how the cone signal is differently transformed as it flows to the 5 types of Off (ionotropic glutamate receptor-expressing) bipolar cells. I present evidence that the individual Off bipolar types have different thresholds for responding to cone transmitter release and encode the visual signal over different light decrement ranges. Differences in bipolar cell response threshold result from type-specific distances between cone ribbon vesicle release sites and the sites of bipolar cell cone contacts, the precise number of contacts that each bipolar cell makes with a cone, and on the glutamate affinity of different receptors expressed by each Off bipolar cell type. Our findings suggest that parallel processing at the cone to bipolar cell synapse is more elaborate and systematic than currently thought.

当日19時より夕食会を企画しています。参加ご希望の方は予めお問い合わせ下さい。

お問い合わせ

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