

第1309回生物科学セミナー

日時： 10月 30日（水） 14：55 - 16：40

演者： 久保 郁（国立遺伝学研究所 新分野創造センター）

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演題: Function and connectivity of a visual circuit underlying optic flow processing in zebrafish

A wide range of animals use global image motion to actively stabilize their position or gaze by compensatory movements, such as the optomotor or optokinetic responses. In zebrafish, the main visual area that process optic flow information is the pretectum. Previous studies have shown that pretectal neurons distinguish different optic flow patterns, such as rotation and translation, to drive appropriate compensatory behaviors. To elucidate critical neuroanatomical features that underlie this sensorimotor transformation, we have combined functional imaging and morphological reconstruction of single cells. Using a function-guided inducible morphological analysis (FuGIMA) that we developed, we identified a feed forward pretectum-premotor circuit in which “simple” direction selective information is combined to produce “complex” functional responses and transmitted to premotor centers in the hindbrain. Furthermore, using a whole-brain electron microscopy stack of larval zebrafish from which we recorded the responses of pretectal neurons, we are determining the interconnectivity of pretectal neurons made by their direct synaptic connections. These approaches will directly test and refine our circuit model for the binocular optic flow computation in the pretectum.

参考文献

Kramer A, Wu Y, Baier H, Kubo F. (2019) Neuronal architecture of a visual center that processes optic flow. [Neuron 103, 118-132.](#)

Kubo F, Hablitzel B, Dal Maschio M, Driever W, Baier H, Arrenberg AB. (2014) Functional architecture of an optic flow responsive area that drives horizontal eye movements in zebrafish. [Neuron 81, 1344-59.](#)

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担当： 東京大学大学院理学系研究科・生物科学専攻・榎本研究室