

BDR SEMINAR in Kobe

"CDB SEMINAR" and "QBiC SEMINAR" have been renamed "BDR SEMINAR".

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Wednesday, July 25, 2018

16:00-17:00, Seminar Room A7F

N-cadherin orchestrates self-organizing ensemble of neurons within a columnar unit in the fly brain

Summary

Columnar structure is a basic unit of the brain, but the underlying mechanism of its development remains largely elusive. The medulla, the largest ganglion of the fly visual center, provides a unique opportunity to reveal the mechanisms of 3D organization of the columns. In this study, we reveal the donut-like columnar structure in the top, middle and bottom layers of the medulla using N-cadherin as a marker and that column formation is initiated by three core neurons, R8, R7 and Mi1. We demonstrate that N-cadherin-dependent relative adhesiveness of the columnar neurons regulates their relative location within a column, suggesting that the columnar organization is regulated according to the differential adhesion hypothesis. Importantly, the columnar organization in the top and middle layers regulates that in the bottom layer. Thus, differential adhesion and inter-layer interactions act in concert to establish the 3D organization of the medulla columns.



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