CDB SEMINAR

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16:00~17:00 A7F CDB Conference Room

Transcription factors, miRNAs and neuronal diversity in the nematode *C. elegans*

Summary

The gustatory system of the nematode C.elegans is composed of two bilaterally symmertic sensory neurons, ASE Left (ASEL) and ASE Right (ASER). We have undertaken a single cell transcriptome analysis of this cell type and identified the complete battery of genes expressed in these neurons. We have dissected the regulatory architecture of this gene battery and identified a key selector gene that controls the expression of this gene battery, thereby defining ASEL/R fate. Apart from having to define their distinct identity compared to other sensory neuron types, the two ASEL/R also display an intriguing diversification process across the left/right axis. While bilaterally symmetric in their morphological features, ASEL and ASER express distinct taste receptors, which endows the animals with the ability to discriminate between distinct sensory cues. We have utilized genetic approaches to identify genes that are required for the left/right asymmetric expression of these taste receptors genes in ASEL and ASER. These genetic screens uncovered a plethora of regulatory factors, including microRNAs and their transcription factors targets. These regulatory factors interact with each other in a bistable feedback loops which controls this left/right asymmetric cell fate decision.

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