RUTGERS–NEW BRUNSWICK
School of Arts and Sciences

DEPARTMENT OF CELL BIOLOGY AND NEUROSCIENCE

2024 RESEARCH SEMINAR

"Epigenetic Programming of Olfactory Sensory Neuron Diversification by Testis expressed 15"

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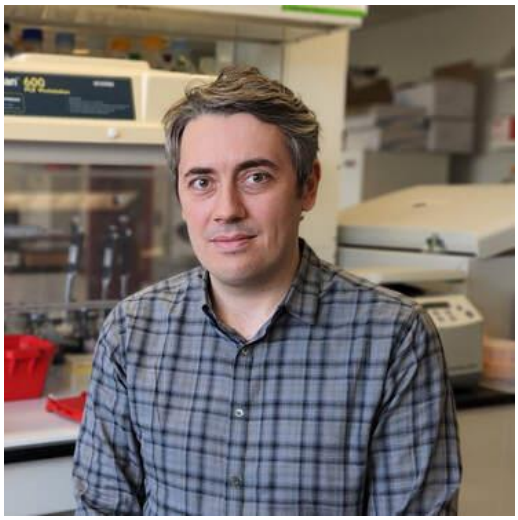

There are hundreds of subtypes of olfactory receptor neurons (ORNs) in mice, each of which expresses a different odorant receptor (OR). These subtypes are specified in a hierarchical fashion, with ORN progenitors first committing to express a specific class of OR genes. For the large family of Class II ORs, the set of ORs available for selection is further restricted depending on anatomical position within the olfactory epithelium. This restriction is followed by stochastic selection of one allele of a single OR gene from the available set. The process of OR choice coincides with a dramatic remodeling of the spatial positioning and chromatin state of OR genes within the nucleus. Strikingly, changes in the chromatin structure of OR genes closely correlate with the class and spatial restriction of OR gene choice. We are investigating the mechanisms that remodel OR gene chromatin in OSN progenitors and their relationship to OR choice. Here, we show that Testis expressed 15 (Tex15) is required for the spatial restriction of class II OR choice and for the normal pattern of stochastic choice across all OSN classes. Intriguingly, germline deletion of Tex15 results in biased OR selection choice in favor of OR genes that are expressed early in OSN differentiation. Moreover, Tex15 null mice exhibit altered patterns of heterochromatin deposition on OR genes, which suggests that Tex15 may repress OR genes in OSN progenitors, analogous to its known role in the silencing transposons in spermatocytes.

Friday, May 10th, 2024
12 Noon Nelson D406

Zoom Link:
Meeting ID: 997 8104 6148
Password: 685527

Host: Santiago Cuesta | sc2524@dls.rutgers.edu