



PROGRESS IN NEUROSCIENCE PINS



Seminar Series of the
Brain & Mind Research Institute
Weill Cornell Medical College (WCMC)

&

The Graduate Program in Neuroscience of
WCMC and Sloan Kettering Institute

Thursday, 1/7/16, 4 PM, coffee at 3:45 PM
Weill Auditorium

“Sculpting Neuronal Connections: The Logic and Mechanisms of Axon Growth and Pruning”

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Abstract:



Neuronal axons navigate over long distances along specified pathways to find appropriate targets, guided by attractants and repellents acting in coordinate fashion. Axons also branch to connect to multiple targets, and many branches are later pruned to sculpt a final pattern of connections. This presentation will describe progress in deciphering axon growth and guidance mechanisms, including how axons switch responsiveness to guidance cues at intermediate targets from attraction to repulsion. It will also focus on recent advances in elucidating pruning mechanisms during development and in adult plasticity, with implications for neurodegenerative disease.

Recent relevant publications:

- 1) Renier N, Wu Z, Simon DJ, Yang J, Ariel P, Tessier-Lavigne M. iDISCO: a simple, rapid method to immunolabel large tissue samples for volume imaging. *Cell*. 2014 Nov 6;159(4):896-910.
- 2) Yang J, Wu Z, Renier N, Simon DJ, Uryu K, Park DS, Greer PA, Tournier C, Davis RJ, Tessier-Lavigne M. Pathological axonal death through a MAPK cascade that triggers a local energy deficit. *Cell*. 2015 Jan 15;160(1-2):161-76.
- 3) Jaworski A, Tom I, Tong RK, Gildea HK, Koch AW, Gonzalez LC, Tessier-Lavigne M. Operational redundancy in axon guidance through the multifunctional receptor Robo3 and its ligand NELL2. *Science*. 2015 Nov 20;350(6263):961-5.



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