

## 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, 10/8/15, 4 PM, coffee at 3:45 PM A-950

## "Control of Neural Specification and Behavior in Drosophila miRNAs"

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## Abstract:



The Lai lab is fascinated by diverse regulatory mechanisms, both transcriptional and post-transcriptional in nature. Our main interests include: (1) biogenesis and function of Argonaute-mediated small RNA pathways, including microRNAs (miRNAs), and (2) control of cell specification by Notch signaling and neural transcription factors (TFs). We combine diverse methodologies, including genetics, molecular biology and biochemistry, and bioinformatics, to study these topics using both *Drosophila* and mammalian systems. In terms of biological models, we have historically focused on the control of sensory organ cell fates in the fruitfly peripheral nervous system, and have more recently transitioned these efforts to elucidating the regulation of neural stem cell renewal and differentiation in the mammalian brain. In the future, we are increasingly turning our attention to the function of the nervous system, and how the consequences of regulatory dysfunction play out in a number of behavioral paradigms.

In this talk, I will discuss ongoing studies on several *Drosophila* miRNAs that control neural specification and/or morphogenesis, and their impact on diverse innate adult behaviors.

## **Recent relevant publications:**

- Dai, Q., A. Ren, J. O. Westholm, A. Serganov, D. J. Patel and E. C. Lai (2013). The BEN domain is a novel sequence-specific DNA binding domain conserved in neural transcriptional repressors. Genes and Development 27: 602-14.
- Garaulet, D. L., M. Castellanos, F. Bejarano, P. Sanfilippo, D. M. Tyler, D. Allan, E. Sanchez-Herrero and E. C. Lai (2014). Homeotic function of Drosophila Bithorax-Complex miRNAs mediates fertility by restricting multiple Hox genes and TALE cofactors in the central nervous system. Developmental Cell 29: 635-648.
- Westholm, J. O., P. Miura, S. Olson, S. Shenker, B. Joseph, P. Sanfilippo, S. E. Celniker, B. R. Graveley and E. C. Lai (2014). Genomewide analysis of Drosophila circular RNAs reveals their structural and sequence properties and age-dependent neural accumulation. Cell Reports 9: 1966-1980.



