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, 1/23/13, 4 PM, coffee at 3:45 PM
Weill Auditorium

Circuitry Mechanisms Regulating Adult Neural Stem Cells and Neurogenesis

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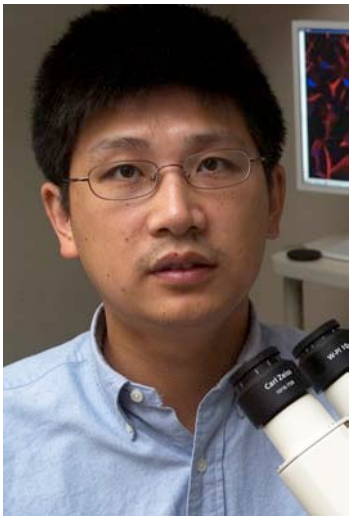

Abstract:
Adult neurogenesis arises from neural stem cells within specialized niches. Neuronal activity and experience, presumably acting on this local niche, regulate multiple stages of adult neurogenesis, from neural stem cell activation, neural progenitor proliferation to new neuron maturation, synaptic integration and survival. Using genetic clonal lineage-tracing, slice electrophysiology and optogenetics, we have identified a niche mechanism involving specific interneuron subtypes that couple local circuit activity to diametric regulation of adult neural stem cell activation and survival of their newborn progeny during critical early sequential phases of adult hippocampal neurogenesis.

Recent relevant publications:

Song, J., Sun, J., Moss, J., Wen, Z., Sun, G.J., Hsu, D., Zhong, C., Davoudi, H., Christian, K.M., Toni, N., Ming, G.L., and Song, H. (2013). Parvalbumin interneurons mediate neuronal circuitry-neurogenesis coupling in the adult hippocampus. Nature Neuroscience 16, 1728-1730.

Song, J., Zhong, C., Bonaguidi, M.A., Sun, G.J., Hsu1, D., Gu, Y., Meletis, K., Huang, Z.J., Ge, S., Enikolopov, G., Deisseroth, K., Luscher, B., Christian, K., Ming, G-l., and Song, H. (2012). Neuronal circuitry mechanism regulating adult quiescent neural stem cell fate decision. Nature 489, 150-4

Bonaguidi, M.A., Wheeler, M.A., Shapiro, J.S., Stadel, R.P., Sun, G.J., Ming, G.L., and Song, H. (2011). In vivo clonal analysis reveals self-renewing and multipotent adult neural stem cell characteristics. Cell 145, 1142-55

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