

Neuroscience Colloquium

Winter Semester 2016/2017

Lecture is held **Thursday, 5 p.m.**
Venue: **Paul-Ehrlich Lecturehall, Virchowweg 4, next to CCO**

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GABAergic neurons: from individual cells to networks

GABAergic interneurons are crucially involved in the generation and maintenance of rhythmic synchronous activity in many forebrain regions, including the hippocampal-entorhinal formation. Genetic manipulations affecting the activity of GABAergic interneurons highlighted the functional role of GABAergic interneurons for spatial and/or temporal coding in the hippocampus, and were associated with spatial memory deficits. I will present data pertaining to the anatomical and functional characterization of distinct cell types in the medial and lateral entorhinal cortex, with a particular focus on putative functions of GABAergic interneurons.

I will also present data demonstrating the presence of long-range GABAergic cells that connect the hippocampus and entorhinal cortex bi-directionally. By virtue of their connectivity - the target cells are most often local interneurons - this class of cells is ideally suited to synchronize brain regions over long distance. I will show that long-range GABAergic cells connect many more brain regions, and will discuss in more detail the functional implications of the GABAergic septum-entorhinal cortex connectivity as well as motor cortex-striatum connectivity.

Finally, I will present a more recent research direction in the lab focusing on GABAergic signaling and its modulation in neuronal stem cells and progenitors of the postnatal brain. Specifically, I will show that diazepam binding inhibitor (DBI) is a major modulator of postnatal neurogenesis. Thus, DBI reduces GABA receptor-mediated currents, thereby favoring symmetric division of neural progenitors and supporting neurogenesis in the major neurogenic niches of the postnatal brain. Moreover, DBI supports stem cell proliferation under conditions of enriched environment.

Location: Paul Ehrlich-Hörsaal,
Charité – Universitätsmedizin Berlin, Campus Mitte
Virchowweg 4, next to CCO

Date: Thursday, January 26th, 5 p.m.

Host: Craig Garner/Christian Rosenmund

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