

The Most Specialized Community for Blood-Brain Barrier

10th International Conference on Cerebral Vascular Biology, Montreal 2013

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With roughly over 250 participants representing more than 20 countries, the 10th international conference on cerebral vascular biology may not have been the largest, but is definitely the one for those with a passion for the natural mystery of the Blood-Brain Barrier (BBB) and the Neurovascular Unit (NVU) in both healthy and diseased conditions. By joining the program packed with keynote and oral presentations, poster sessions and other social events, I got the chance to rub shoulders with leading researchers in cerebral vascular biology and opportunities of learning and networking.

The talks were categorized into nine main domains, which broadly covered the most interesting topics in cerebral barrier development, molecular composition and cell-cell interactions in the neurovascular unit (NVU), NVU inflammation and immune cell migration, neurovascular coupling in diseases and new drug delivery. The inspiring and thought provoking talks, kept the discussions lively and the magically beautiful images of cerebral vasculature left me awestruck.

Targeting Metabolism in Angiogenesis

Peter Carmeliet, Professor of the Catholic University of Leuven, compared the metabolic similarity between tumor growth and that of angiogenesis, both of which switch from aerobic respiration to glycolysis for energy generation. Based on this, they explored the anti-tumor potential by pharmaceutically blocking glycolysis in vivo. It turns out that a 50% systemic reduction of glycolysis has the best

curative effect and is tolerable. Anti-glycolysis therapy seems promising compared to anti-angiogenic therapy targeting vascular endothelial growth factor (VEGF) receptors, since anti-VEGF treatment has at best, only transitory therapeutic efficacy followed by resistance.

Dynamics of T Cell Activation in Real Time During CNS Autoimmunity

Alexander Flügel, Professor of the University Medical Center, Göttingen, gave an exciting talk about the dynamics of T cell activation during central nervous system (CNS) autoimmunity. They combined the fluorescently labeled nuclear factor of activated T cells (NFAT) with histone protein H2B to intravitaly visualize T cell activation. The first test has been made in experimental autoimmune encephalitis, where they reported that effector T cells entering the CNS become activated after short contacts with leptomeningeal phagocytes and this process is extended to the parenchyma during established disease. Thus, it proves that the intensity and duration of the disease depends on the activation process during the preclinical phase rather than during the established disease.

If you are fascinated by research on the BBB and NVU and want to know about state-of-the-art vascular biology, CVB 2015 should already be marked on your calendar!

References

- [1] Potente et al, Cell, 2011
- [2] Lodygin et al, Nat Med, 2013

5th G-Node Winter Course in Neural Data Analysis

By Nikolas Karalis, MSc Student Neurasmus

The fifth edition of the yearly G-Node Winter Course on Neural Data Analysis [1] took place at the end of February in Munich. It was organized by the German Neuroinformatics Node, [2] part of the International Neuroinformatics Coordination Facility. Participants from diverse neuroscientific backgrounds - both theoreticians and experimentalists - got hands-on experience with neural data analysis during this intense week.

The course consisted of four different topics, each spanning a full day of theoretical introduction and practical sessions. On the first day, Clemens Boucsein (ALU Freiburg) introduced techniques for the detection and statistical description of spontaneous as well as evoked post-synaptic currents from whole-cell patch-clamp recordings. The second day was devoted to modeling short-term synaptic depression under the supervision of Alex Loebe (LMU Munich). The spectral analysis of spiking data was addressed on the third day, during which Jan Grewe (LMU) guided us through the implementation of various statistical measures of spiking activity. The last day, in a module designed by Martin Nawrot (FU Berlin), we analyzed the directional tuning in single unit

activity from the monkey motor cortex.

The course is targeted to researchers interested in the practical analysis of data complemented with a theoretical approach. Matlab programming skills are a prerequisite, which are further crafted during this practical course of day-long coding and data analysis. All in all, this crash course on basic and more advanced neural data analysis techniques is very useful for those already working with or planning to start working with neural data and can help boost your data analysis abilities.

The next meeting of the G-Node team is called the Advanced Scientific Programming in Python, a summer school organized by the University of Zurich and G-Node from the 1st-6th September 2013, followed by the Bernstein Conference 2013, which will take place on September 25-27, 2013 in Tübingen.

References

- [1] <https://portal.g-node.org/dataanalysis-course-2013/>
- [2] <http://www.g-node.org/>