TEMS

Temasek External Monthly Seminar

TEMASEK LIFESCIENCES LABORATORY

ALL ARE WELCOME

16 February 2016 (Tuesday), 4pm
The Auditorium (Level 1)

Hosted by: Dr YU Fengwei

Cytoskeletal Mechanisms of Axonal Growth and Regeneration

Prof Frank Bradke
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Cytoskeletal Mechanisms of Axonal Growth and Regeneration: Neurons are the cellular basis of the circuits of our nervous system that allow us to sense the environment, control our muscles and, sometimes, even to think. In these circuits, neurons fulfill very different functions at different part of the cells, including signal reception, integration and propagation. This is possible because neurons have a high degree of asymmetry (or polarity). We want to understand how neurons develop their polarity. How do neurons generate an axon? While this is an interesting question by itself, answers will also allow us to reactivate the polarity program under pathological conditions, such as a spinal injury, to induce axon regeneration.

Frank Bradke is a Group Leader at the German Center for Neurodegenerative Diseases (DZNE) in Bonn where the major goal of his lab is to understand how axonal growth is regulated. Frank has several seminal contributions in the field of axonal growth and regeneration, including the development of new tools for in vivo imaging. Frank Bradke studied Biochemistry, Anatomy and Developmental Biology at the Freie Universität Berlin and the University College London. In 1994, he received a B.Sc. degree in Anatomy and Developmental Biology and in 1995 a degree in Biochemistry. During his thesis, he conducted research at the EMBL, Heidelberg. In 1999, he earned his PhD from the Ruprecht-Karls-Universität Heidelberg. Thereafter, in 2000, as a postdoctoral fellow he moved to Prof. Marc Tessier-Lavigne's laboratory at the University of California, San Francisco and Stanford. Then, in 2003, he became a Max Planck Institute Research Group Leader at the MPI of Neurobiology, Martinsried. In 2009, Frank Bradke habilitated in Neurobiology at the Ludwig Maximilians-University Munich. In 2011 he received the IRP-Schellenberg-Prize and became full professor at the University of Bonn and Senior Research Groupleader for Axonal Growth and Regeneration at the German Center for Neurodegenerative Diseases (DZNE) in Bonn. In 2013 Frank Bradke was elected to the European science organization EMBO. In 2014, he was elected a member of the Leopoldina, the German National Academy of Sciences. In 2015, he received the “Gottfried Wilhelm Leibniz-Preis”, highest prize for science in Germany.

Recent Publications:

1. Ruschel J, Hellal F, Flynn KC, Dupraz S, Elliott DA, Tedeschi A, Bates M, Sliwinski C, Brook G, Dobrindt K, Peitz M, Brüstle O, Norenberg MD, Blesch A, Weidner N, Bunge MB, Bixby JL, **Bradke F**. Systemic administration of epothilone B promotes axon regeneration after spinal cord injury. Science. 2015 Mar 12. pii: aaa2958. doi: 10.1126/science.aaa2958. [Epub ahead of print]
2. Flynn KC, Hellal F, Neukirchen D, Jacobs S, Tahirovic S, Dupraz S, Stern S, Garvalov BK, Gurniak C, Shaw A, Meyn L, Wedlich-Söldner R, Bamburg JR, Small JV, Witke W, **Bradke F** (2012). ADF/cofilin-mediated Actin Retrograde Flow Directs Neurite Formation in the Developing Brain. Neuron 2012, 76:1091-107.
3. Ertürk A, Mauch CP, Hellal F, Förstner F, Keck T, Becker K, Jährling N, Steffens H, Richter M, Hübener M, Kramer E, Kirchhoff F, Dodt HU, **Bradke F** (2011). 3D imaging of the unsectioned adult spinal cord to assess axon regeneration and glial responses after injury. Nature Medicine 18: 166-171.