

Introductory Remarks to Symposium 16

The evolutionary diversity of nervous system development - from worms to humans

Nico Posnien and Max Stephen Farnworth, Göttingen

The structural and functional organization of animal nervous systems is highly variable and the extent of this variation has fascinated a great number of biologists. Comprehensive comparison of nervous system morphology, connectivity and function among nearly all branches of the animal tree of life has resulted in astonishing insights into conserved and divergent aspects. Recent advances in molecular genetics in well-established model organisms such as the fruit fly *Drosophila melanogaster* or the mouse *Mus musculus* allow to study nervous system organization in great detail. This data inevitably represents a solid basis for broad comparisons of adult brain and nervous system functionality. However, if comparative studies are restricted to a few selected model organisms, it is difficult to draw general conclusions on the origin of nervous systems and their organizational subunits like anteriorly centralized brains. In the last two decades, research in the field of evolutionary developmental biology (evo-devo) has proven that the combination of comparative embryology and molecular methodology represents a very efficient approach to identify homologous nervous system structures among different animal groups. The basic assumption of evo-devo related research questions is that the diversification of adult and hence functional organs is to a large part due to variation in the underlying developmental processes and developmental gene regulatory networks. With this symposium, we want to highlight recent advances as well as future directions in the field of nervous system development and evolution. Our multidisciplinary group of speakers will certainly be able to provide new impulses to the entire field by identifying commonalities, divergences and shared challenges of studying nervous system development and evolution in strongly different groups of model species. Especially the exchange of used methods and the underlying theoretical frameworks will foster interactions and hopefully facilitate future fruitful collaborations among researchers studying different aspects of nervous system organization and function.

Symposium 16

Thursday, March 23, 2017
14:30 – 16:30, Lecture Hall 104

Chairs: Nico Posnien and Max Stephen Farnworth,
Göttingen

- 14:30 **Short Introduction**
- 14:35 Patrick Callaerts, Leuven (Belgium)
THE GENETIC BASIS OF NATURAL VARIATION IN MUSHROOM BODY SIZE IN *DROSOPHILA MELANOGASTER* (S16-1)
- 15:00 Angelika Stollewerk, London (UK)
EVOLUTION OF NEUROGENESIS IN ARTHROPODS – CONSERVED FEATURES AND FLEXIBLE TOOLS (S16-2)
- 15:25 Katharina Beer, Würzburg
COMPARISON OF THE CIRCADIAN CLOCK OF SOCIAL AND SOLITARY BEES (S16-3)
- 15:40 Gregor Bucher, Göttingen
DEVELOPMENTAL CONSERVATION AND DIVERSITY OF THE INSECT BRAIN (S16-4)
- 16:05 Wieland B. Huttner, Dresden
NEURAL STEM AND PROGENITOR CELLS AND NEOCORTEX EXPANSION IN DEVELOPMENT AND EVOLUTION (S16-5)

