- **The role of $G_{q/11}$-and $G_{12/13}$-mediated signaling pathways in the function and development of the central nervous systems**
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  Many G-protein coupled receptors are expressed in the developing and adult nervous system, and there is increasing evidence that in particular receptors coupling to the ubiquitously expressed G-proteins of the G_q/G_{11}- and G_{12}/G_{13}-families are involved in various aspects of nervous system function. While G_q/G_{11} mediate the activation of β-isoforms of phospholipase C, G_{12}/G_{13} lead to the activation of the small GTPase RhoA. Both pathways have been shown to be involved in cell migration, axonal pathfinding as well as neuronal cell differentiation *in vitro*. We would therefore like to study the role of $G_{q/11}$- and $G_{12/13}$-mediated signaling processes during the development of the intact nervous system. We plan to generate and analyze mouse lines which lack $G\alpha_q/G\alpha_{11}$ and $G\alpha_{12}/G\alpha_{13}$ in defined compartments of the developing nervous system using Cre/loxP-mediated recombination. In different mouse lines, $G\alpha_q/G\alpha_{11}$- and $G\alpha_{12}/G\alpha_{13}$-mediated signaling pathways will be ablated in neuronal/glial precursor cells, neural crest cells, the forebrain or in cerebellar Purkinje cells. These *in-vivo*-studies will be accompanied by experiments at the cellular level. Using wild-type and mutant embryonic neurons, we want to characterize the Rho/Rho-kinase-mediated signaling pathway which controls axonal growth cone morphology. These studies should contribute to a deeper understanding of cellular mechanims involving G-proteins in neural development and function.

  Literature

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