1384 A dual role of erbB2 in myelination and in expansion of the Schwann cell precursor pool
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Neuregulin-1 provides an important axonally-derived signal for survival and growth of developing Schwann cells, which is transmitted by the ErbB2/ErbB3 receptor tyrosine kinases. Null-mutations of the neuregulin-1, erbB2 or erbB3 mouse genes cause severe deficits in early Schwann cell development. Here we employ Cre-loxP technology to introduce erbB2 mutations late in Schwann cell development, using a Krox20-cre allele. Cre-mediated erbB2 ablation occurs perinaturally in peripheral nerves, but already at E11 within spinal roots. The mutant mice exhibit a widespread peripheral neuropathy characterized by abnormally thin myelin sheaths, containing fewer myelin wraps. In addition, in spinal roots the Schwann cell precursor pool is not correctly established. Thus, the Neuregulin signaling system functions during multiple stages of Schwann cell development and is essential for correct myelination. The thickness of the myelin sheath is determined by axon diameter, and we suggest that trophic signals provided by the nerve determine the number of times a Schwann cell wraps an axon.

1386 The role of Rel/NF-κB genes in early Xenopus Development: Xrel3 is required for normal head patterning
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The Rel/NF-κB proteins comprise a family of transcriptional activators involved in cell differentiation events. We have previously shown that a Xenopus Rel/NF-κB related gene, Xrel3, is expressed in the forebrain, dorsal mid- and hindbrain, notochord and otocysts of neurula and larval stage embryos. Ectopic expression of Xrel3 mRNA in the animal hemisphere of early embryos led to epidermal tumors. RT-PCR and in situ hybridization showed upregulation in tumors of the neural patterning genes Otx-2, Sonic hedgehog, Glil, HNF-3β and twist (at the times of normal endogenous gene expression). Further analysis showed that Xrel3 homodimers constitutively localize to the nucleus and can bind Rel/NF-κB type enhancer sequences. Deletion of the Xrel3 C-terminal trans-activation domain led to the loss of tumor forming ability and overexpression of certain truncations in early embryos caused head defects. These latter truncation mutants inhibited wild-type Xrel3 binding to the Rel/NF-κB consensus DNA binding sequence in vitro, identifying their ability to interfere with endogenous Xrel3 activity in vitro. Normal Xrel3 expression patterns in association with these new findings suggest that Xrel3 is required for anterior neural patterning in Xenopus.

1385 Analysis of differential gene expression in response to estrogen-exposure on early development of Xenopus laevis
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Some environmental chemicals are known to have estrogenic activity and can affect gene expression during embryogenesis. It has been reported that estradiol-exposure causes malformations of the head and abdomen and suppresses organogenesis in Xenopus embryos. In this study, we utilized a mRNA differential display method to identify the genes whose expression is modulated by estradiol on early development of Xenopus laevis. Fragments of cDNA representing differentially expressed messages were cloned and sequenced. Differential expression of the genes were confirmed by RT-PCR. One of them, es13, was up-regulated by the estradiol-treatment. Deduced amino acid sequence analysis of the partial cDNA fragment es13 showed the similarity to tachylectin-

1387 Intracellular localization and activity changes of casein kinase 2 during progesterone- induced maturation of Rana temporaria oocytes
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Using Rana temporaria oocytes stimulated to meiotic maturation the study of the features of casein kinase 2 (CK2) activity changes accompanying by the changes in the cell physiological status was conducted. For this purpose the activity of CK2 was determined in different cell fractions (membranes, cytoskeleton, ribonucleo- proteides, free RNA-binding proteins) at different maturation stages. The activity of CK2 increased in the fraction of free RNA-binding proteins 10-folds in 7 hours after progesterone administration then decreased. A recurring increase of CK2 activity in this fraction (2-4 folds) was observed at the stage of germinal vesicle destruction. The mechanism of enzyme activation is unknown as yet. The immunochemical analysis proved the significant part of CK2 to transfer to cytosol from cytoskeleton/membrane fraction during oocyte maturation. It can explain why the activity of CK2 increases in this fraction. Thus, the regulation of CK2 activity is realized due to the reversible localization of CK2 in different cell structures. The increase of the CK2 activity correlates with augmentation of protein biosynthesis. This can be explained by the fact that the protein biosynthesis during the maturation is controlled at the post-transcriptional level and results from the specific unmasking of mRNA stored in the oocyte cytoplasm. It demonstrates that the CK2 participates in the processes of mRNA unmasking.

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