

Distribution of the multidomain serine protease *neurotrypsin* in the mouse suggests multiple roles in pre- and postnatal development

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Introduction

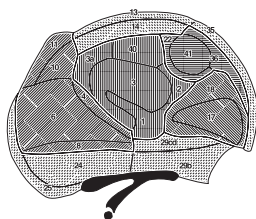
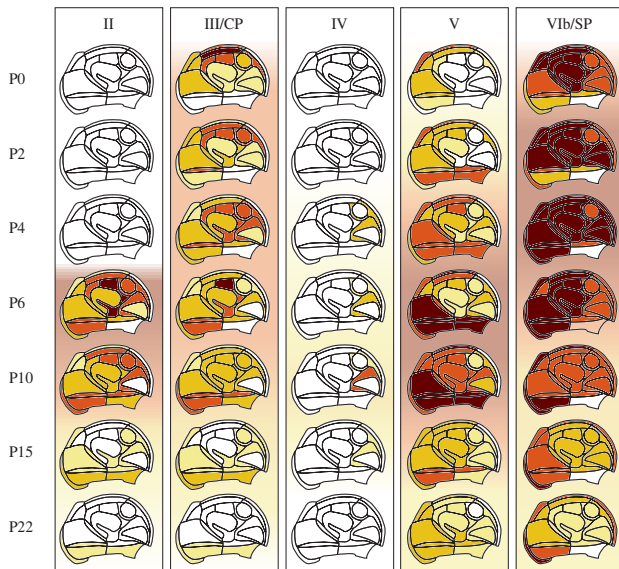
The trypsin-like multidomain serine protease neurotrypsin is found in distinct subsets of central and peripheral neurons of the adult mouse. Other serine proteases, such as thrombin, tissue- and urokinase-type plasminogen activator, have been implicated in cell migration, axogenesis, and synapse elimination during development, but also in neural plasticity of the adult. In order to better understand the developmental role of neurotrypsin, we have used *in situ* hybridization to map the distribution of its mRNA during pre- and postnatal development in B6D2F1 mice.

Methods. Fresh freezing, 20 µm cryostat sections. DIG-labeled anti/sense riboprobes from partial cDNA clone of neurotrypsin in pBluescript using Roche DIG RNA labeling kit. Fragments of 200-300 bp of the cRNA by partial alkaline hydrolysis used at approx. 300 ng/ml. Visualization with Roche anti-DIG Fab, AP + NBT/BCIP + levamisole.

Conclusion

While the elaborate postnatal expression pattern in the neocortex suggests an involvement of neurotrypsin in synaptogenesis or synapse elimination, its prenatal expression implicates it in target invasion by axons, Schwann cell differentiation and tissue morphogenesis.

Complex pattern in postnatal cortex



□ blank, layer not developed □ weak
 □ moderate □ strong □ maximal

Expression projected onto mouse cortical map from Caviness V.S.Jr. JCN 164:247-263, 1975:

Neocortex
 ▨ frontal: 4, 6 (motor), 8, 10, 11
 ▨ parietal: 1, 2, 3 (barrel field), 3a, 40
 ▨ temporal: 22, 36, 41 (auditory)
 ▨ occipital: 17 (visual), 18

Transition zone
 ▨ lateral: 13+14 (insular), 35 (perirhinal)
 ▨ medial: 24 (cingulate), 25, 29 (retrosplenial)

Neural and non-neural expression

