

## **Fibronectin Expression in the Developing Human Spinal Cord, Nerves, and Ganglia**

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**Aim.** Analysis of developmental role of fibronectin during differentiation of the human spinal cord, nerves, and ganglia.

**Methods.** Seven normal human embryos and fetuses between the 7th and 9th developmental week and a 9-week fetus with cervical spina bifida were histologically examined on hematoxylin and eosin stained serial paraffin sections of thoracic axial segments. Monoclonal antibody to the human cell fibronectin fragment was used for immunohistochemical detection of fibronectin.

**Results.** In the 7th and 8th week of development, fibronectin was weakly expressed in the ventricular and intermediate zones of the spinal cord. Intense fibrillar expression was found in the marginal zone of the spinal cord – first over the ventral gray horns and later over the lateral and dorsal gray horns, and along the pathways of ventral and dorsal roots of the spinal nerves and in the spinal ganglia. At 9th week, fibronectin expression disappeared in the ventricular and intermediate zones and became weak and granular in the marginal zone of the spinal cord. In the spinal cord of a 9-week malformed fetus with cervical spina bifida, fibronectin expression was completely absent. Fibronectin was expressed in the nerves and ganglia throughout the investigated period, both in normal and malformed human conceptuses.

**Conclusion.** Transient expression of fibronectin in the human spinal cord coincided with the most intense neuronal differentiation. Temporal and spatial expression of fibronectin during normal development, and its absence in a malformed human fetus suggests developmental role of fibronectin for the normal formation of the spinal cord.

**Key words:** central nervous system; extracellular matrix; fibronectins; human development; immunohistochemistry; spinal cord; spinal dysraphism; spinal nerves