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Journal

International Journal of Developmental Neuroscience, 1(3)

ISSN

0736-5748

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Publication Date

1983

DOI

10.1016/0736-5748(83)90235-6

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STUDIES ON NEUROTROPHIC AND SUBSTRATE - ATTACHED NEURITE OUTGROWTH FACTORS

Reichardt, L.F., Calof, A.L., Gorin, P.D., Greenspan, R.J., Greif, K.F., Lander, A.D. Matthew, W.D., Shelton, D.L., Tomaselli, K., & Winter, J. Dept. Physiology, UCSF, San Francisco, CA 94143

Neurons require appropriate substrata on which to extend neurites and the composition of the substrata encountered in vivo is believed to regulate both the extent and direction of axon growth as well as the position at which synaptic specializations appear. In particular, three constituents of extracellular matrix--fibronectin, laminin, and factors associated with heparan sulfate proteoglycans--have dramatic effects on neurite outgrowth in appropriate circumstances. Several of these factors have been shown to exist in appropriate positions to promote neurite growth in vivo as well as in vitro. The response of neurons to such factors depends on their growth state. This presentation will focus on characterization of these neurite outgrowth promoting factors and our efforts to determine their roles in directing neuronal development. The role of ECM components in directing axon growth and guidance in vivo is poorly understood. The study of soluble factors, which contain ECM components and act when bound to a substratum, may offer insights into that role. Supported by grants from the NIH, NSF, March of Dimes, and MDA.