FENS Forum 2006 - Vienna

For lectures, symposia and workshops, time indicates the beginning of the session.
For posters, authors are expected to be in attendance at their posters at the time indicated.

First author: Milanese, Chiara (poster)

Poster board 331 - Tue 11/07, 16:45 - Hall Y
Session 194 - Axon guidance
Abstract A194.11, published in *FENS Forum Abstracts, vol. 3, 2006*.
Ref.: *FENS Abstr., vol.3, A194.11, 2006*

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Title Cloning and functional characterization of adhesion molecules in the nervous system of Helix pomatia.

Text

A large number of proteins belonging to the IgCAM family are involved in various aspects of neural development and partecipate in the regulation of synaptic formation. We focused on the mouse neuronal glycoprotein F3/contactin, a member of the immunoglobulin superfamily that has been implicated in several functions in the vertebrate nervous system, including axonal growth, pathfinding and synaptic activity.
In previous studies, by using the anti mouse F3/contactin antisera, we found that three different components were expressed in the Helix pomatia nervous system and we investigated their distribution on Helix pomatia ganglia and on cultured Helix neurons. We also demonstrated that these molecules appeared to be important for cell adhesion and neurite outgrowth of neurons in culture and that they were involved in the target dependent regulation of neurotransmitter release from presynaptic terminals. We called these protein components Helix F3/contactin Related Proteins (HFRPs).
In the present study, by screening an expression library obtained from the Helix pomatia nervous tissue with the mouse F3/contactin antibody, we cloned two related proteins called HFRP-1 and HFRP-2. Alignment analysis showed that these two molecules shared almost the same sequence and structure between by the signal peptide and the first FNIII domain, but after that they remarkably differentiate. By northern blotting analysis, in which the common coding sequence was used as probe, we identified a single 6.3 Kb m-RNA, suggesting that these isoforms could arise from alternative splicing of a single gene, and by CHO transfection we demonstrated that either HFRP-1 than HFRP-2 showed a clear surface distribution. Microinjected isolated neurons with an antisense m-RNA generated from HFRP-2 to inhibit the protein expression showed a massive reduction of neurite extension and branching, suggesting that HFRPs are surface proteins involved in modulation of neuronal growth.

Theme
Development
Axonal and dendritic development / Axon guidance: extracellular regulation

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