

## Publication

A homologue of the axonally secreted protein axonin-1 is an integral membrane protein of nerve fiber tracts involved in neurite fasciculation

**JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 1384768**Author(s)** Ruegg, M. A.; Stoeckli, E. T.; Lanz, R. B.; Streit, P.; Sonderegger, P.**Author(s) at UniBasel** [Rüegg, Markus A.](#) ;**Year** 1989**Title** A homologue of the axonally secreted protein axonin-1 is an integral membrane protein of nerve fiber tracts involved in neurite fasciculation**Journal** Journal of cell biology**Volume** 109**Number** 5**Pages / Article-Number** 2363-78**Mesh terms** Animals; Axons, physiology; Brain Chemistry; Cell Adhesion Molecules, Neuronal, metabolism; Cells, Cultured; Chick Embryo; Contactin 2; Electrophoresis, Polyacrylamide Gel; Fluorescent Antibody Technique; Ganglia, Spinal, physiology; Immunodiffusion; Immunoglobulin Fab Fragments; Membranes, analysis; Molecular Weight; Nerve Fibers, physiology; Neurons, physiology

Axonin-1 is a glycoprotein that is released from axons of cultured neurons (Stoeckli, E. T., P. F. Lemkin, T. B. Kuhn, M. A. Ruegg, M. Heller, and P. Sonderegger. 1989. Eur. J. Biochem. 180:249-258). It has recently been purified from the ocular vitreous fluid of the chicken embryo (Ruegg, M. A., E. T. Stoeckli, T. B. Kuhn, M. Heller, R. Zuellig, and P. Sonderegger. 1989. EMBO (Eur. Mol. Biol. Organ.) J. 8:55-63). Immunohistochemistry localized axonin-1 prevalently in developing nerve fiber tracts. The presence of anti-axonin-1 Fab fragments during axon growth in vitro resulted in antibody binding to the axonal surfaces and in a marked perturbation of the fasciculation pattern. Hence, a fraction of axonin-1 is associated with axonal membranes and, by operational criteria, qualifies as a cell adhesion molecule. The major proportion of membrane-associated axonin-1 co-solubilized with the integral membrane proteins. By physico-chemical, immunological, and protein-chemical criteria, the integral membrane form was found to be highly similar to soluble axonin-1. In common with a number of other cell adhesion molecules, both soluble and membrane-bound axonin-1 express the L2/HNK-1 and the L3 epitopes. Radioactive pulse-chase and double-labeling experiments revealed that the released form was not derived from the membrane-bound form by shedding from the membrane surface, but directly secreted from an intracellular pool. Due to its high degree of similarity to the membrane-associated form and the presence of the L2/HNK-1 and L3 epitopes, reported to be ligands in adhesive cell interactions, adhesive properties are postulated for secreted axonin-1. As a soluble adhesive protein, it may function as a regulator of cell adhesion around its most likely site of secretion, the growth cone.

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