SCHWANN AND SCHWANNOMA CELLS EXPRESS A PROSPECTIVELY FUNCTIONAL MANNOSE RECEPTOR-LIKE PROTEIN

Leny A. Cavalcante[1], Wagner Baetas-Da-Cruz[1,2], Suzana Corte-Real[2]

[1]Instituto de Biofísica, UFRJ, Rio de Janeiro, [2]Departamento de Ultra-estrutura e Biologia Celular, FIOCRUZ-RJ – Leny@biof.ufrj.br, wagner.baetas@gmail.com

The mannose receptor (MR) is a transmembrane glycoprotein that is expressed in several cell types but no information is available on Schwann cells (SC). We show that both rodent SC in primary cultures and a human Schwann cell line (ST88-14) bind the exogenous MR ligand neoglycoprotein mannosyl/bovine serum albumin-fluorescein isothiocyanate (man/BSA-FITC) in a highly specific manner. Flow cytometry demonstrates 90% SC and 62% man/BSA-FITC-positive ST88-14 cells, a dose-dependent change in tagged cellular proteins and near total inhibition of binding by D-mannose or the highly mannosylated horseradish peroxidase (HRP). Both endogenous lectin binding and Western blot show that SC and ST88-14 share a ~180 kDA protein with peritoneal macrophages. Ultrastructural analysis of ST88-14 cells after incubation with HRP-colloidal gold without or with chasing at 37C shows an initial location on the cell surface and temperature– and time-dependent internalization of the probe. Treatment of cultured SC with interferon γ or dexamethasone followed by tagging with man/BSA-FITC and analysis by flow cytometry shows down– and upregulation, respectively, of the putative receptor. Our results show that Schwann and Schwannoma cells express a MR-like protein in a prospectively functional state and suggest an antigen-presenting function of SC and their role in infectious/inflammatory states of peripheral nerves.

Key-words: Pattern recognition receptors; Mannosylated proteins; Peripheral glia

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