A novel marker glycoprotein for the microvillus membrane of surface colonocytes of rat large intestine and its presence in small-intestinal crypt cells

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 153419
Author(s) GORR, SU; STIEGER, B; FRANSEN, JA; KEDINGER, M; MARXER, A; HAURI, HP
Author(s) at UniBasel Hauri, Hans-Peter ;
Year 1988
Title A novel marker glycoprotein for the microvillus membrane of surface colonocytes of rat large intestine and its presence in small-intestinal crypt cells
Journal The Journal of cell biology
Volume 106
Number 6
Pages / **Article-Number** 1937-1946
Keywords Age Factors; Animals; Antibodies; Monoclonal/immunology; Cell Compartmentation; Colon/*analysis; Fluorescent Antibody Technique; Intestinal Mucosa/*analysis; Intestine; Small/*analysis; Membrane Glycoproteins/*analysis; Microscopy; Electron; Microvilli/analysis; Molecular Weight; Rats; Tissue Distribution

Murine mAbs were produced against purified microvillus membranes of rat colonocytes in order to establish a marker protein for this membrane. The majority of antibodies binding to the colonic microvillus membrane recognized a single protein with a mean apparent Mr of 120 kD in both proximal and distal colon samples. The antigen is membrane bound as probed by phase-partitioning studies using Triton X-114 and by the sodium carbonate extraction procedure and is extensively glycosylated as assessed by endoglycosidase F digestion. Localization studies in adult rats by light and electron microscopy revealed the microvillus membrane of surface colonocytes as the principal site of the immunoreaction. The antigen was not detectable in kidney or liver by immunoprecipitation but was present in the small intestine, where it was predominantly confined to the apical membrane of crypt cells and much less to the microvillus membrane of differentiated enterocytes. During fetal development, the antigen appears first in the colon at day 15 and 1-2 d later in the small intestine. In both segments, it initially covers the whole luminal surface but an adult-like localization pattern develops soon after birth. The antibodies were also used to develop a radiometric assay for the quantification of the antigen in subcellular fractions of colonocytes in order to assess the validity of a previously developed method for the purification of colonic brush-border membranes (Stieger, B., A. Marxer, and H.P. Hauri. 1986. J. Membr. Biol. 91:19-31.). The results suggest that we have identified a valuable marker glycoprotein for the colonic microvillus membrane, which in adult rats may also serve as a marker for early differentiation of enterocyte progenitor cells in small-intestinal crypt cells.

Publisher Rockefeller University Press
ISSN/ISBN 0021-9525
edoc-URL http://edoc.unibas.ch/dok/A5257822
Full Text on edoc Available;
Digital Object Identifier DOI 10.1083/jcb.106.6.1937
PubMed ID http://www.ncbi.nlm.nih.gov/pubmed/3290221
ISI-Number WOS:A1988P139500014
Document type (ISI) Article