Heparan sulfate in human cutaneous Meissner's and Pacinian corpuscles

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Heparan sulfate proteoglycans are pericellular/cell surface molecules involved in somatosensory axon guidance in the peripheral nervous system. However, the distribution of heparan sulfate proteoglycans in the extracellular matrix of human cutaneous sensory corpuscles is unknown. Immunohistochemistry and immunofluorescence assays were performed to define the localization of heparan sulfate proteoglycans in human cutaneous Meissner's and Pacinian corpuscles using two anti-heparan sulfate antibodies together with anti-S100 protein, anti-PGP9.5, anti-CD34 (to immunolabel basement membranes, Schwann cells, axon and the intermediate endoneurial layer of Pacinian corpuscles, respectively), anti-Type IV collagen, and anti-chondroitin sulfate antibodies. Heparan sulfate proteoglycans were colocalized with Type IV collagen in Meissner's corpuscles and were located in the outer core lamellae and capsule, but not in the inner core or the intermediate layer, in Pacinian corpuscles. Chondroitin sulfate was observed in the intermediate layer of Pacinian corpuscles but was never colocalized with heparan sulfate proteoglycans. The present results strongly suggest that heparan sulfate proteoglycans are associated with the basement membranes of the lamellar cells in Meissner's corpuscles and with the complex outer core capsule in Pacinian corpuscles. The functional significance of these results, if any, remains to be elucidated.

basement membrane

cutaneous sensory corpuscles

extracellular matrix

heparan sulfate proteoglycans

human

antibody

CD34 antibody

chondroitin sulfate

collagen type 4

pgp9.5 anitbody

protein S 100

proteoheparan sulfate

unclassified drug

adult

antibody labeling

Article

axon

basement membrane

human

immunofluorescence test

immunohistochemistry

meissner's corpuscles

Pacini corpuscle

priority journal

Schwann cell

skin