Spatio-Temporal Localization of the Glial Fibrillary Acidic Protein (GFAP) in the Spiral Ganglion from the 16th Embryonic Day Until the 25th Postnatal Day in Rats

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The spiral ganglion is responsible for the conduction of the information between the sensory epithelium of the auditory organ (the organ of Corti) and the central nervous system. The origin and nature of the spiral ganglion glial cells in mammals are barely known, although glial cells are essential to the development and the working of the nervous system.

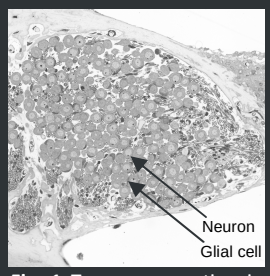

Fig. 1 Transverse section in the spiral ganglion of a rat at P25.

Looking for a specific marker of glial cells present during the whole development of the spiral ganglion, we tested the GFAP in a double-labelling experiment with betaIII-tubulin. According to a previous preliminary study from our team, the betaIII-tubulin labels (pro)neuronal cells.

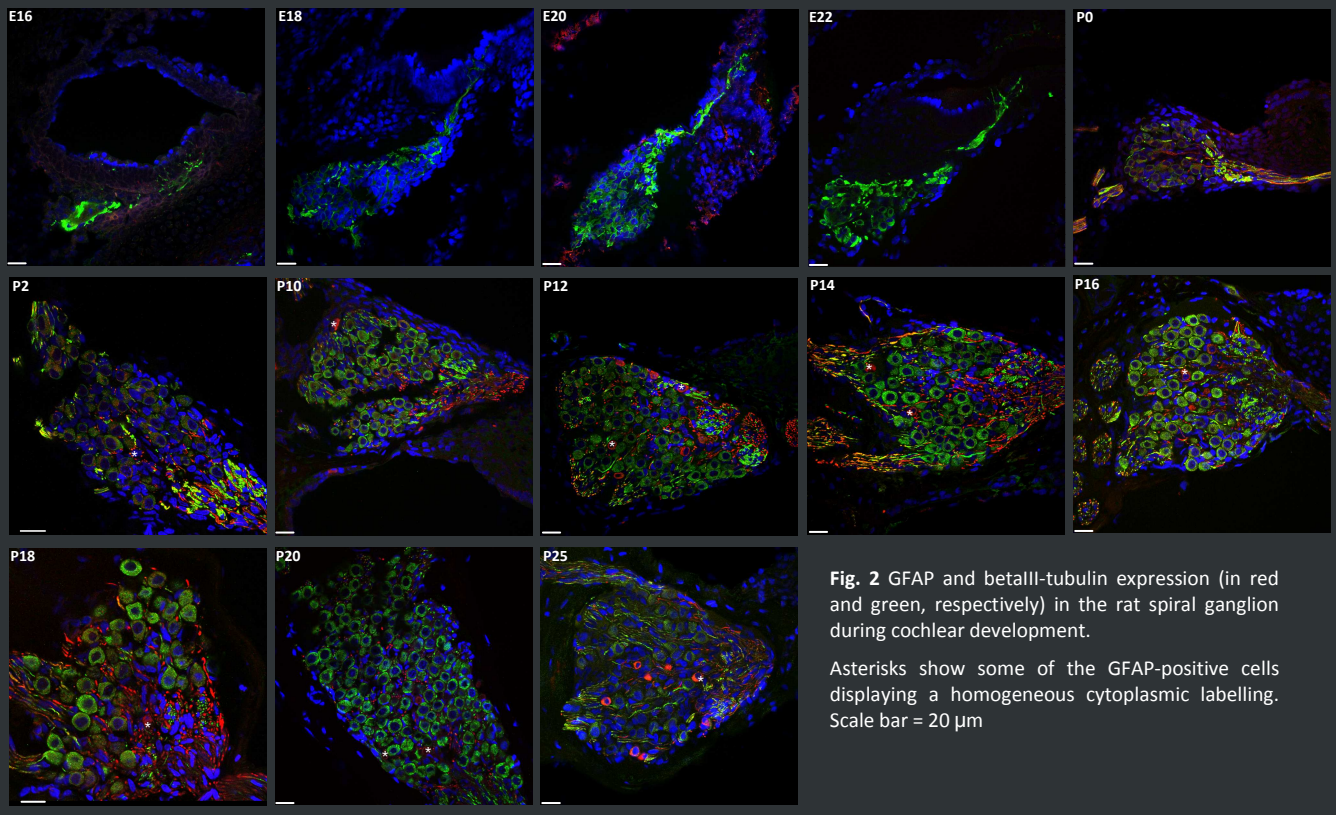

Fig. 2 GFAP and betaIII-tubulin expression (in red and green, respectively) in the rat spiral ganglion during cochlear development.

Asterisks show some of the GFAP-positive cells displaying a homogeneous cytoplasmic labelling. Scale bar = 20 µm

The GFAP is expressed in the spiral ganglion from P0 until P25. A homogeneous labelling is found in the cytoplasm of a few dispersed unidentified cells among the (pro)neurons, whereas a granular labelling appears among a group of cells neighbouring the bundle of fibers innervating the organ of Corti. The GFAP seems to be absent in the earlier stages, but this observation needs to be confirmed. Some cells of the ganglion are not labelled by either marker.

Ultrastructural analysis may help in the identification of the GFAP-positive cells and of the unlabelled cells.

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