Signal transducing adaptor molecule 2 (*Stam2*) expression in the peripheral nervous system of the mouse

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STAM2 (Signal transducing adaptor molecule 2) is a phosphotyrosine protein taking part in an endosome associated complex containing also HRS and EPS15 proteins. This complex has been suggested to be involved in sorting of mono-ubiquitinated endosomal cargo toward degradation in the lysosome. As STAM2 is phosphorylated upon binding diverse growth factors and cytokines to the cell membrane, it might also play a regulatory role in cell signalling, being at the intercross of signalling pathways and membrane transport in the cell [1].

The visualization of *Stam2* expression in the peripheral nervous system was achieved using the advantage of the genetically modified mouse line originated from the gene trap screen [2]. These mice have a promoterless *lacZ* gene inserted in frame with *Stam2*, therefore *lacZ* expression is expected to mirror those of *Stam2*. Beta-galactosidase activity resulting from *lacZ* expression was detected in the tissues by histochemical staining with X-gal substrate.

Stam2 expression was found in all sites of the peripheral nervous system under study, i.e. in the trigeminal ganglion, in dorsal root ganglia and in the enteric nerve networks (Figure 1).

In order to further clarify which cell types are expressing *Stam2*, three markers were checked for colocalisation with beta-galactosidase: PGP as a general neuronal marker, GFAP as a glial cell marker, and c-kit as marker for interstitial cells of Cajal. No GFAP-immunoreactive glial cells were observed to stain for beta-galactosidase. Some co-labeling for beta-galactosidase was noticed in c-kit immunoreactive interstitial cells of Cajal within the myenteric plexus. The majority of the beta-galactosidase positive cells, however, costained for PGP, indicating that the most of these *Stam2*-expressing cells were neuronal in origin (Figure 2).

As STAM2 together with HRS (hepatocyte growth factor regulated tyrosine kinase substrate) forms the ESCRT-0 complex implicated in sorting of ubiquitinated receptors toward late endosomes/multivesicular bodies and subsequent degradation in the lysosome, the observed expression suggests the importance of Stam2 in the regulation of growth factor and cytokine signalling for the maintenance of a healthy gut.

1. K.G. Bache et al., J. Biol. Chem. **278** (2003) p12513
2. T. Thomas et al., Transgenic Res. 9 (2000) p395.
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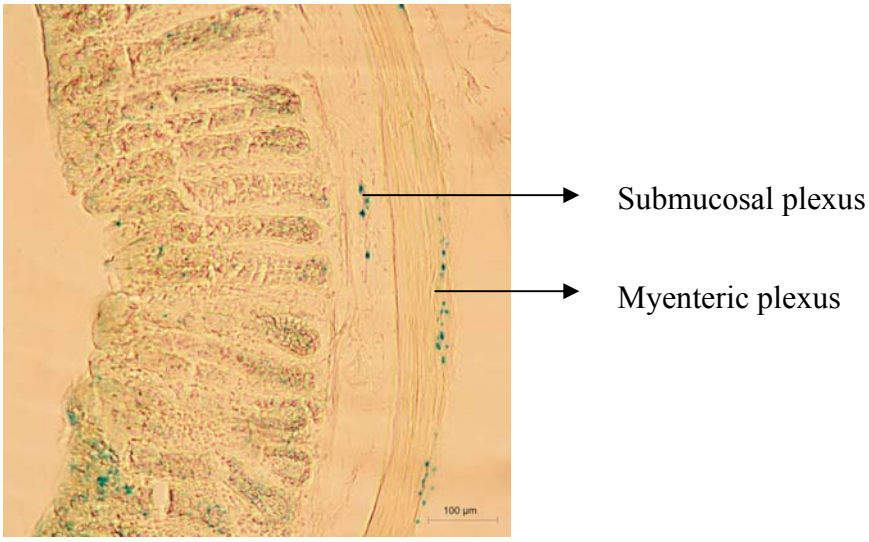

Figure 1. Stam2 was found in the both, myenteric and submucosal plexus (arrows) of the large intestine (X-gal staining on paraffin embedded sections of the homozigous mouse).

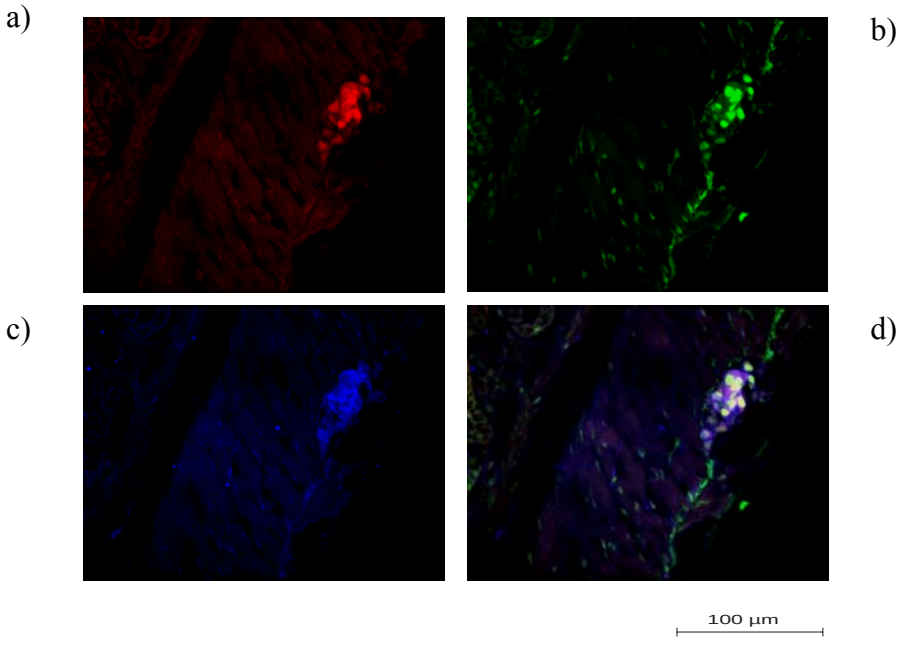

Figure 2. Immunohistochemistry of the myenteric plexus of the large intestine of the heterozygous mouse. The triple staining included beta-galactosidase (a), C-kit staining of interstitial cells of Cajal (b) and PGP-9.5 staining of the neurons (c). The staining indicates the presence of ß-galactosidase in a subpopulation of myenteric neurons and in some interstitial cells of Cajal (d).

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