

Gfi1 regulates intestinal and gastric epithelial differentiation downstream of Notch

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Gfi1 is a transcriptional repressor involved in directing differentiation of secretory precursors into goblet and paneth cells in the intestinal epithelium. Gfi 1 is downstream of the Notch signaling pathway, responsible in regulating expression of counter transcription factors Atoh 1 (secretory) and Hes 1, (absorptive). Recent reports describe Notch activity in gastric epithelium, but there are no demonstrations of the role of Gfi 1 in stomach differentiation. In order to investigate the role of Gfi1 in context of Notch inhibition in intestinal and gastric epithelium, we recently generated Gfi1^{cre} mice to visualize expression. Furthermore, we developed mice with a deletion in Gfi 1 using Cre/LoxP system, which were treated with Gamma secretase inhibitor for notch investigation. Our analysis of small intestine shows notch inhibition in Gfi1 ^{-/-} significantly increases enteroendocrine and paneth cell expression. Furthermore, we describe the phenotype of a Gfi1 ^{-/-} stomach indicating an increase expression of transitional cells between mucus neck and chief cells. Thus, Gfi1 is responsible for the allocation but not selection of secretory cells in the intestine, and in regulating mucus neck to chief cell differentiation scheme in the fundus. Furthermore, Gfi1 has a role in the context of Notch inhibition in intestinal and gastric epithelium.

Acknowledgment: This study was supported by T35 DK 60444