Expression of TFF3 in epithelia of mouse fetus

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BACKGROUND AND AIMS: Trefoil Factor Family 3 protein can be found in different epithelial tissues, such as that of intestine, oral mucosa, salivary glands, submucosal esophageal glands, airways and some other organs, and is secreted onto different mucosal surfaces. It has an important role in maintenance of epithelial integrity by acting through various mechanisms.[1-5] Involvement of TFF3 in restitution and repair of the gastric and intestinal epithelium is well documented, and its up-regulation in response to mucosal injury. On the other hand, TFF3 overexpression was noticed in a variety of cancers of epithelial origin including colorectal cancer, cholangiocarcinoma, breast cancer and prostate cancer.[1,6,7]
In this work we wanted to get insight in TFF3 expression in mouse fetus

METHODS: CD1 mouse fetuses, day 15 to 17 were isolated from pregnant females upon cervical dislocation, fixed in 4% paraformaldehyde and embedded into paraffin. Fetuses were cut into 6µm thick slides, and processed for immunohistochemical staining. Primary polyclonal rabbit anti-TFF3 antibody was used, and the method employed was biotin-streptavidin with DAB (3,3'-diaminobenzidine) as chromogen. PBS instead of primary antibody was used as a negative control. Slides were examined by light microscopy.

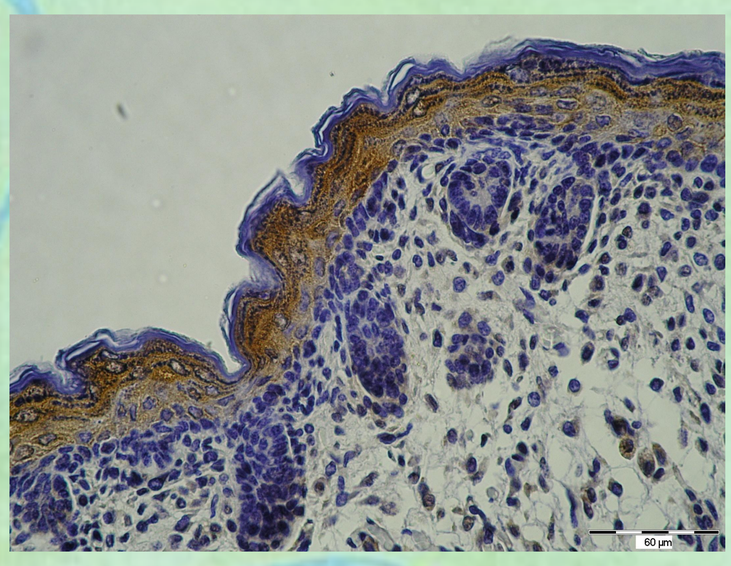

Fig.1. TFF3 expression in developing skin (17-day old mouse fetus). Strong immunostaining in the cytoplasm of keratinocytes of the *stratum spinosum* and *stratum granulosum*.

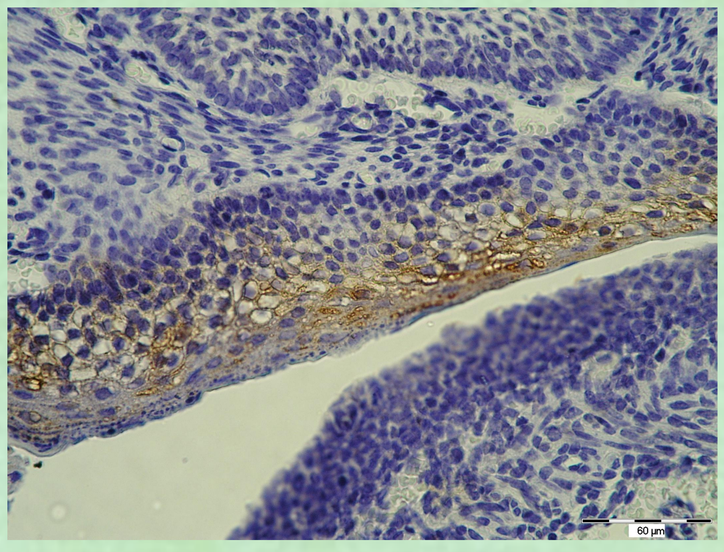

Fig.2. TFF3 expression in keratinocytes of the oral mucosa (16-day old mouse fetus). Cytoplasmic expression of TFF3 is visible in different layers of stratified epithelium in oral cavity except in *stratum basale*.

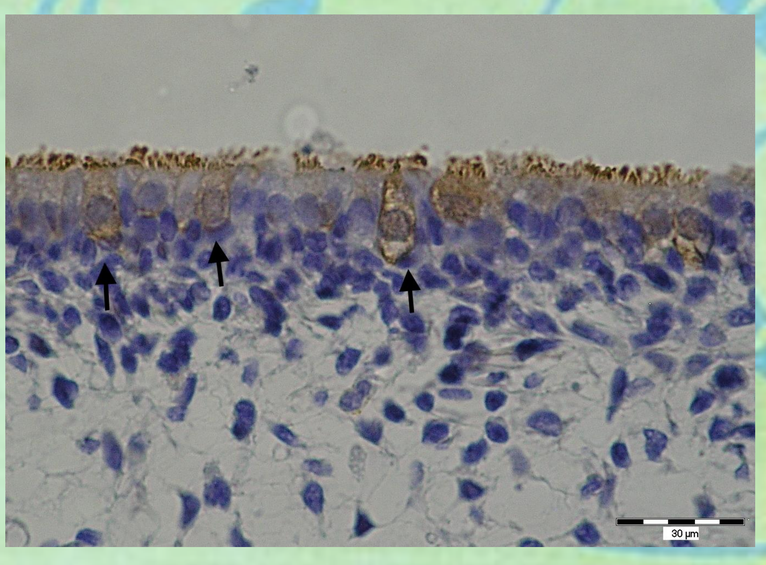

Fig.3. Respiratory mucosa of a 16-day old mouse fetus expressing TFF3. Pseudostratified columnar epithelium of the nasal cavity shows positive staining in the cytoplasm of goblet cells (arrows), and on the surface of the epithelium in the cilia area.

RESULTUS: TFF3 expression was found in keratinocytes that constitute basal and middle layers of stratified epithelia in developing skin of fetuses and in keratinocytes at the vestibulum of the oral cavity. Goblet cells of the nasal cavity, bronchi and gut also stained positively. Mild signal was found in the epithelium of kidney collecting ducts. Negative controls showed no signal.

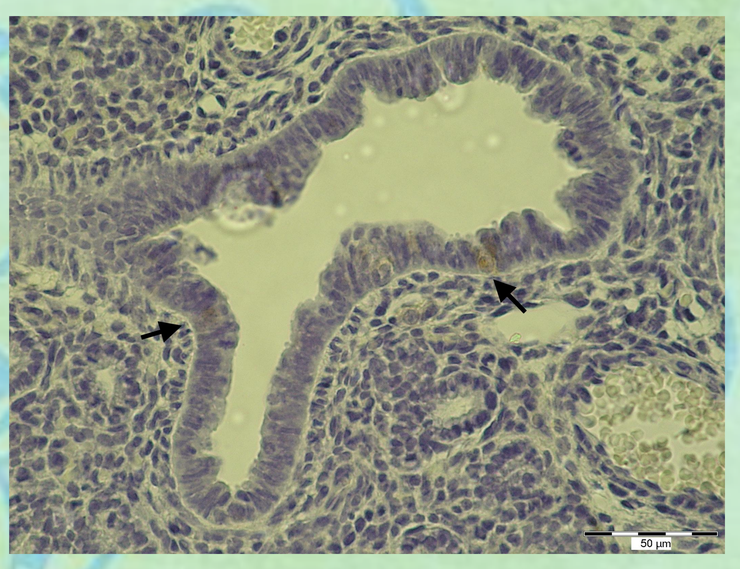

Fig.4. Bronchial epithelium of a 15-day old mouse fetus showing TFF3 expression. Goblet cells (arrows) of pseudostratified columnar epithelium show faint but detectable immunostaining for TFF3 in bronchi inside the developing lung.

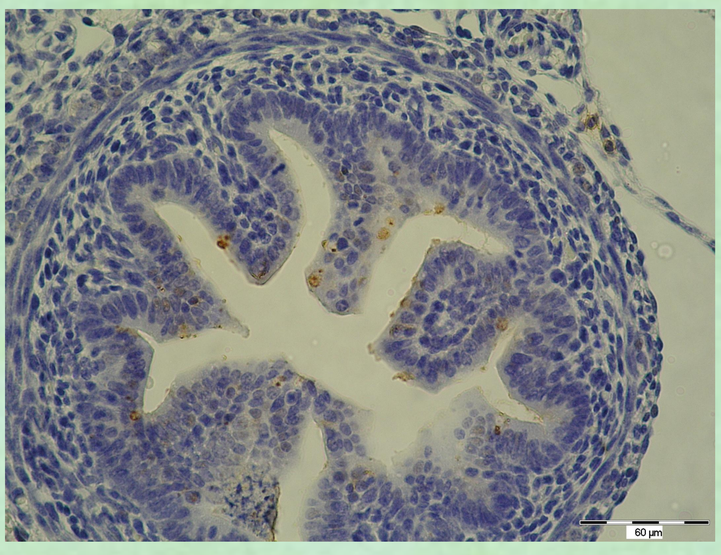

Fig.5. TFF3 expression in the intestine of a 16-day old mouse fetus. Clearly visible signal in goblet cells of simple columnar epithelium in the intestine.

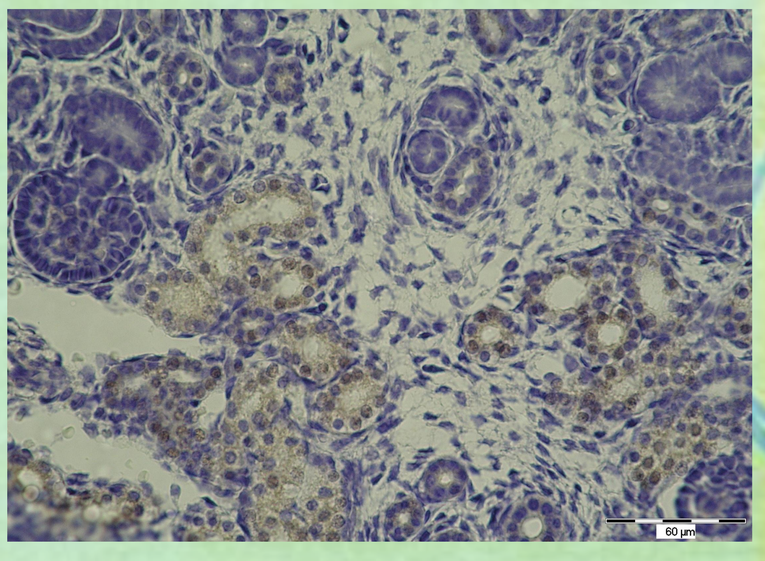

Fig.6. Renal medulla expressing TFF3 (15 day-old mouse fetus). Ducts in the renal medulla show moderate cytoplasmic expression of TFF3.

CONCLUSIONS: TFF3 has been shown to promote migration of epithelial cells in vitro and in vivo, partly by reducing cell to cell adhesion. It participates in immune response, and activates various signaling cascades. TFF3 is also known to affect apoptosis. Since it is expressed in various epithelial tissues during fetal development, it could play an important role in these actively proliferating tissues. Cancers which express or overexpress TFF3 probably only exploit the physiological properties of TFF3 in growth and metastasing, which has diagnostic and potentially therapeutic implications. Furthermore, it confirms that malignancies often tend to exhibit some features of embryonic tissues.

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