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Intestinal Stemness and Microenvironmental Cues

Research emphasis:

Dr. Van Landeghem's laboratory focuses on understanding how signals emanating from the microenvironment impact normal and cancer intestinal stem cells with an emphasis on enteric glia. Her group aims to define the molecular crosstalk between intestinal stem cells and their neighboring cells such as enteric glial cells in healthy intestines, and to assess whether alterations of this crosstalk induced by chronic stress occurring during intestinal pathologies may lead to the malignant transformation of normal stem cells into cancer stem cells and promote tumor development using genetic mouse models and primary co-culture systems.

Selected publications:

Van Landeghem L, Chevalier J, Mahé MM, Wedel T, Urvil P, Derkinderen P, Savidge T, Neunlist M. Enteric glia promote intestinal mucosal healing via activation of focal adhesion kinase and release of proEGF. *Am J Physiol Gastrointest Liver Physiol.* 2011

Van Landeghem L, Santoro MA, Krebs AE, Mah AT, Dehmer JJ, Gracz AD, Scull BP, McNaughton K, Magness ST, Lund PK. Activation of two distinct Sox9-EGFP-expressing intestinal stem cell populations during crypt regeneration after irradiation. *Am J Physiol Gastrointest Liver Physiol.* 2012

Neunlist M, Van Landeghem L, Mahé MM, Derkinderen P, des Varannes SB, Rolli-Derkinderen M. The digestive neuronal-glia-epithelial unit: a new actor in gut health and disease. *Nat Rev Gastroenterol Hepatol.* 2012

Van Landeghem L, Santoro MA, Mah AT, Krebs AE, Dehmer JJ, McNaughton KK, Helmrich MA, Magness ST, Lund PK. IGF1 stimulates crypt expansion via differential activation of 2 intestinal stem cell populations. *FASEB J.* 2015

Application:

- Intestinal Repair
- Colorectal Cancer
- Intestinal Stem Cells
- Enteric Nervous System

Collaboration potential:

- Enteric Nervous System in Gastrointestinal Diseases
- Normal and Cancer Intestinal Stem Cells
- *In vitro* Co-culture Systems