**SCHOOL OF LIFE SCIENCES – FACULTÉ DES SCIENCES DE LA VIE**
**GLOBAL HEALTH INSTITUTE – INSTITUT D'INFECTIOLOGIE**

ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

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# Global Health Institute
# RECRUITING SEMINAR

## *Regulation of Intestinal Immune Homeostasis in Mouse and Man*

**Thursday, August 27th, 2015 – 13h30**
**EPFL – room SV1717a**

## Arthur Mortha

Center for Science and Medicine at the Mount Sinai Medical Center
Department of Oncological Sciences, New York

*Host: Prof. Stewart Cole*

**Abstract:**

The gut is the body's largest mucosal surface and serves as entry port for nutrients, water, minerals and vitamins. It harbors a universe of microbial species known as the intestinal commensal microflora. Preserving proper intestinal homeostasis is the key to ensure optimal nutrient absorption. Exposures to microbial molecules and food-borne antigens cause permanently activate the gut-residing immune system, even in a healthy organism. Overriding activation of the intestinal immune system by luminal antigens is commonly kept in check by potent immune-suppressive cells. The suppression of the immune activation is an essential cellular system that prevents immune-mediated damage of the gut. Permanent tissue damage, nutrient-intolerance, changes in microbial composition and function are only a few of the consequences resulting from a failure in suppression of the destructive activated gut immune system.
We have identified a cellular and molecular network that promotes the generation of immune-suppressive cells, supporting the tolerance to food-antigens. Our results define intestinal, microflora-derived signals as key initiator of this network. Recognition and interpretation of the intestinal microflora by innate immune cells thereafter dictates the phenotype of effector cells that facilitate the generation of essential intestinal immune-suppression. The occurrence of chronic intestinal inflammation and defects in tolerance to food-antigens strongly associate with genetic and idiopathic alterations of this network in mice and man, further highlighting its relevance in the maintenance of intestinal functionality. Thus, our network provides a critical mechanism through which the gut microbiota supports intestinal immune-suppression and protects immunologic tolerance to food and preserves intestinal functionality.