



Funded Postdoc positions available

Due to its remarkable self-renewing capacity, the fly gut represents a powerful system for studying stem-cell function during adult tissue homeostasis. At steady-state turnover rates, the fly intestine undergoes complete self-renewal every three weeks, a process which is highly accelerated in response to damage of the gut epithelium. This capacity for self-renewal relies on the proliferative activity of the intestinal stem cells (ISC), which is tightly coupled with cell loss to maintain intestinal homeostasis. ISC proliferation is controlled by multiple local and systemic signals released from the ISC niche (enterocytes (ECs), enteroendocrine (EE) cells, enteroblasts (EBs), and visceral muscles (VMs)) and non-gastrointestinal organs. To identify niche-derived signals controlling ISC fate and gut homeostasis, we recently knocked down 800 secreted peptides in the different populations of the ISC niche using RNAs and screened for signals that are required for gut barrier function and survival following enteric infection. Interestingly, many of the identified signals are conserved, but with no previous described function in the gut. Several of the ongoing projects in the team is centered around understanding how these signals control ISC fate and what their roles are in maintaining organ physiology and homeostasis. We are currently starting another functional screen aiming at identifying receptors in the enterocytes and visceral muscles that couple systemic signals or environmental cues with ISC fate decisions and gut homeostasis. These screens aim at identifying novel interorgan circuitries allowing communication between the gut and other organs to sustain gut physiology and organismal health.

Another thematic in our team focuses on the complex role that TNFR signalling plays in intestinal homeostasis and disease. In humans, excess TNF-alpha signalling induces apoptosis and contributes to intestinal pathologies, but it is also a critical protective factor promoting intestinal homeostasis following injury. Our research show that TNFR signalling plays an important role in maintaining gut homeostasis and physiology in homeostatic conditions. We are currently investigating the upstream events that leads to TNFR activation and how this contributes to intestinal physiology.

The “Organ Homeostasis and Physiology” team is situated in the vibrant capital of Denmark, Copenhagen, at the Department of Biology, University of Copenhagen, where we are part of a larger fly community. We are also affiliated with the DanStem Center, which houses several groups working on stem cells in vertebrate models. Our team is funded by an “ERC starting grant” and the “Novo Nordisk” foundation, and we currently have paid Postdoc (net salary (after taxes) ~ 3300 euros/month) position available. We are looking for highly motivated people with experience in the fly model starting end 2021 beginning of 2022.

Letters of intention should be forwarded to:



Ditte Andersen: ditte.andersen@bio.ku.dk

Julien Colombani: julien.colombani@bio.ku.dk

<https://www1.bio.ku.dk/english/research/cell-neurobiology/andersen-colombani-lab/>
<https://danstem.ku.dk/research1/andersen-colombani-group/>