



STudent REseArch Mobility Programme (STREAM) Project proposal

Host University:
Universität Zurich / ETHZ

Field:
Medicine

Specified field, subject:
Inflammatory bowel disease and colorectal carcinoma

Research project title:
The role of protein tyrosine phosphatases and epithelial-to-mesenchymal transition in the pathogenesis of inflammatory bowel disease and colorectal carcinoma

Possible starting month(s):

Sep	Oct	Nov	Dec	Jan	Fev	Mar	Apr	May	Jun	Jul	Aug
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Possible duration in months:

1	2	3	4	5	6
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Exact starting and end dates will be discussed between the supervisor and the student

Suitable for students in: Bachelor level Master level

Prerequisites:

The applicants should have sufficient abilities in basic research and be able to cooperate with a number of international people. Further, they should be interested in performing cell culture experiments, mouse experiments as well as working with human tissue samples.

Restrictions:

NONE

Description (maximum 2,000 characters):

The pathogenesis of inflammatory bowel disease, representing a chronic intestinal inflammation, is still poorly understood. Recent evidence suggest that polymorphisms in more than 160 susceptibility genes contribute to an aberrant immune response to food allergens, microbial components and environmental toxins finally resulting in an impaired intestinal barrier function and excessive cytokine secretion. As a consequence, chronic inflammation is established and major complications, such as the development of intestinal fistulae or colorectal carcinoma occurs. Protein tyrosine phosphatases play a key role for modulating pro-inflammatory signal transduction and cytokine secretion, controlling the adaptive and innate immune system as well as regulating cell growth and cell proliferation. Further, they have been implicated in a variety of malignant tumors. In our laboratory, we investigate the role for certain protein tyrosine phosphatases, such as PTPN2, PTPN9, PTPN22 and PTPN23 in the pathogenesis of chronic intestinal inflammation



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as well as of colorectal carcinoma. Further, we are studying the pathogenesis of Crohn's disease associated fistulae that feature epithelial-to-mesenchymal transition (EMT) as a characteristic pathogenetic mechanism. However, the molecular mechanisms underlying the onset of these fistulae are still poorly understood. So far, we could demonstrate that pro-inflammatory cytokines as well as bacterial antigens critically contribute to development of EMT in the intestinal tract and therefore to the pathogenesis of Crohn's disease associated fistulae. Since EMT is also associated with the onset of colorectal carcinoma, a further goal of our laboratory is to investigate the pathogenesis of colorectal carcinoma. In this subject, we are studying the role for certain protein tyrosine phosphatases as well as of alpha v beta 6 integrin. The project runs from 1 May 2015 - 31 December 2018 and is open for recently graduated undergraduate students and for graduate students. The project is available in the Fall and Spring semesters. Number of places available: 2 per semester.



Note: Research project may be adapted according to the student profile and the period/timeline.

Department:

Division of Gastroenterology and Hepatology

Contact person, including position:

Katja Durkin, Project Manager, International Relations Office

Contact email:

Katja.durkin@int.uzh.ch

Deadline for nomination to reach host university:

Ongoing

Notification of admission given by the end of:

Given within 4 weeks

Additional information:

NA



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