DBMR Research Conference

Langhans Auditorium
Murtenstrasse 31, 3008 Bern

Date: **Monday, November 6, 2023, 5 pm – 6 pm**

Title: **Intravital Microscopy of the Fate Cells that carry Mutations in Oncogenic Driver Genes**

Speaker: **Prof. Jacco van Rheenen, PhD**
Division of Molecular Pathology, Oncode Institute
The Netherlands Cancer Institute (NL)

Bio: The van Rheenen group studies the identity, behavior, and fate of cells that drive tumor initiation, progression, and metastasis. These dangerous populations of cells are difficult to study since they are rare, and their behavior (e.g. migration) and traits (e.g. stemness) change over time. To be able to study these cells, the van Rheenen group has developed microscopy techniques to visualize individual cells and their progeny in living animals for serval weeks, referred to as intravital microscopy. By combining this technology with the latest genetic mouse models, we literally see the behavior of (cancer) cells and uncovered the dynamic and plastic nature of cancer that could not be extracted by any other techniques.

In 2008 van Rheenen was appointed as group leader at the Hubrecht Institute, where he utilizes his imaging techniques to visualize processes that are required for the metastasis of tumor cells in living animals. In July 2014 he was appointed full professor in Intravital Microscopy at the University Medical Center Utrecht. In October 2017 he became senior group leader at the Netherlands Cancer Institute (NKI) and the Oncode Institute. In 2009, he was awarded a VIDI, and in 2022 a VICI award from Netherlands Organization for Scientific Research. In 2013, he received the Stem Cells Young Investigator Award. In 2015, he was awarded an ERC consolidator grant, in 2017 the Dr. Josef Steiner Cancer Research Foundation Award, and in 2019 the Ammodo Science Award.

Abstract: Cells that have acquired mutations in driver genes are abundantly present in tissues of healthy individuals, but they rarely develop into tumors. Yet, the underlying protection mechanisms that prevent tumor formation are largely unknown. Over the years, we have developed high-resolution intravital microscopy techniques to visualize and study the behavior and fate of individual cells in breast and intestinal tissues in living mice. In my talk, I will show how we have used these intravital technologies to study the mechanisms in breast and intestinal tissues that prevent and mediate the formation of tumors by cells that acquire oncogenic mutations. Our studies illustrate several layers of protection that serve to eliminate the majority of cells that acquire chance somatic mutations at the expense of driving the accelerated expansion of a minority of cells, which can colonize large areas leading to field cancerization in both intestinal and breast tissues.

Prof. Jacco van Rheenen, PhD, has been invited by Prof. Marianna Kruithof-de Julio, PhD, Cancer Resistance Therapy, Department for BioMedical Research, University of Bern.

The DBMR Research Conference takes place from 5 pm – 6 pm and will be followed by an apéro.

Next DBMR Research Conference

Monday, December 4, 2023, 5 pm – 6 pm
Speaker & Title: tba