

ICB PhD public presentations**DEVELOPMENT AND OPTIMIZATION
OF MAMMALIAN CELL PERFUSION
CULTURES FOR CONTINUOUS BIO-
MANUFACTURING****Moritz Wolf**

ICB Morbidelli Group

Supervisor: Prof. Dr. Massimo Morbidelli

Co-examiner: Prof. Dr. Donald Hilvert

**ETH Hönggerberg, 10/04/2018****HCI H 2.1, 14.00 h**

Project Summary: Therapeutic proteins, especially monoclonal antibodies (mAbs), have become one of the most important areas in the biopharmaceutical industry. In perfusion bioreactors, the continuous exchange of fresh medium combined with the retention of cells enables long-term stable cultures at high viable cell densities and viability, minimal variation in the metabolite environment and short product residence time in the reactor leading to a significantly more uniform protein product compared to fed-batch technology. Spin tube bioreactors provide a useful scale down model for the design and optimization of perfusion cultures with strong savings in time and media consumption. Further optimization can be performed in benchtop bioreactors at lab-scale applying a 2-step approach investigating step wisely optimal operating conditions by varying viable cell density, perfusion rate, or investigating the effect of environmental or chemical growth inhibition.

CV. Moritz Wolf completed both his bachelor (2013) and Master (2015) degrees at ETH Zurich. He performed his Master Thesis in the metabolic engineering laboratory of Professor Greg Stephanopoulos. He started as a PhD student in the Morbidelli Group in summer 2015.