

ICB PhD public presentations

MICRO FLUORESCENCE IN SITU HYBRIDIZATION (μ FISH) USING A MICROFLUIDIC SCANNING PROBE (MFP)

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The deMello group

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HCI D2, 16.00 h

Project Summary: FISH is an important cytogenetic technique for high-resolution detection of genetic and transcriptomic abnormalities, which can be indicators of cancer. However, the widespread use of FISH for diagnostics is limited, mainly because the FISH probes are expensive and the assay is time-consuming. We developed a microfluidic FISH implementation using an MFP for rapid cytogenetic analysis of cells and tumor sections while also being conservative of the cytological sample and reagents. We demonstrated spatially multiplex chromosomal enumeration in adherent cells. Further, we adapted this MFP-based FISH implementation for rapid detection of the HER2 gene, an important diagnostic biomarker, in breast tumor sections. We also developed a new method for probing FISH hybridization kinetics of FISH signals in real time. This method allows the effects of various reaction parameters in FISH reactions to be quantified, which is important for modelling intracellular hybridization and the development of new FISH assays.

CV. Deborah Huber is a researcher at IBM Research-Zurich and a PhD candidate at the Department of Chemistry and Applied Biosciences at ETH Zurich. She received her B.Sc. and M.Sc. from the Department of Biosystems Science and Engineering department at ETH Zurich in 2012 and 2014.