

# 2021 Lecture Series

## Dr Rupert Ecker

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will present a seminar entitled

## Contextual Tissue Cytometry with AI – Immunophenotyping and Quantifying the Tumor Microenvironment *in-situ*

Friday 5 March 2021, 11am

Institute for Glycomics  
Lecture Theatre (G26 4.09) (No food or drink allowed in the lecture theatre)



### Abstract

Determining the *in-situ* immune status of diseased organs or quantify coexpression of molecules on the single-cell level has mostly been subject to visual estimation, or – at best – to manual counting for decades. Hence, experts usually had the choice of the “least of evils” between *guessing* and *endless (manual) counting*. In tumor immunology, infiltrating inflammatory cells need to be phenotypically characterized on a quantitative basis. To better understand the function of inflammatory cells in tumor development, type and number of inflammatory cells and their proximity to glandular/tumor structures have to be analyzed *in-situ* and correlated with disease state. Using TissueFAXS™ Cytometry the time-consuming and error-prone human evaluation of stained histological sections can be approached with an observer-independent and reproducible technology platform, offering a high degree of automation, paired with user interaction at relevant points of the analytical workflow. This platform can be applied as a means of tissue cytometry for both immunofluorescence and immunohistochemistry and thus constitutes the microscopic equivalent to flow cytometry (FACS).

Likewise FACS, TissueFAXS™ can quantify any type of molecular marker in any type of cell – but in tissue context or in adherent cell culture monolayers without the need to solubilise the cells (i.e. TissueFAXS permits analyses *in-situ*). Applications include, but are not limited to, the exploration of the tumor microenvironment and/or the spatial organization of cellular subpopulations, detection and quantification of fluorescence *in situ* hybridization (FISH), assessment of different bone structures, or analysis of samples in multiplexing or multispectral mode.

The TissueFAXS Cytometry platform can be used in clinical multi-center studies to determine the immune response to certain drugs *in-situ*, measure proliferation, apoptosis, cytokine expression, signalling molecules, and others. It can do end-point assays as well as live-cell imaging and time-kinetic experiments. But TissueFAXS Cytometry also promotes tissue cytometry to a new level of quality, where complex cellular interactions can be addressed on the single-cell level but still in histological context.

For further information, contact

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