Title: Advanced Measurement Techniques in Digital Pathology
Presenter name: **Dr. David Tatrai**
Company name / Institute: **3Dhistech**
Project name: **ENTERTAIN**
Funding group: Xecs

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Pathology is an essential tool in the diagnosis of numerous diseases. In modern pathology laboratories, workflows are increasingly digitized through the use of microscope-based whole slide scanners. Whole slide imaging (WSI) is evolving beyond conventional brightfield microscopy to incorporate fluorescence and polarization imaging, enabling deeper insights into tissue composition and biology. This introductory presentation will review the principles of fluorescence imaging and its applications in immunofluorescence, multiplex biomarker detection, and spatial biology, alongside polarization imaging for the visualization of birefringent structures such as collagen, fibrotic tissue, and crystalline deposits.

In addition to these analytical techniques and their applications, the presentation will introduce the underlying technical foundations, including imaging sensors, camera technologies, optical system design considerations, and digital data pipelines that enable advanced multimodal whole slide imaging.