Sunday, March 3
11:30 am – 1:00 pm
Room 303
Leica Microsystems

LEICA SP8 FALCON: A NEW WAY TO GENERATE FLUORESCENCE LIFETIME IMAGES AT CONFOCAL SPEED
Functional imaging is a rapidly growing field, because understanding the function and interaction of molecules is the key to revealing the underlying biology. In this context, fluorescence lifetime imaging (FLIM) is a powerful tool, providing valuable information beyond spectral imaging. FLIM is immune to concentration artifacts and sensitive to molecular environment, but previous FLIM solutions were slow and difficult to implement, particularly for complex imaging workflows. Therefore, FLIM imaging has so far been limited to specialized laboratories and classical TCSPC has been unable to deliver the speeds needed to address most of the biological processes.

We present SP8 FALCON, the fast, intuitive and totally integrated all-Leica FLIM solution. SP8 FALCON delivers video-rate FLIM with pixel-by-pixel quantification, thanks to a unique combination of fast electronics, sensitive spectral hybrid detectors (Leica HyDs), and a novel concept for measuring time. Photon arrival times can now be recorded at count rates typical for standard confocal imaging. The system has ultra-short dead time, and powerful built-in algorithms take care of the data acquisition and analysis, while keeping accuracy and excellent data quality. This talk explains the technical implementations enabling this new level of performance and explains the new way to generate FLIM images.

SP8 FALCON with STED enables STED-FCS at high count rate and separation of multiple fluorophores spectrally overlapping with nanoscopic resolution.

SP8 DIVE (Leica multiphoton system) with spectrally tunable non-descanned detector (Leica 4Tune detector) combined with FALCON allows metabolic imaging, species separation and in vivo FLIM imaging.

The deep integration of SP8 FALCON into the Leica SP8 platform provides easy access to complex FLIM experiments, enabling fast FLIM-FRET, 3D- and 4D-imaging modes, high-content screening, and autofluorescence component separation.

Speakers
TBD