
CORE FACILITY TECH-TALK SERIES

# Beyond Labels: Biological Insights through Chemical Imaging

## LMCF CrossTalks Seminar

**17 November 2025, 3 pm**

German Cancer Research Center (DKFZ), A0.106 (ATV, Ground Floor)

Jens Peter Gabriel

### Breaking Speed Barriers – Unveiling Insights with Label-free Chemical Imaging

Dr. Jens Peter Gabriel, Advanced Workflow Specialist, Leica Microsystems

**The scope of stimulated Raman scattering (SRS) microscopy in life sciences and medical research is rapidly expanding. Advances in laser technology enable much higher acquisition speeds, especially for multicolor and hyperspectral data. At the same time, specialized analysis workflows increasingly support the extraction of biologically relevant information from label-free image data. Here, we showcase new SRS applications that exploit these developments, including label-free, multimodal metabolic profiling at the single-cell level and high-speed, multicolor chemical imaging of dynamic biological processes.**

Joao Seco

### Lipid Droplets in Radiation Response: Raman Spectroscopy Benefits

Prof. Dr. Joao Seco, Heidelberg University and DKFZ

**Lipid droplets (LDs) are emerging regulators and biomarkers of cancer radioresistance, linking lipid metabolism to DNA damage handling, redox control, and cell cycle–dependent radiosensitivity. LD-rich cells and their extracellular vesicles can influence the tumor microenvironment, while label-free Raman micro-spectroscopy quantitatively maps LD abundance and chemistry. This positions LDs, read out by Raman, as promising tools for non-invasive monitoring and stratification in radiotherapy.**

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