

TIC International Seminar

Wednesday, April 22nd, 16:00



Location: Felix Frey Auditorium, sitem-insel, Freiburgstrasse 3, Bern
Broadcast on zoom: <https://unibe-ch.zoom.us/j/61079804322>

The seminar is followed by an Apéro to continue discussions

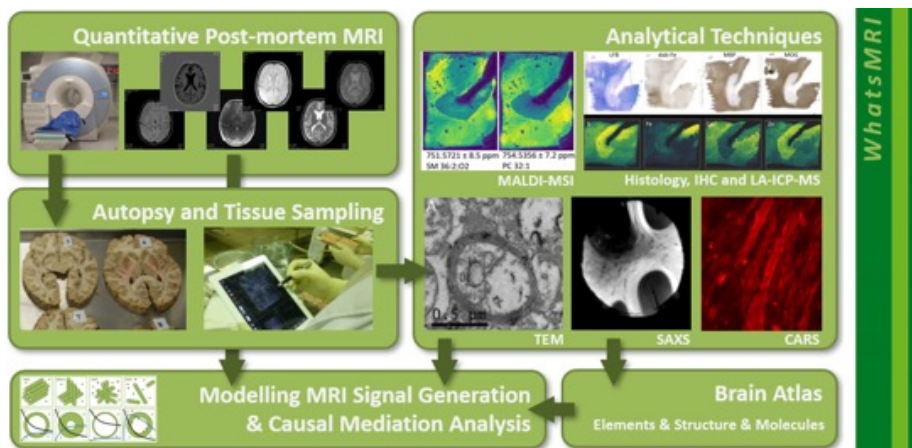
Explainable MRI in the Human Brain

Prof. Dr. Christian Langkammer

[Medical University of Graz, Austria](#)

Widely used MRI biomarkers for myelin and iron often lack rigorous ground-truth validation. To move beyond mere correlation, we combine quantitative post-mortem MRI of unfixed human brains with multimodal techniques, including mass spectrometry imaging, synchrotron small-angle X-ray scattering (SAXS), and 2D/3D microscopy. This approach allows us to map fundamental MRI parameters, such as relaxometry, susceptibility, and diffusion, directly to tissue microstructure and elemental composition.

The second part of this talk addresses the "black box" problem when deep learning is applied to neuroimaging. While deep neural networks achieve high accuracy in disease classification, they frequently exploit hidden data artifacts rather than identifying true pathology. We will discuss strategies to ensure algorithmic transparency and ensure that models rely on physiologically plausible features.



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