

## **Whole body hybrid fluorescence tomography - MRI system for simultaneous structural/physiological and molecular imaging in the mouse**

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Tomographic imaging has proven to be attractive for non-invasive and in-vivo observation of molecular activity in biological tissues. Fluorescence Tomography (FT) is a novel type of quantitative imaging modality that benefits from the tools developed in well-established fluorescence microscopy. FT has, compared to other imaging modalities, a high sensitivity, but a poor spatial resolution due to light scattering in tissue. A hybrid imaging system that combines FT with a modality that provides structural information increases the information of the images. Combinations with Magnetic Resonance Imaging are therefore attractive due to high quality structural information provided as a result of high soft-tissue contrast and resolution. A hybrid FT-MRI system with a 32x32 single photon avalanche diode (SPAD) array was implemented. The resulting images were promising, but the field of view was limited and the spatial resolution can still be improved. A prototype of a second generation system with a CMOS-imager is in development which will be extended to a whole-body system in future.