Multimodal imaging in mouse models of Alzheimer’s disease

The advances in neuroimaging in the last decades have bridged the translational gap and enabled our understanding of brain under physiological and disease conditions. In animal models of Alzheimer’s disease, multiscale and multimodal imaging (positron emission tomography, magnetic resonance imaging, and optical imaging) have enabled non-invasive visualization of the neuropathology (amyloid-beta and tauopathy), neurodegeneration, as well as functional alterations. We recently developed novel optoacoustic tomography (resolution 100 µm) and fluorescence microscopy (resolution 15 µm) imaging methods that enable whole brain non-invasive transcranial detection of amyloid-beta/tau at high resolution. These platforms offer new prospects for in vivo studies into Alzheimer’s disease mechanisms in animal models as well as longitudinal monitoring of therapeutic responses targeting at amyloid-beta and tau.