

IntraVital Microscopy (IVM) : In Vivo Live Cell Imaging Platform

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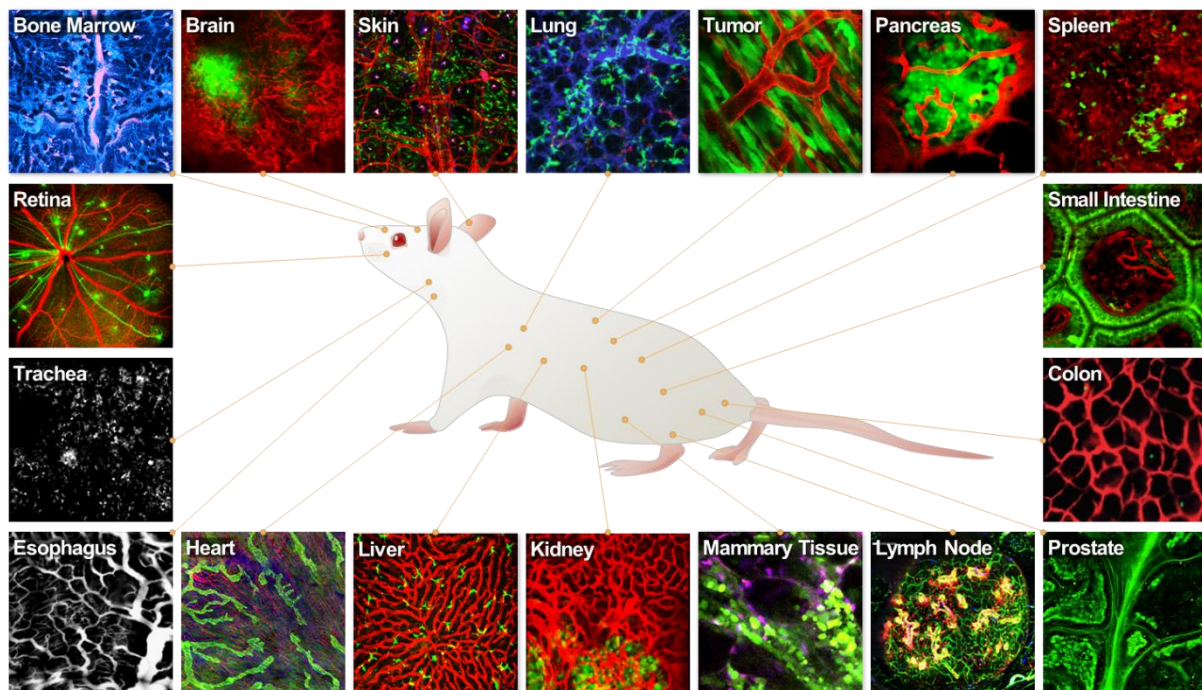
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Over the recent years, intravital laser-scanning microscopy has demonstrated the dynamic 3D visualization of various biological processes in a living subject *in vivo*. It has been utilized to monitor gene expression, protein activity, drug delivery, cell trafficking, cell interaction, and physiological response to external stimuli in a live animal *in vivo*, which has provided unprecedented insights those were impossible to obtain with conventional static 2D *ex vivo* or *in vitro* observation.

In this talk, a custom-built real-time intravital microscopy system will be introduced, which can acquire the multi-color microscopic fluorescence images with sub-micron resolution in the living animal model in real time *in vivo*. The imaging system based on custom-built laser-scanning confocal/two-photon microscopy has been extensively optimized for *in vivo* cellular-level imaging of various internal organs in animal model for human diseases. First, intravital microscopic imaging of various organs including skin, liver, spleen, pancreas, kidney, small intestine, colon, retina, lung, heart, lymph node, and bone marrow will be briefly introduced. Subsequently, recent studies utilizing the real-time intravital imaging technique to investigate dynamic cellular-level pathophysiology of various human diseases will be introduced.

Keyword: Intravital microscopy, *In vivo* imaging, Fluorescence imaging, Confocal microscopy,



+ Thymus, Thyroid gland, Adipose Tissue, Lymphatics, Microcirculation ... etc.

Two-photon microscopy