

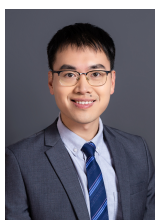
Mapping structural alterations of biological tissues via quantitative optical imaging

Zhejiang University, China

Zhiyi Liu

Email: liuzhiyi07@zju.edu.cn

Progression of diseases is closely associated with subtle changes in morphology and organization of biological tissues; therefore, sensitive detection of these changes plays an important role in understanding diseases. Here, we use optical imaging to acquire high-resolution (sub-micron level) images from typical fibrous biological tissues, including blood vessels, collagen fibers, and sub-cellular components, mainly in a label-free way. Based on these images, we have developed quantitative, multi-parametric measures to uncover tissue remodeling in the context of important diseases (such as cancer, osteoarthritis and neurodegenerative diseases), with these measures including orientation, alignment, waviness, local coverage and thickness, in a truly three-dimensional (3D) manner. A combined use of these quantitative metrics leads to a better understanding of diseases and serves as biomarkers for diagnosis and prognosis.



Short Bio:

Zhiyi Liu received his PhD degree in Physics from Tsinghua University, China. He is a ZJU100 young professor of Zhejiang University, China. He works on the biomedical imaging of tissues relying on endogenous contrast. By exploring the quantitative characteristics of both cells and extracellular matrix, he is trying to gain a better understanding of cell-matrix interactions during the progression of diseases. He has published more than 60 peer-reviewed research papers. He serves as an Editorial Board Member of *Scientific Reports*, and as a guest editor for *Discover Applied Sciences* and *Journal of Innovative Optical Health Sciences*.