

OS02-4 **In vivo imaging reveals chronic inflammatory processes: parenchymal and stromal cell cross talks**

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To assess dynamic interplay between multiple cell-types in inflammatory diseases, in vivo imaging technique based on single- and multi-photon microscopy was developed. Imaging revealed close spatial and temporal interrelationships between angiogenesis and adipogenesis in obese adipose (2007 Diabetes). In addition, increased leukocyte-platelet-endothelial cell interactions in the microcirculation of obese adipose were observed, a hallmark of inflammation (2008 JCI). We also found that large numbers of CD8⁺ effector T cells infiltrated into obese adipose. Infiltration by CD8⁺ T cells is essential for the initiation and development of adipose inflammation (2009 NatMed). By our in vivo imaging technique, multiple cell types are specifically visualized (Figure), and using this technique, we revealed Lnk/Sh2b3 regulates integrin alpha-IIb-beta-3 outside-in signaling in platelets leading to stabilization of developing thrombus in vivo (2010 JCI). In addition, we established human iPS-derived platelets, and tracked them in mice to elucidate its function in vivo. Our results clearly demonstrated the power of our imaging technique to analyze complex cellular interplays in inflammatory diseases, especially parenchymal and stromal cell cross talks.

