

A Novel Liposome-based Nanoprobe for Macrophage Mitochondria *in vivo* Labeling and Imaging

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Macrophages, one type of immune cells, almost reside in all tissues and are involved in every disease. Imaging macrophages *in vivo* will help to grasp their dynamic functions in homeostasis and pathogenesis. Recent studies showed that immune cells can control the mitochondrial fission and fusion machinery to shape their metabolism and functions [1], which provides possibility to differentiate cell type based on mitochondria morphology [2]. Liposomes, a kind of nanocarriers, have been widely used to delivery drugs and dyes to macrophages *in vivo* [3]. In the present study, we design a novel liposome-based nanoprobe to label macrophages and their mitochondria.

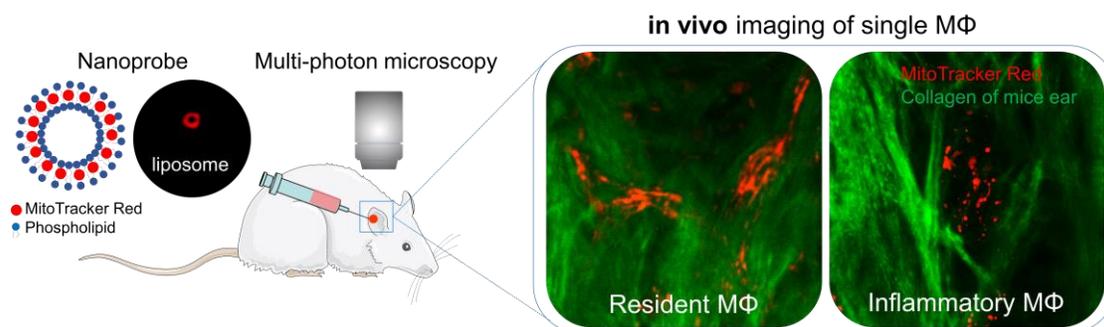


Figure 1: MitoTracker-loaded liposome and mitochondria imaging by multi-photon microscopy

In vitro study reveals that liposome can effectively load MitoTracker dyes and deliver them to the mitochondria of macrophages. Using the two-photon microscopy and mice model, we successfully differentiate macrophage from other cells and observe their mitochondrial morphology *in vivo* (Figure 1). Moreover, we can identify the phenotype of activated macrophages based on their mitochondrial structures. More details will be discussed in the presentation. Together, these findings provide us with more information to decipher macrophage functions at their native microenvironments.

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References

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