1. No.
   2021G019

2. Title
   Effects of Nicotine on Mitochondrial dynamics in Macrophages

3. Period
   2021-2023

4. Summary
   We conducted a study aiming to elucidate the involvement of mitochondrial dynamics (fusion and fission) in the regulation of macrophage function. We stimulated Raw264.7 cells, a macrophage cell line, with LPS to induce M1 macrophages, and observed mitochondrial fragmentation using confocal microscopy, followed by quantitative analysis. By breeding mitochondrial fission factor (MFF) floxed mice with LysM-Cre mice, we generated macrophage-specific MFF knockout mice and analyzed their phenotype upon induction of obesity by 60% high-fat diet. The macrophage-specific MFF knockout mice were found to be resistant to high-fat diet-induced obesity. Furthermore, examination using bone marrow-derived macrophages (BMDMs) differentiated from isolated mouse bone marrow monocytes revealed that MFF deficiency in macrophages suppresses their inflammatory changes.