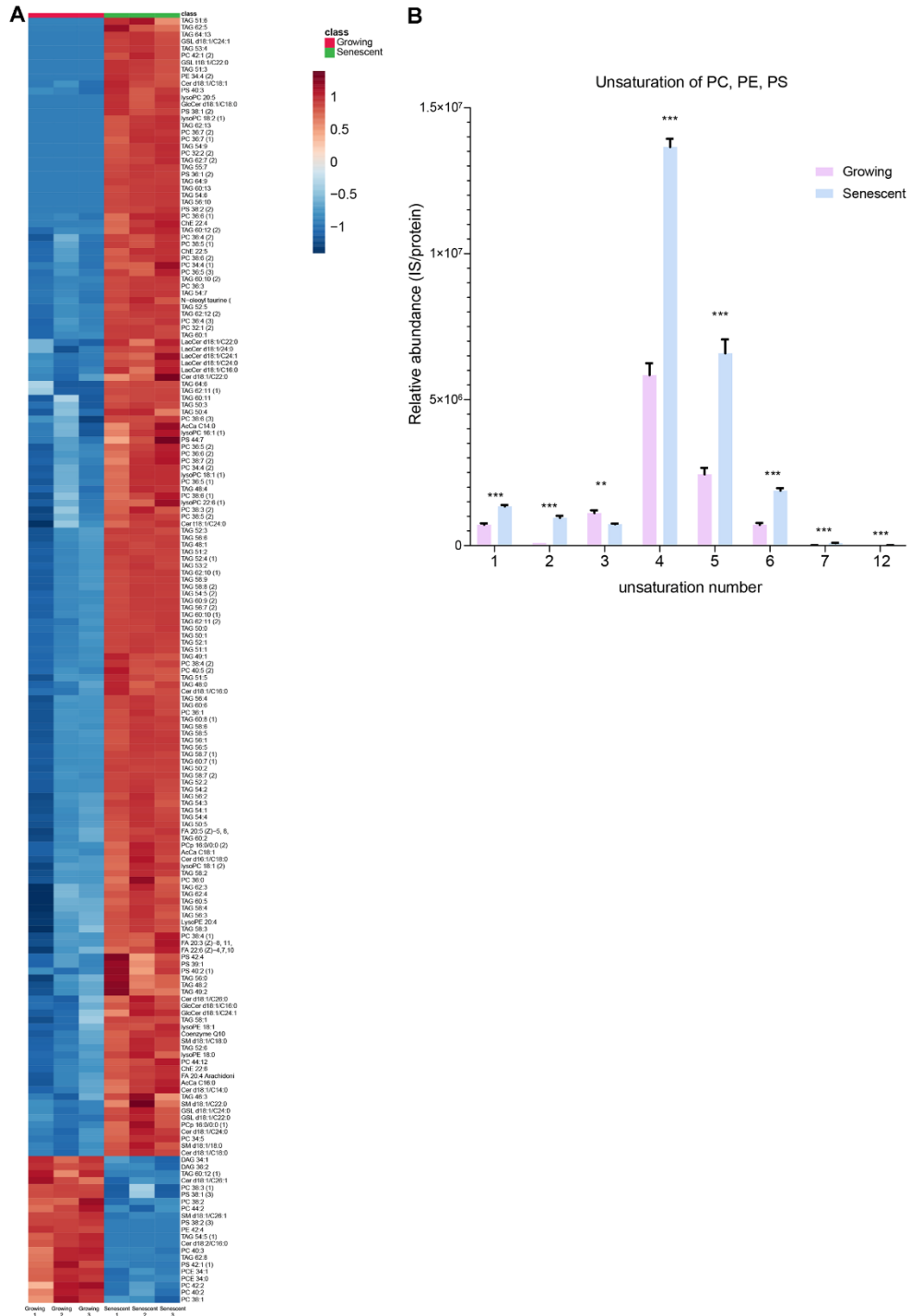
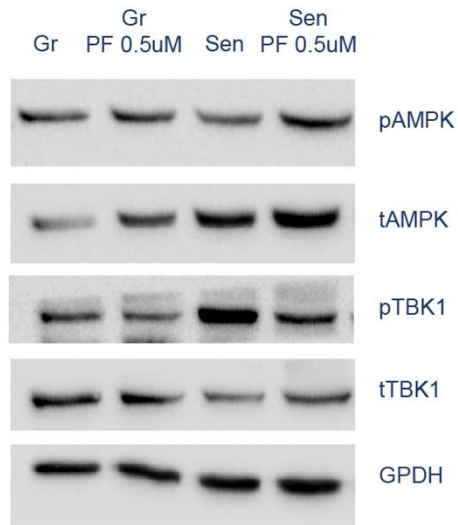


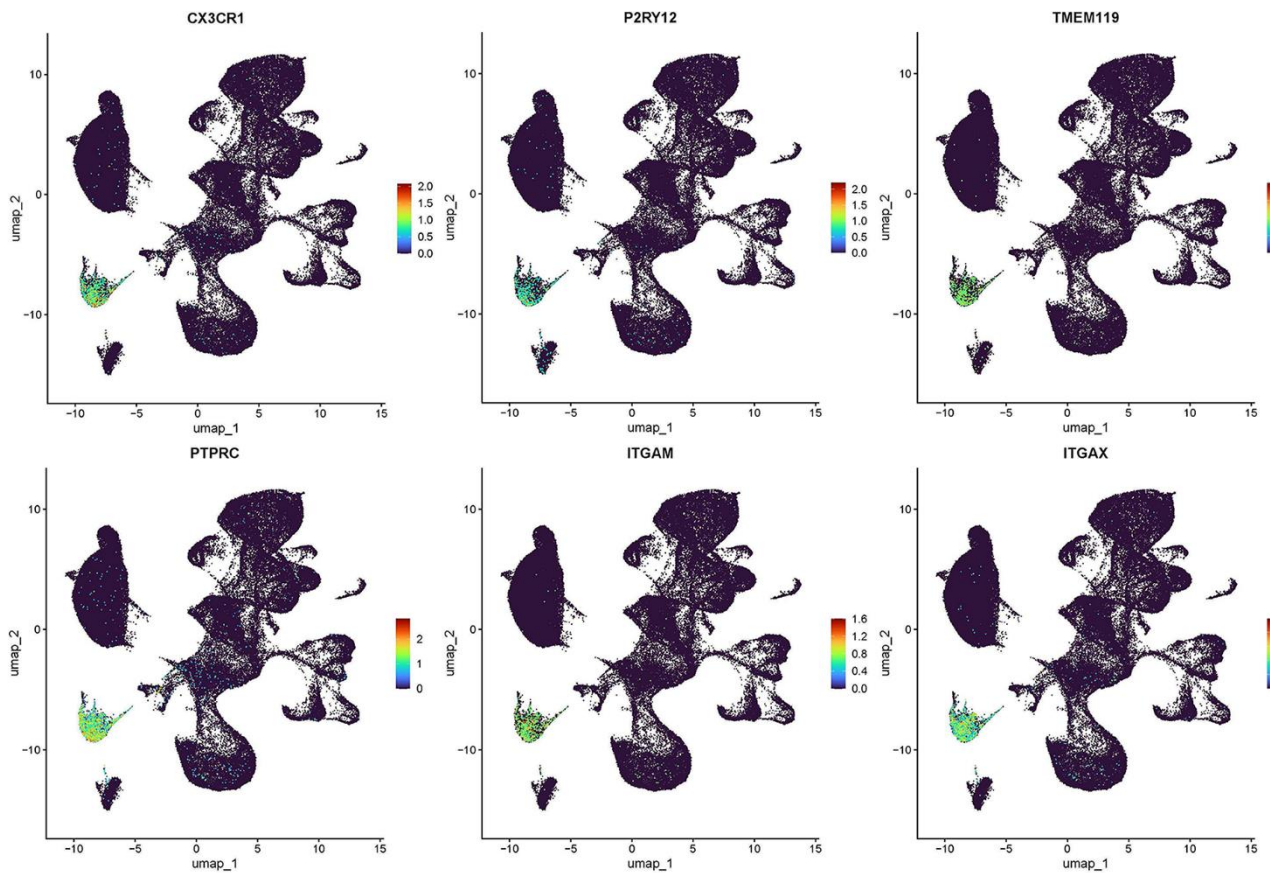
SUPPLEMENTARY FIGURES



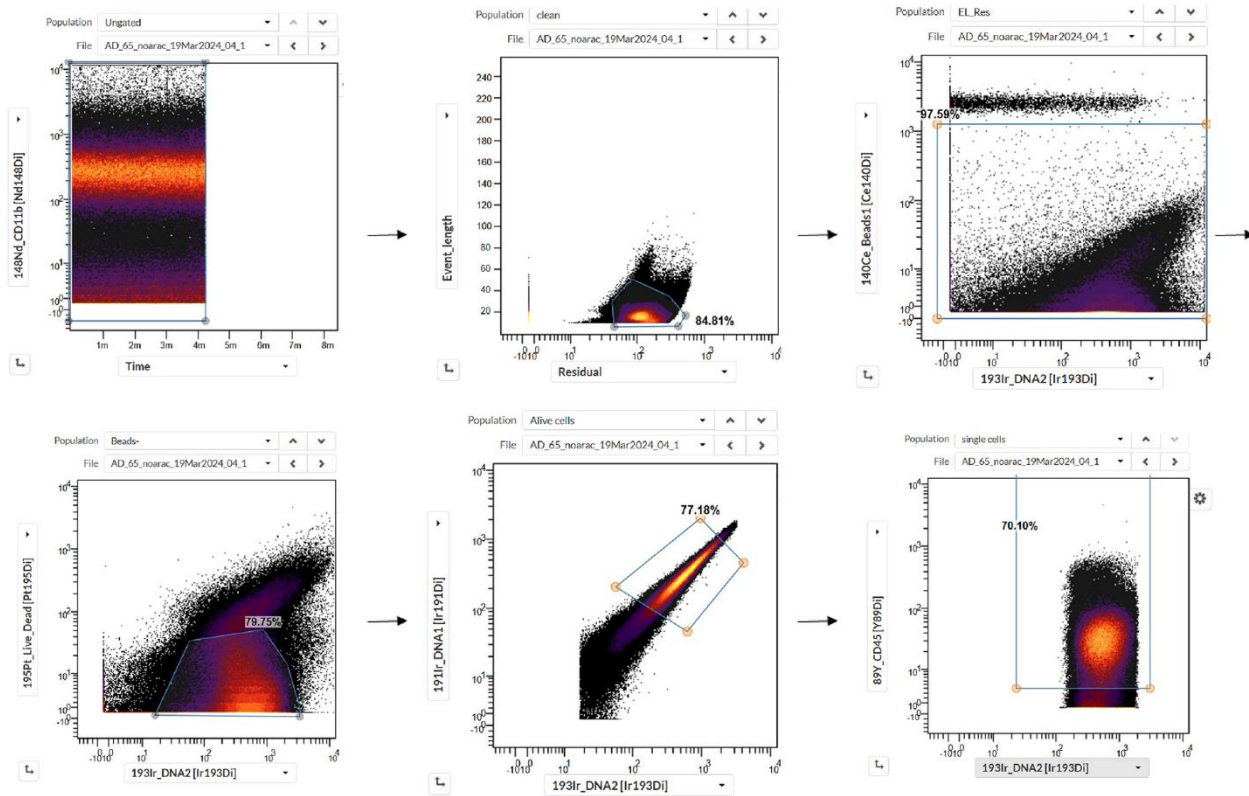
Supplementary Figure 1. DE lipid profile. (A) DE lipid species of senescent BJ cells (red line) compared to control BJ cells (green line). (B) Distribution of major membrane phospholipids, including phosphatidylcholine (PC), phosphatidylethanolamine (PE) and phosphatidylserine (PS) by degree of unsaturation of chains (number of double bonds). Data are shown as mean ± SD. ****P* < 0.001, ***P* < 0.01, **P* < 0.05.

A

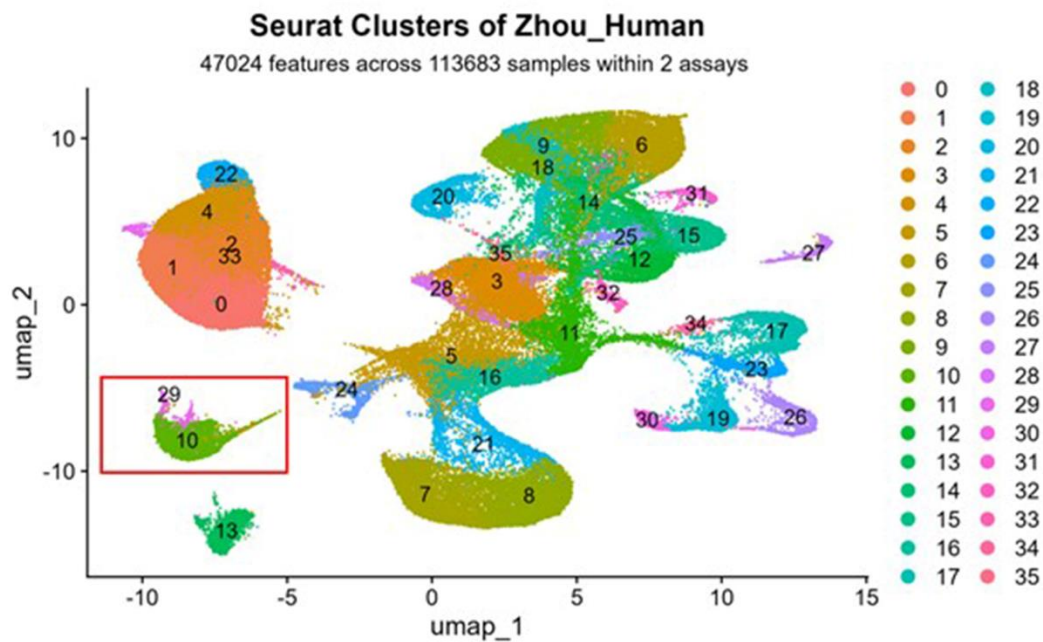
Supplementary Figure 2. AMPK is a metabolic regulator in SnCs. (A) Western blot results show that activation of AMPK with PF-739 reduces the levels of phospho-TANK-binding kinase 1 (p-TBK1) in SnCs.



Supplementary Figure 3. The microglia cluster, expressing microglia markers.



Supplementary Figure 4. Gating strategy for CyTOF analysis. Cells were first gated based on a stable CD11b signal across acquisition, followed by event length and Gaussian residual parameters to exclude aberrant events. Beads were removed using the ^{140}Ce channel. Live single cells were identified by exclusion of cisplatin (^{195}Pt) and gating on DNA content using ^{193}Ir , with doublets excluded based on iridium signal. CD45 $^{+}$ cells were then selected for downstream microglial subset analysis. A representative sample is shown.



Supplementary Figure 5. The microglia cluster selection.