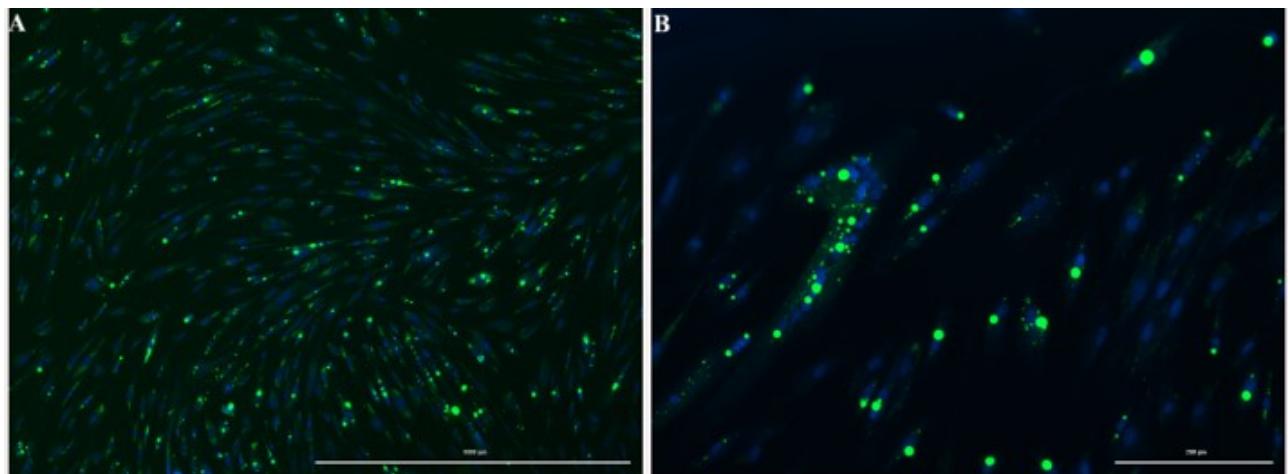
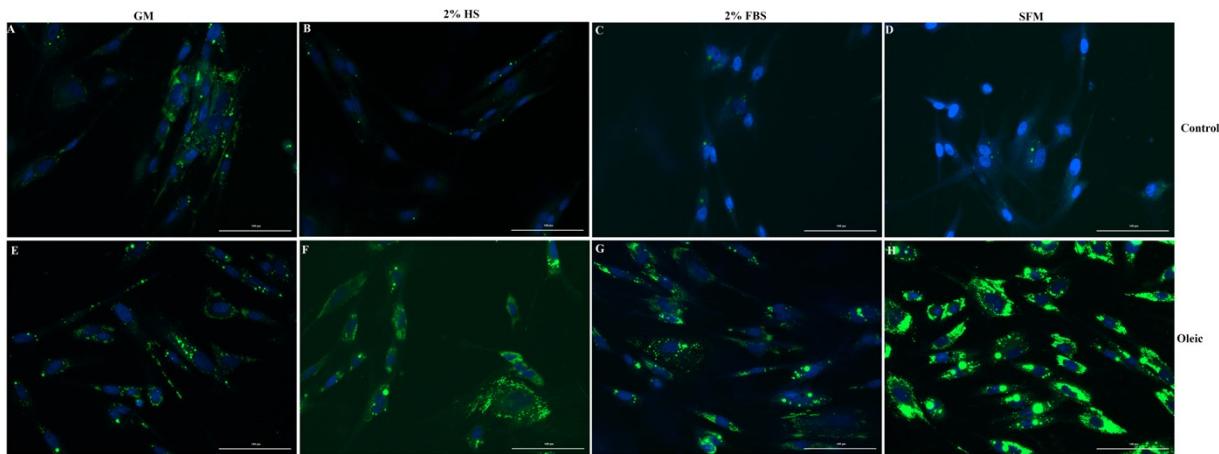


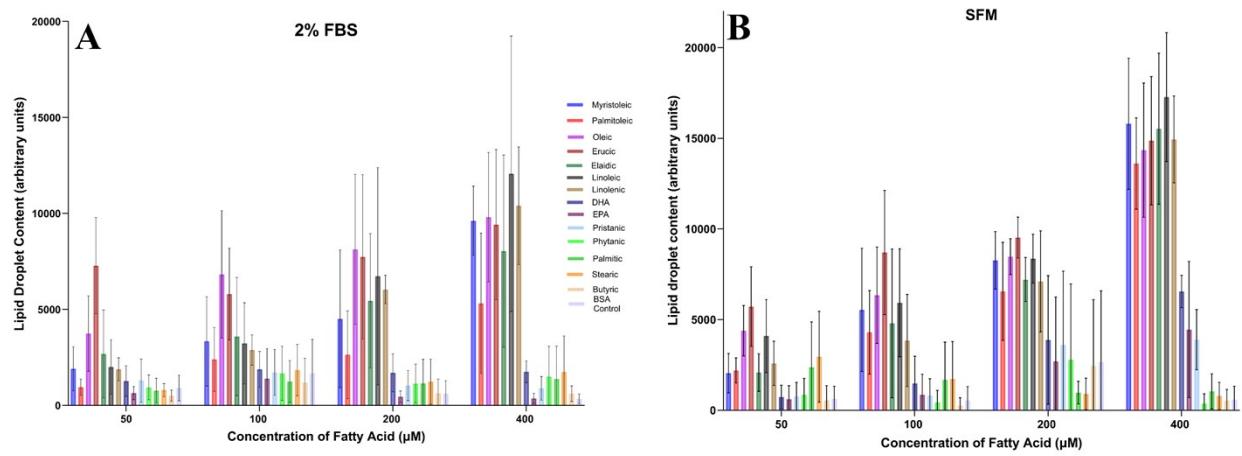
**Supplementary Figure 1:** Immunostaining of myotubes. Myotubes ( stained for F-actin (Red/Phalloidin) and Nuclei (Blue/Hoechst 33342), Scale bar A, C, E : 2000  $\mu$ m, Scale bar for zoomed in image B, D, F: 1000  $\mu$ m. **A and B:** Nuclei in blue stained with Hoechst 33342; **C and D:** F-actin in red stained with phalloidin; **E and F:** Merged image.



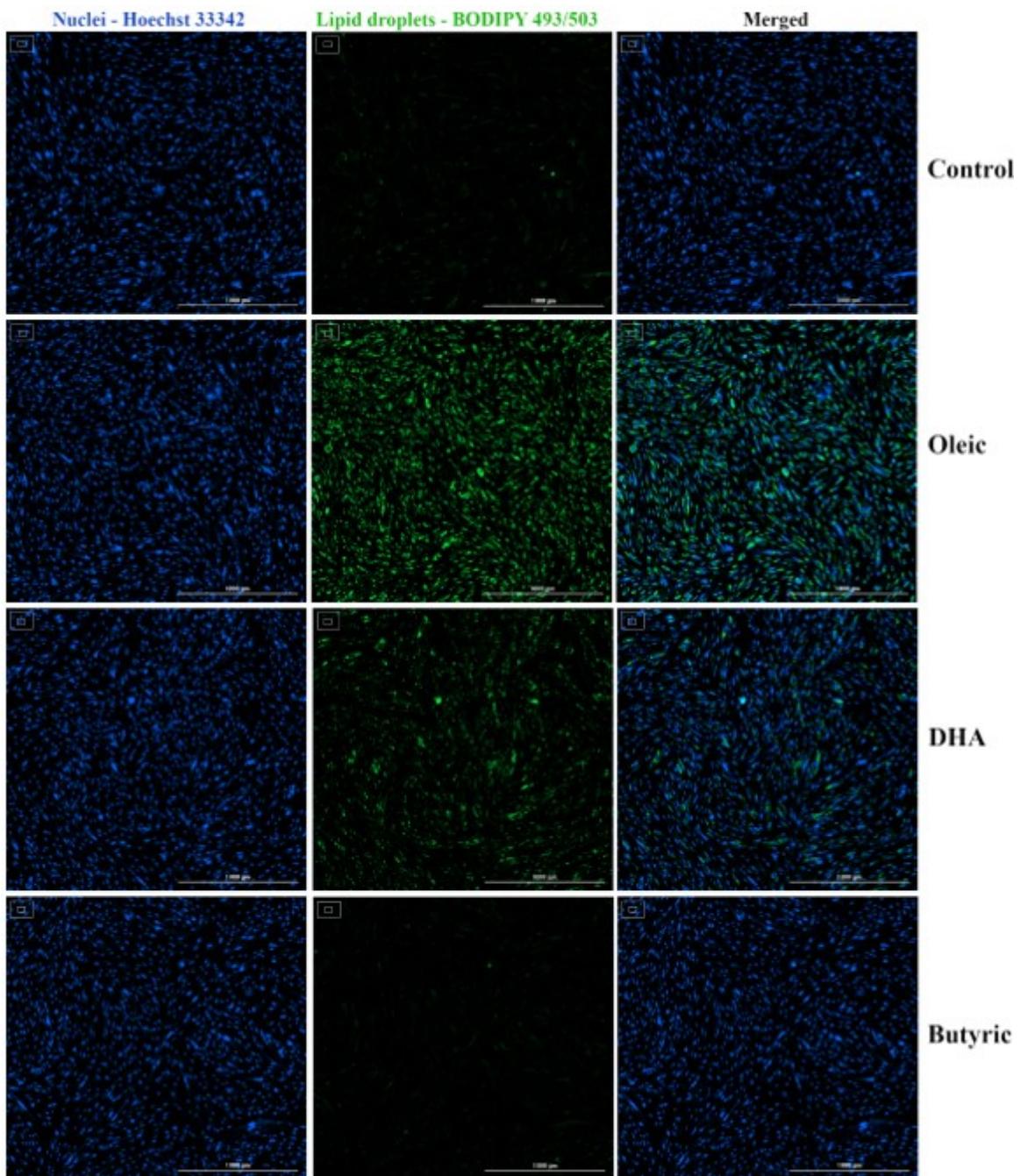
**Supplementary Figure 2:** Representative images of lipid droplets in myotubes. Myotubes stained for lipid droplets (Green/ Bodipy 493/503) and Nuclei (Blue/Hoechst 33342), Scale bar Fig A: 1000  $\mu\text{m}$  Fig B : 200  $\mu\text{m}$ .



**Supplementary Fig 3:** Representative fluorescent merged images (20X objective) of SCs exposed to 400  $\mu$ M oleic acid in different serum media. Nuclei stained in blue (Hoechst 33342) and lipid droplets in green (Bodipy 493/503); Scale bar 100  $\mu$ m. **A:** Cells in GM control **B:** Cells in 2% HS control **C:** Cells in 2% FBS control **D:** Cells in SFM control. **E:** Cells in GM-Oleic **F:** Cells in 2% HS-Oleic **G:** Cells in 2%FBS-Oleic **H:** Cells in SFM-Oleic.



**Supplementary Figure 4:** Lipid droplet content in SCs exposed to different fatty acids at 50  $\mu\text{M}$ , 100  $\mu\text{M}$ , 200  $\mu\text{M}$ , and 400  $\mu\text{M}$  concentrations in **A:** 2% FBS media and **B:** in SFM.



**Supplementary Fig 5:** Representative fluorescent images (4X objective) of SCs exposed to 400 $\mu$ M of Oleic, DHA and Butyric acid. Scale bar: 1000  $\mu$ m. Nuclei in blue (Hoechst 33342) and lipid droplets in green (Bodipy 493/503).