

**Supplementary Fig. 1. Data from MicroCT in OVX mice and sham mice.**



**Supplementary Fig. 2. IF staining of ATG7/ALP in 200 μm ~ 350 μm microchannels with/without CQ was used after reversing the direction of the microfluidics.**



**Supplementary Fig. 3. Negative staining controls of fluorescent secondary antibodies without background staining in all groups (the primary antibody is omitted).**