



**Supplementary Figure 10.** Determination of cytosolic pH in wildtype and *lamp-1<sup>-/-</sup>/lamp-2<sup>-/-</sup>* fibroblasts. Wildtype (A) and *lamp-1<sup>-/-</sup>/lamp-2<sup>-/-</sup>* cells (B) were incubated with 500  $\mu$ M of BCECF AM ester at 37°C for 30 min. Images were collected at emission wavelength 510 nm with excitation at 440 nm and 490nm. After establishing the basal fluorescence ratio, the pH was calibrated using 10  $\mu$ g/ml of nigericin in combination with isotonic K<sup>+</sup> media of varying pH (from pH 4.5-pH 7.5). The calibration data and fitted curve are shown in black, while the resting value is shown by the red triangle. Numbers in parenthesis indicate the calculated pH and fluorescence ratio at rest.