**Supplementary Materials**

**Table S1:** Primer sequences used in qPCR and siRNA transfection

**Table S2:** 2343 Target mRNAs of 25 DE-miRNAs in EVs from ASMCs (stretch/static)

**Table S3**: The results of GO enrichment of 2343 target mRNAs of 25 DE-miRNAs via DAVID

**Table S4**: The results of KEGG pathway analysis of 2343 target mRNAs of 25 DE-miRNAs via DAVID

**Figure S1**: Effect of Rab27a siRNA transfection on the cell function of cultured ASMCs. (**A**) mRNA expression of Rab27a measured with qPCR. (**B, C**) Cellular activity of ASMCs measured with CCK-8, and MTT. CCK-8: cell couning Kit-8; MTT: 3-(4,5-dimethylthiazol-2-yl)-2,5 diphenyl tetrazolium bromide. Data were presented as means ± SD (n = 3), \*\* *p* < 0.01 and n.s. indicates not significant compared with the Scramble group.

**Figure S2**: Effect of tidal volume of MV on airway inflammation of mice. (**A**) Representative images of lung tissue sections with HE staining (×40 objective). Arrows indicate the shedding of airway epithelial cells. (**B**) TGF-β1 expression in bronchoalveolar lavage fluid (BALF) measured by ELISA. (**C**) Cell number in BALF measured by cell counting. Data were presented as means ± SD (n = 6), \*\* *p* < 0.01 compared with Healthy, n.s. indicates not significant compared between 18 and 24 mL/kg.

**Figure S3**: Effect of MV on alveolar wall thickness of mice with/without TUDCA or GW4869. MV: mechanical ventilation; TUDCA: Tauroursodeoxycholic acid. Data were presented as means ± SD (n = 6), \*\* *p* < 0.01 compared with Control (without MV), ## *p* < 0.01 compared with MV.