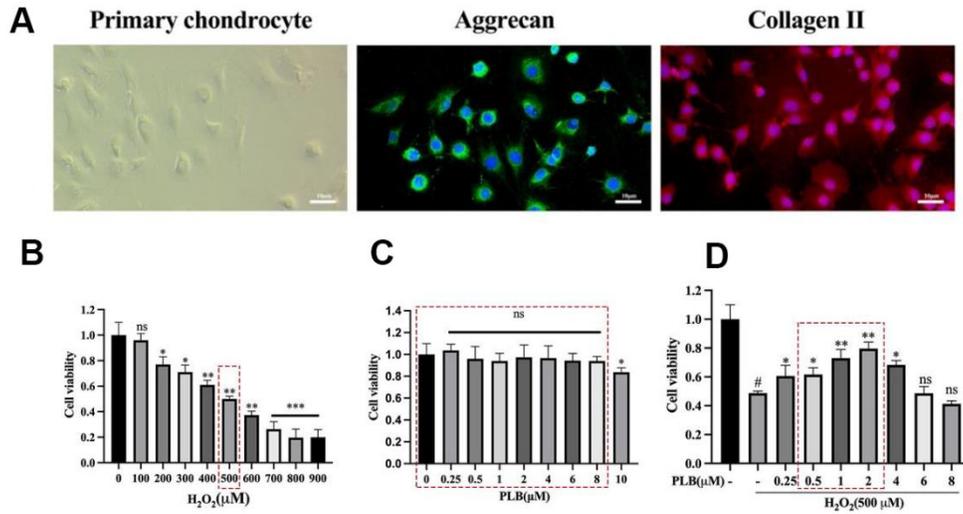
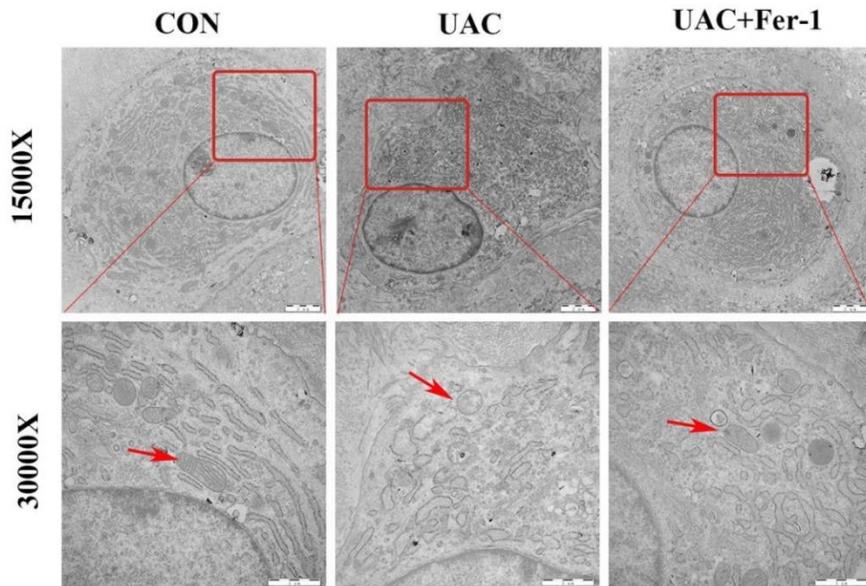


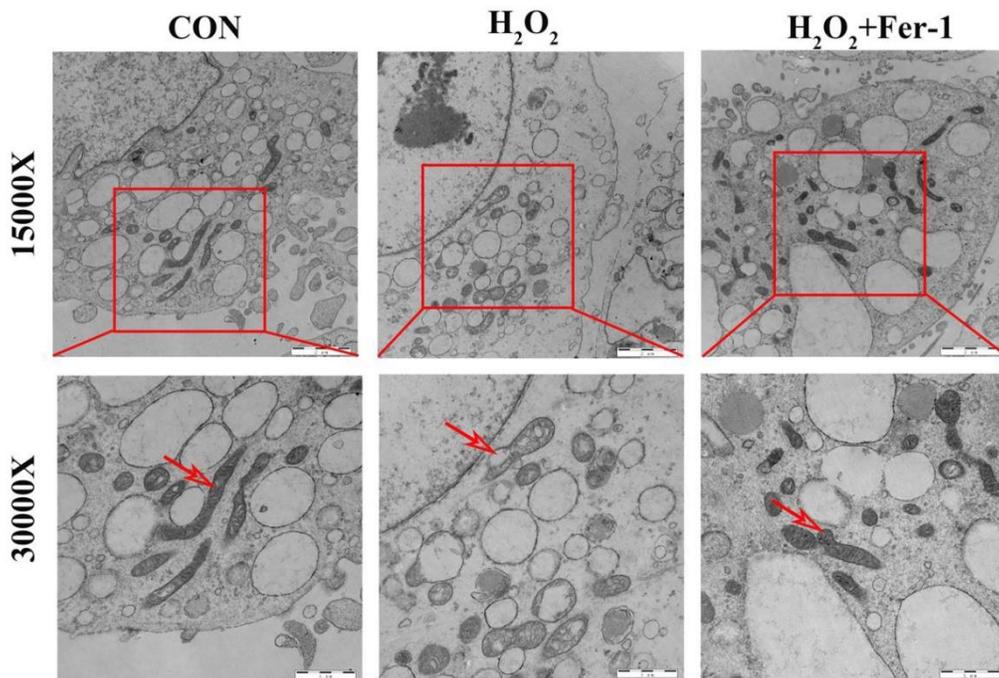
**SUPPLEMENTARY FIGURES**



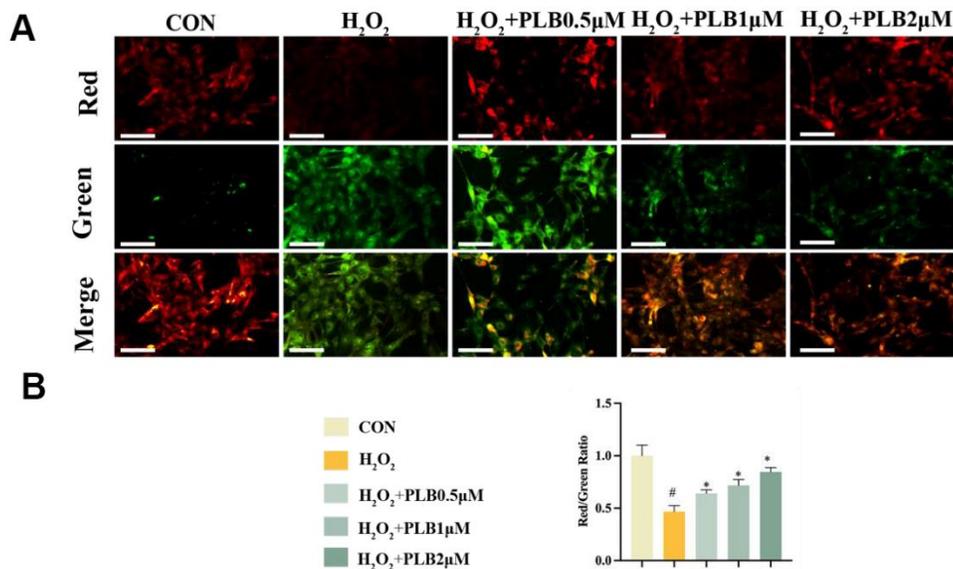
**Supplementary Figure 1. PLB inhibited chondrocytes death caused by H<sub>2</sub>O<sub>2</sub>.** (A) Verification of rat primary chondrocytes with cell morphology, aggrecan and collagen II. Scale bars, 10 μm. (B–D) Chondrocyte’s viability determined by CCK-8 assay. (B) Chondrocytes were incubated with various concentrations H<sub>2</sub>O<sub>2</sub> (0, 100, 200, 300, 400, 500 600, 700, 800 and 900 μM) and 12 h. n = 6. (C) Chondrocytes were incubated with PLB various concentrations (0, 0.25, 0.5, 1, 2, 4, 6, 8 and 10 μM) and 12 h. n = 6. (D) Chondrocytes were incubated with PLB various concentrations (0, 0.25, 0.5, 1, 2, 4, 6 and 8 μM) for 12 h than 500 μM H<sub>2</sub>O<sub>2</sub> for 12 h. n = 6. (All quantified data are presented as mean ± SEM; ns, not significant, #P < 0.05, \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001 by one-way ANOVA and the Tukey-Kramer test. #: CON vs H<sub>2</sub>O<sub>2</sub>, \*: H<sub>2</sub>O<sub>2</sub> vs PLB+ H<sub>2</sub>O<sub>2</sub>).



**Supplementary Figure 2. PLB recovered mitochondrial membrane morphology of chondrocytes induced by UAC.** CON: healthy mitochondria exhibit an elliptical or elongated shape, with a bilayer membrane structure. UAC: chondrocytes stimulated under UAC, mitochondria tend to adopt a more spherical and bloated morphology, leading to an increase in volume or even outer membrane rupture. UAC+Fer-1: the morphological alterations caused by UAC can be prevented by the administration of Fer-1.



**Supplementary Figure 3. PLB recovered mitochondrial membrane morphology of chondrocytes induced by H<sub>2</sub>O<sub>2</sub>.** CON: healthy mitochondria exhibit an elliptical or elongated shape, with a bilayer membrane structure. H<sub>2</sub>O<sub>2</sub>: chondrocytes stimulated with H<sub>2</sub>O<sub>2</sub> (500 μM), mitochondria tend to adopt a more spherical and bloated morphology, leading to an increase in volume or even outer membrane rupture. H<sub>2</sub>O<sub>2</sub>+Fer-1: the morphological alterations caused by H<sub>2</sub>O<sub>2</sub> can be prevented by the administration of Fer-1.



**Supplementary Figure 4. PLB recovered mitochondrial membrane potential of chondrocytes induced by H<sub>2</sub>O<sub>2</sub>.** (A) JC-1 measurement for mitochondrial membrane potential levels of chondrocytes after various treatments. Red indicates high membrane potential, Green indicates low membrane potential, and Merge indicates the combination of the two. Scale bars, 100 μm. (B) Quantitative analysis for mitochondrial membrane potential level of chondrocytes after various treatments. n = 3. (All quantified data are presented as mean ± SEM; #P < 0.05 \*P < 0.05 by one-way ANOVA and the Tukey-Kramer test. #: CON vs H<sub>2</sub>O<sub>2</sub>, \*: H<sub>2</sub>O<sub>2</sub> vs PLB+ H<sub>2</sub>O<sub>2</sub>).