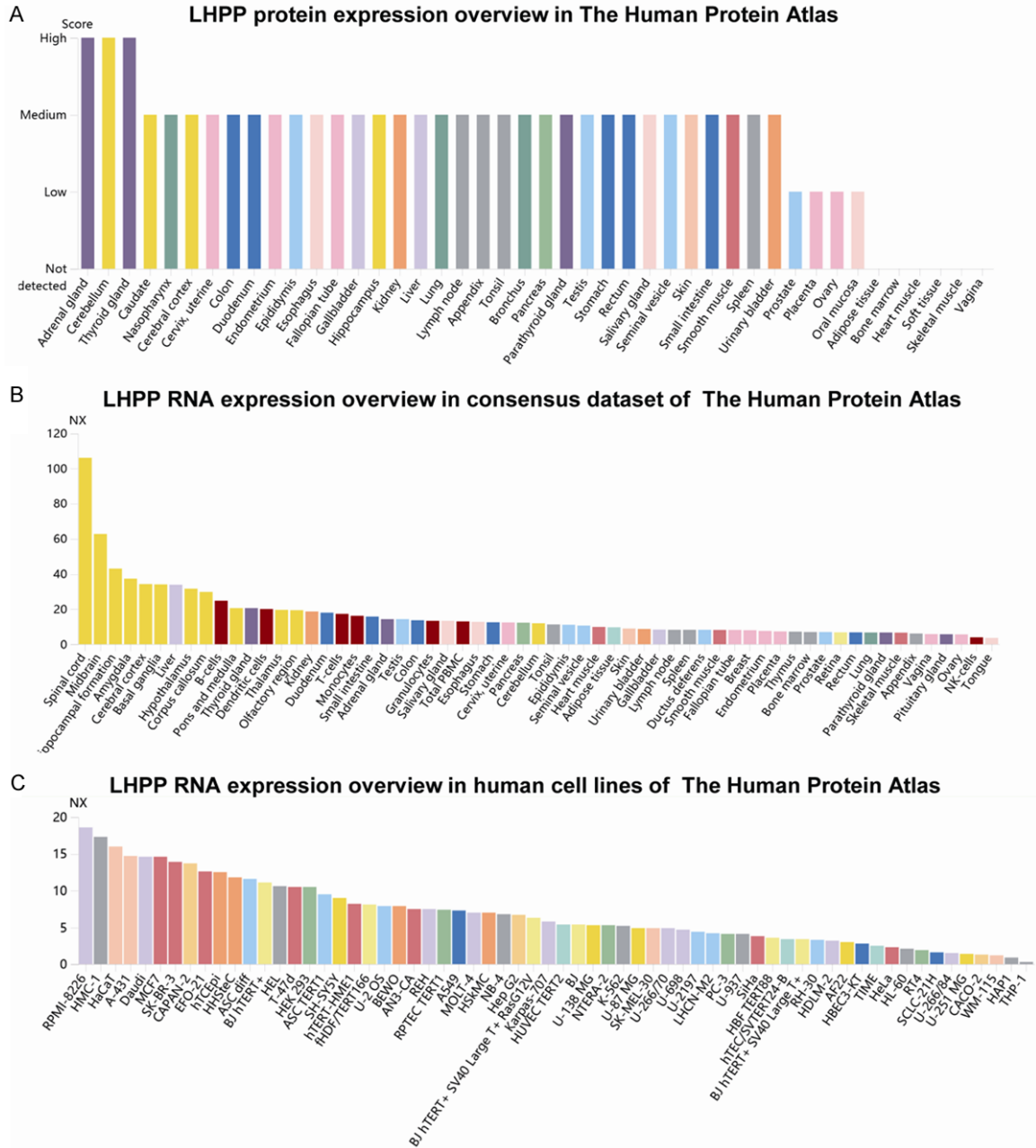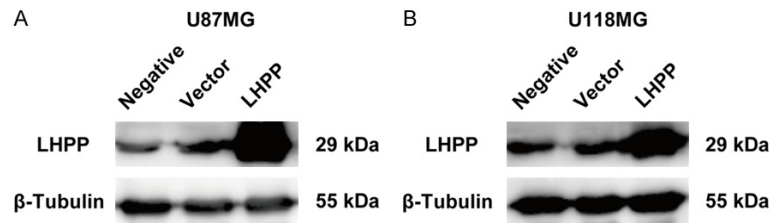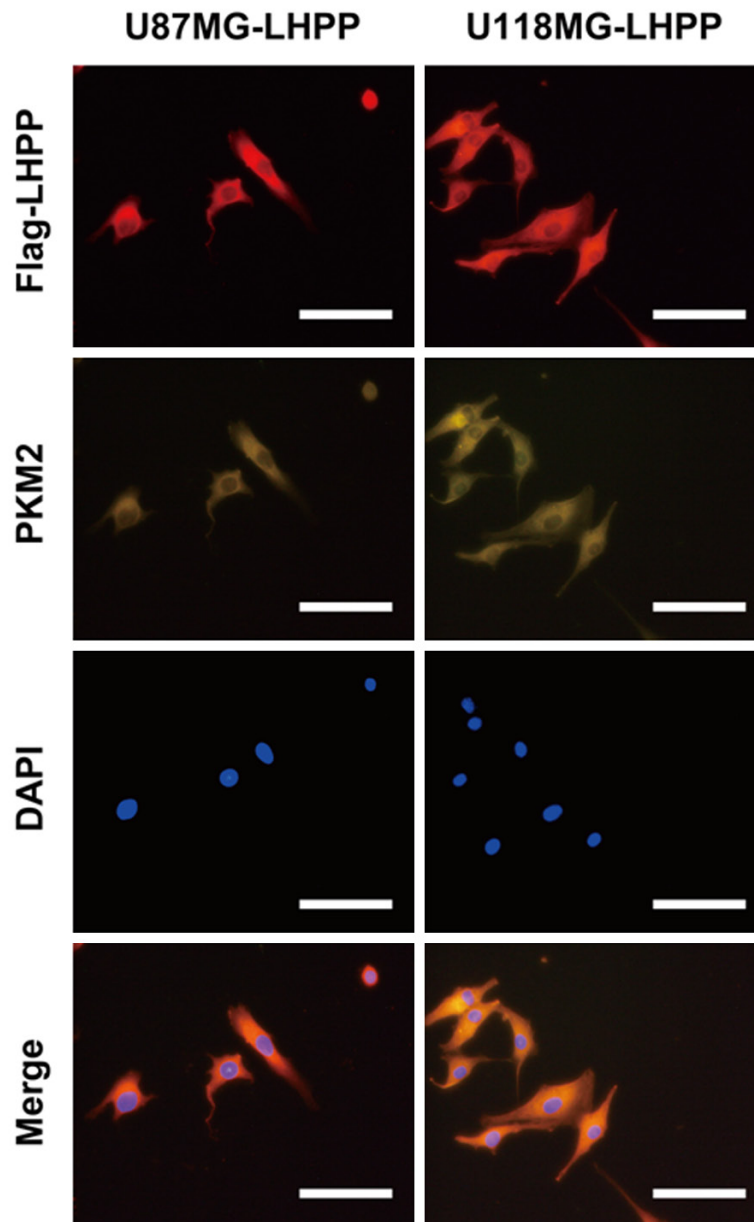**Figure S1.** LHPP expression profile in The Human Protein Atlas database. A. LHPP protein expression overview by organ category in the Human Protein Atlas database. B. LHPP RNA expression overview by organ category in the consensus dataset of The Human Protein Atlas database. C. LHPP RNA expression overview in cancer cell lines of The Human Protein Atlas database. The dates shown here were obtained from The Human Protein Atlas database, and the visualization images are available at: https://www.proteinatlas.org/ENSG00000107902-LHPP.
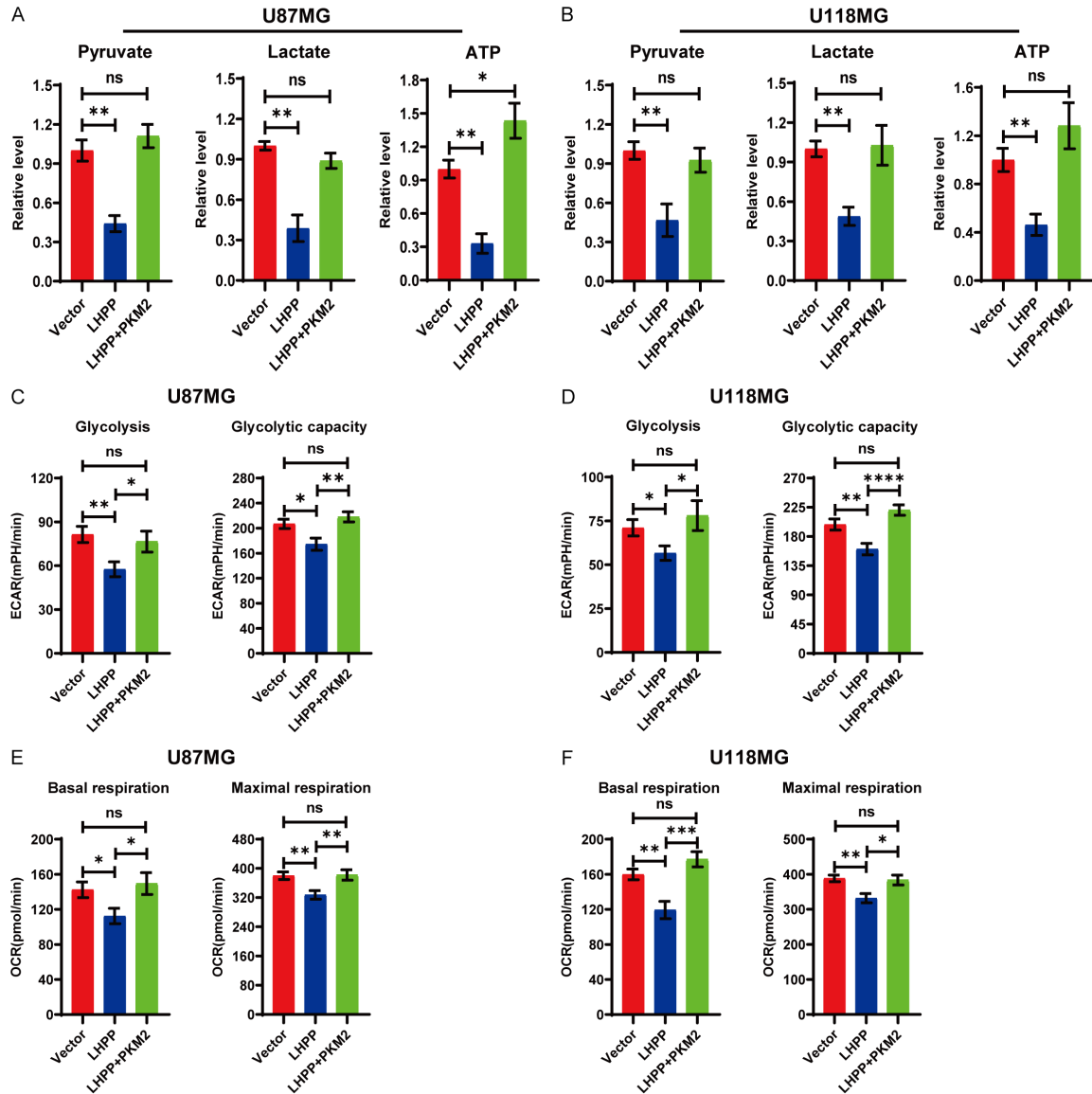
Figure S2. LHPP-overexpression efficiency identification. A and B. Western blot was used to analyse the protein level of PKM2 in negative cells, cells transfected with empty vector, and cells transfected with LHPP plasmids. The protein level of LHPP was significantly increased in U87MG and U118MG cells after transfected with LHPP plasmids.

Figure S3. Immunofluorescence assay of Flag-LHPP and PKM2 in LHPP-overexpression U87MG and U118MG cells. Colocalization assay of Flag-LHPP and PKM2 in LHPP-overexpression U87MG and U118MG cells. Red fluorescence stands for Flag-LHPP, yellow fluorescence stands for PKM2, and blue fluorescence stands for nucleus (×400).

Figure S4. Restoration of PKM2 reversed the aerobic glycolysis and respiration in LHPP-overexpression U87MG and U118MG cells. A and B. Intracellular pyruvate, lactate, and ATP were detected in U87MG and U118MG cells after transfected with empty vector, LHPP plasmids, and LHPP plus PKM2 plasmids, the statistical analysis show restoration of PKM2 reversed the production inhibition of pyruvate, lactate, and ATP in LHPP-overexpression U87MG and U118MG cells (n=4). C and D. Statistical analysis of glycolysis and glycolytic capacity in U87MG and U118MG cells after transfected with empty vector, LHPP plasmids, and LHPP plus PKM2 plasmids (n=4). E and F. Statistical analysis of basal respiration and maximal respiration in U87MG and U118MG cells after transfected with empty vector, LHPP plasmids, and LHPP plus PKM2 plasmids (n=4). The data were expressed as the mean ± SEM (nsP>0.05, *P<0.05, **P<0.01, ***P<0.001, ****P<0.0001).