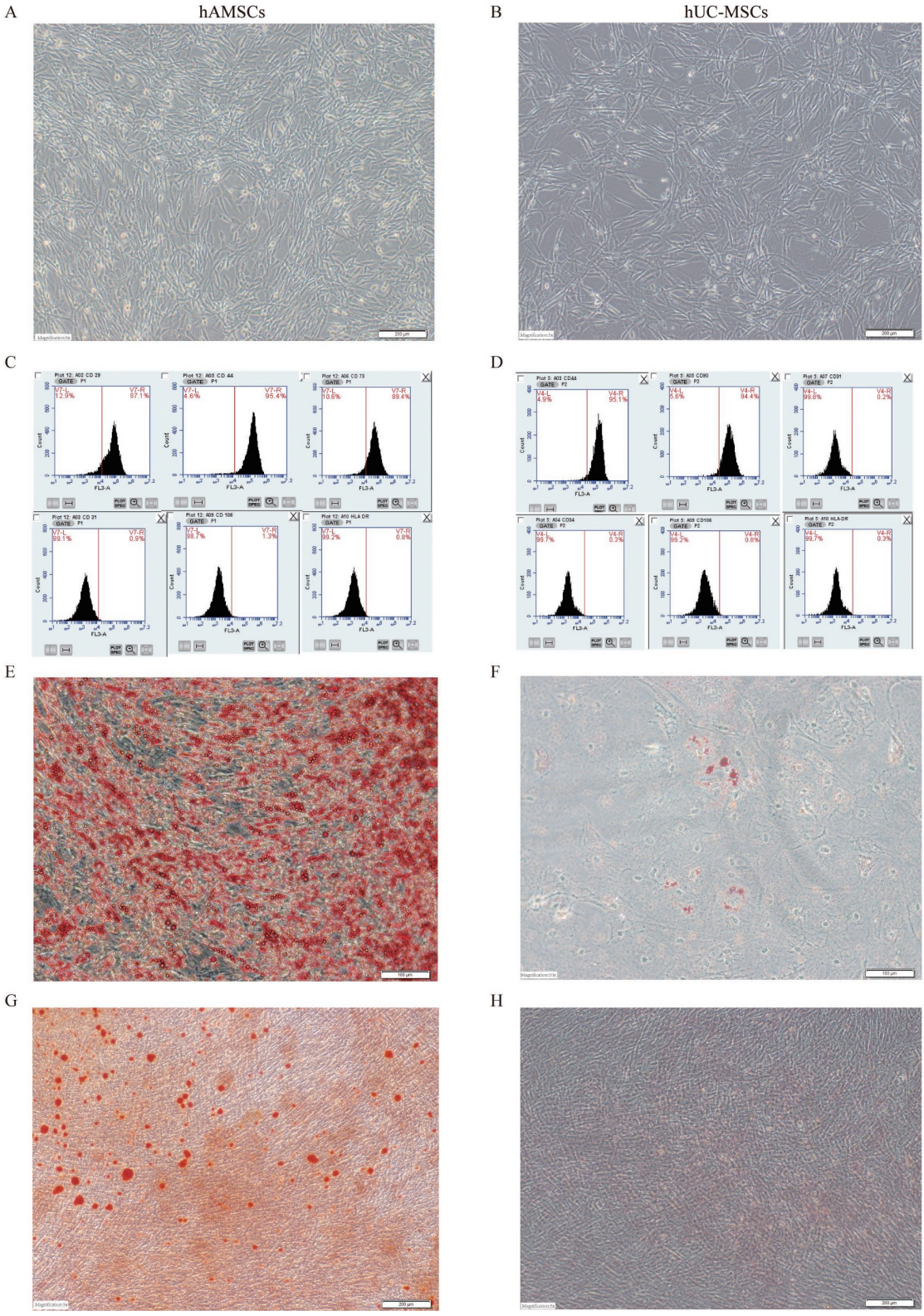
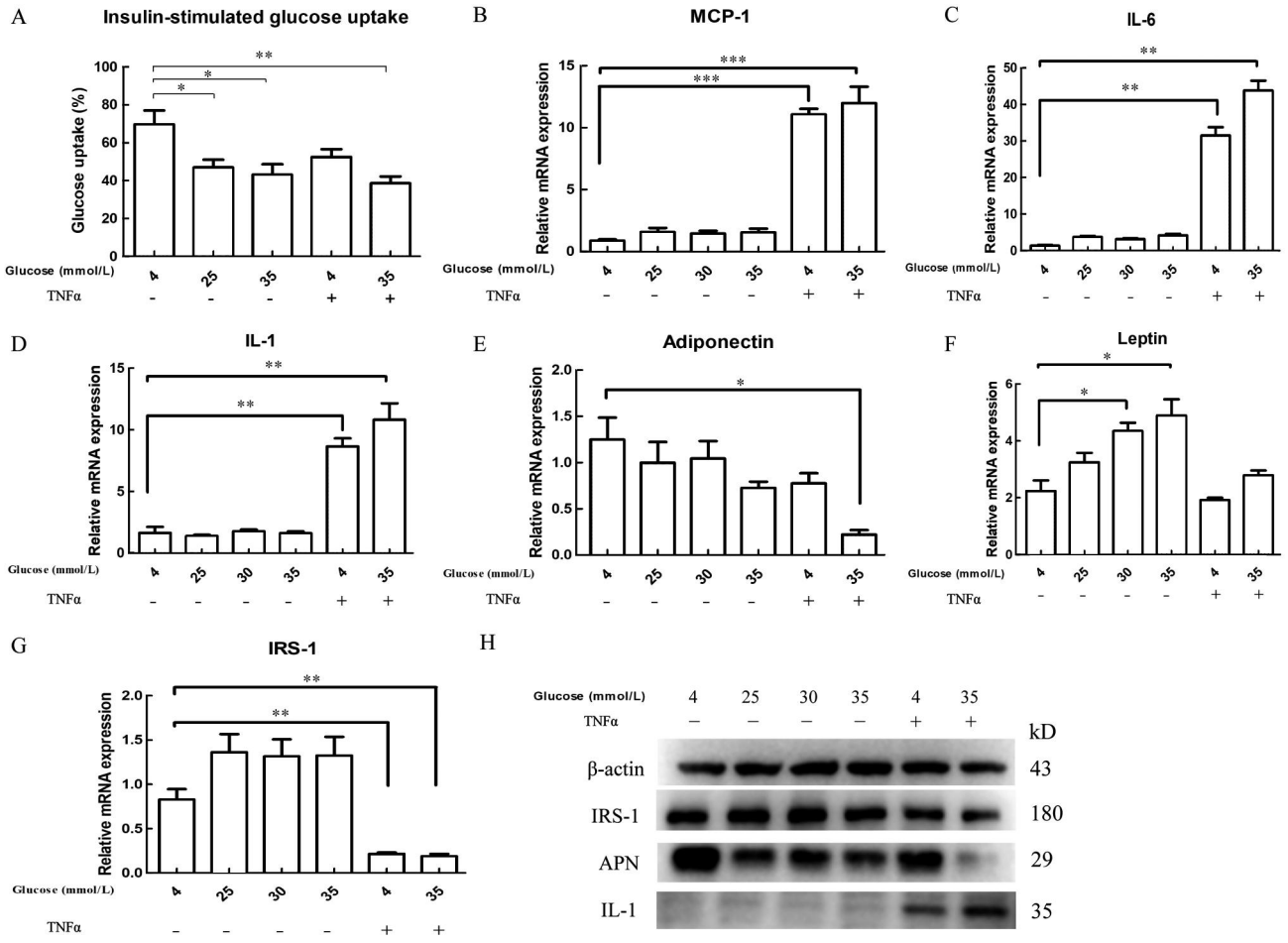


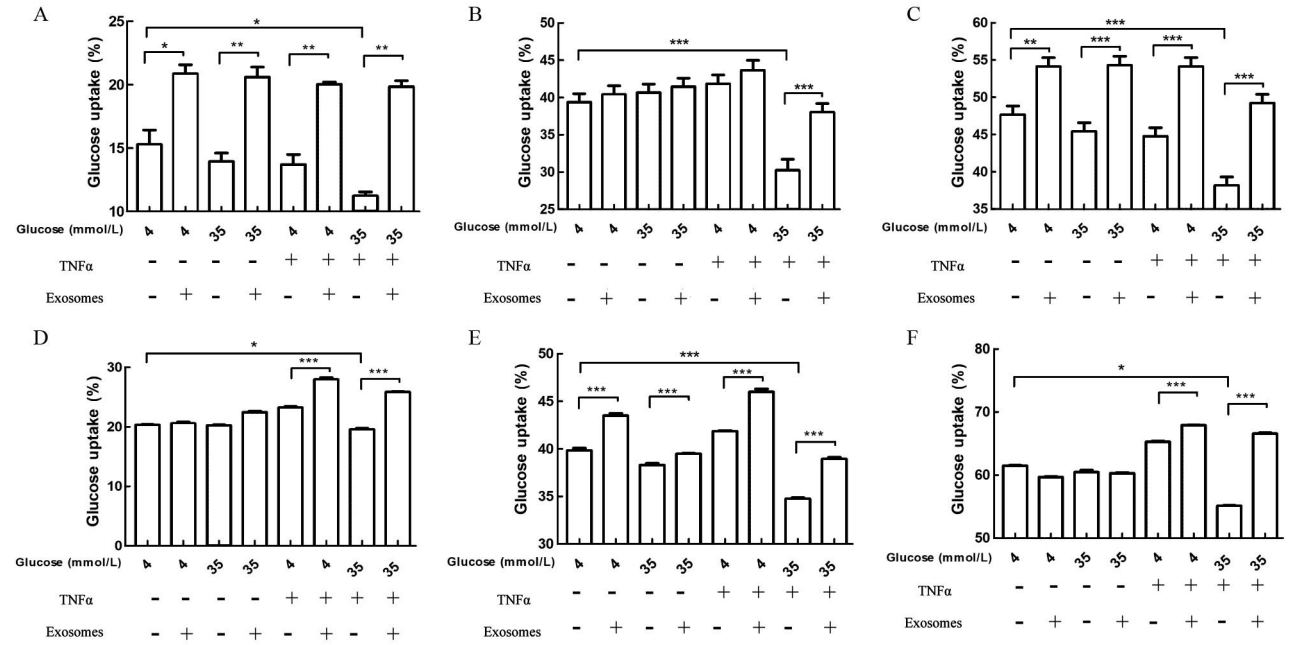
Supplement fig. 1 Morphology of hAMSC (A) and hUC-MSCs (B), and immunophenotypic analysis of hAMSCs (C) and hUC-MSCs (D) by flow cytometry

MSCs-associated markers (CD29, CD44, CD73 and CD90) and hematopoietic lineage markers (CD31, CD34, CD106 and HLA-DR) were evaluated. Immunopheotypes of hAMSCs were CD29+ (87.1%), CD31− (99.1%), CD44+ (95.4%), CD73+ (89.4%), CD106− (98.7%) and HLA-DR− (99.2%); immunopheotype of hUC-MSCs were CD31− (99.8%), CD34− (99.7%), CD44+ (95.1%), CD90+ (94.4%), CD106− (99.7%) and HLA-DR− (99.2%). Both hAMSCs (E) and hUC-MSCs (F) were stained using oil-red O after adipogenic differentiation for two weeks. After osteogenic differentiation for 2 weeks, hAMSCs (G) and hUC-MSCs (H) were stained using alizarin red S. MSCs, mesenchymal stem cells; hUC-MSCs, human umbilical cord-derived MSCs; hAMSCs, human adipose-derived MSCs. Scale bar represents 100 μm (A, B, E, F) and 200 μm (G, H).



Supplement fig. 2 Results of insulin resistance of human adipocytes

A: results of insulin-stimulated glucose uptake in each group (concentration of insulin: 10 ng/mL); B–G: mRNA relative expression levels of MCP-1, IL-6, IL-1, adiponectin, leptin, and IRS-1 genes in each group, reference gene: GAPDH; H: Western blot analysis of protein expression of IRS-1, adiponectin, IL-1 gene in each group. APN: adiponectin, internal reference gene: β-actin. $^{*}P<0.05$, $^{**}P<0.01$, $^{***}P<0.001$



Supplement fig. 3 Exosomes improve insulin-stimulated glucose uptake in human adipocytes.

A–C: Insulin stimulated glucose uptake in adipocytes after exosome treatment at 2 (A), 4 (B), 6 (C) h. D–F: Insulin stimulated glucose uptake at 2 (D), 4 (E), and 6 (F) h on the second day after exosome treatment. $^{*}P<0.05$, $^{**}P<0.01$, $^{***}P<0.001$