Expanded View Figures

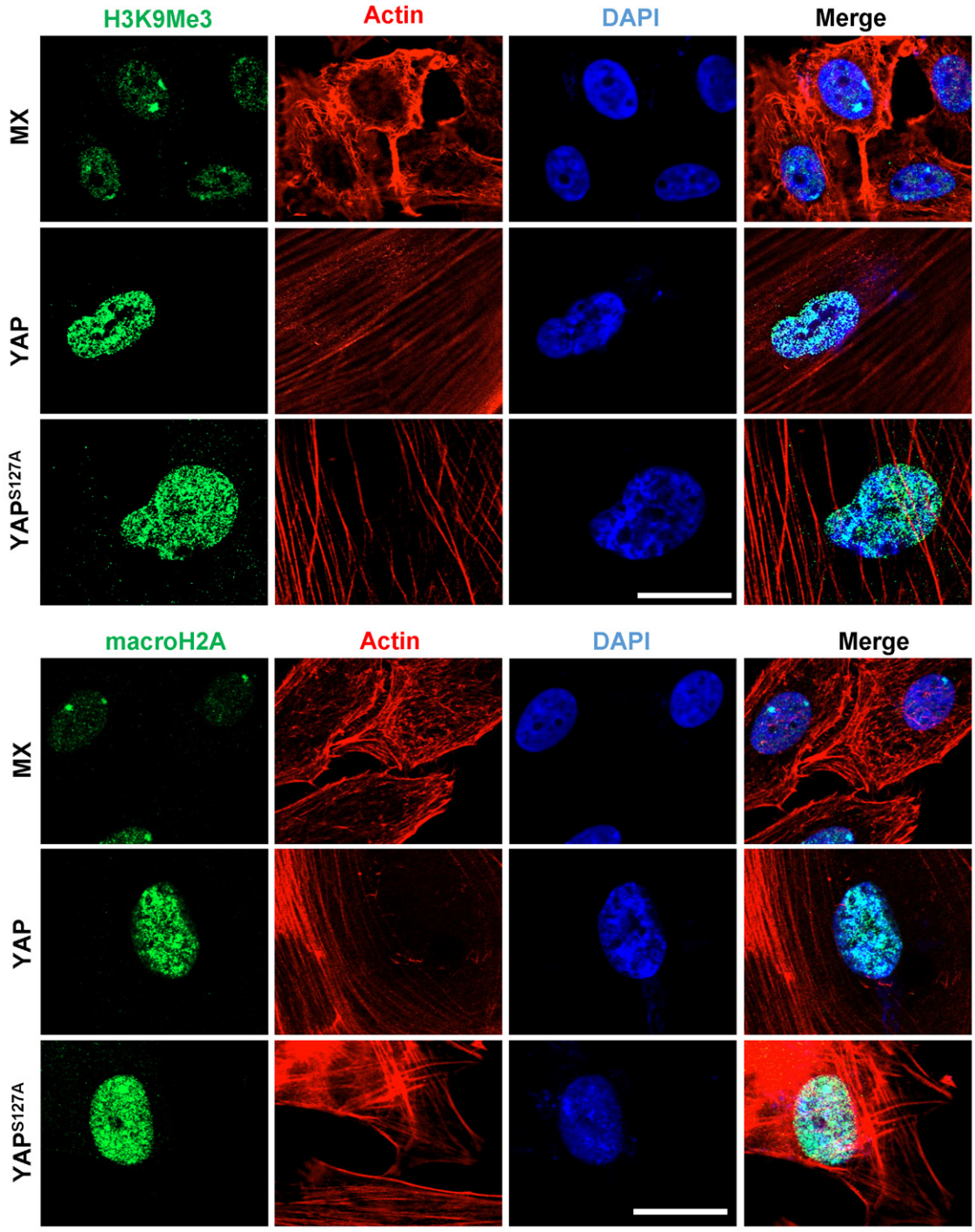

Figure EV1. YAP1 induced senescence-associated heterochromatin foci (SAHF) in hOSE cells.

Representative images showing the expression of H3K9Me3 and macroH2A in the seventh passage hOSE cells transfected with empty (MX), wild-type YAP (YAP), or constitutively active YAP (YAP^{S127A}) vectors. H3K9Me3 and macroH2A were visualized by an Alexa-488-conjugated secondary antibody (green). Actin filaments were stained with rhodamine-phalloidin (red). Scale bar = 20 μm.

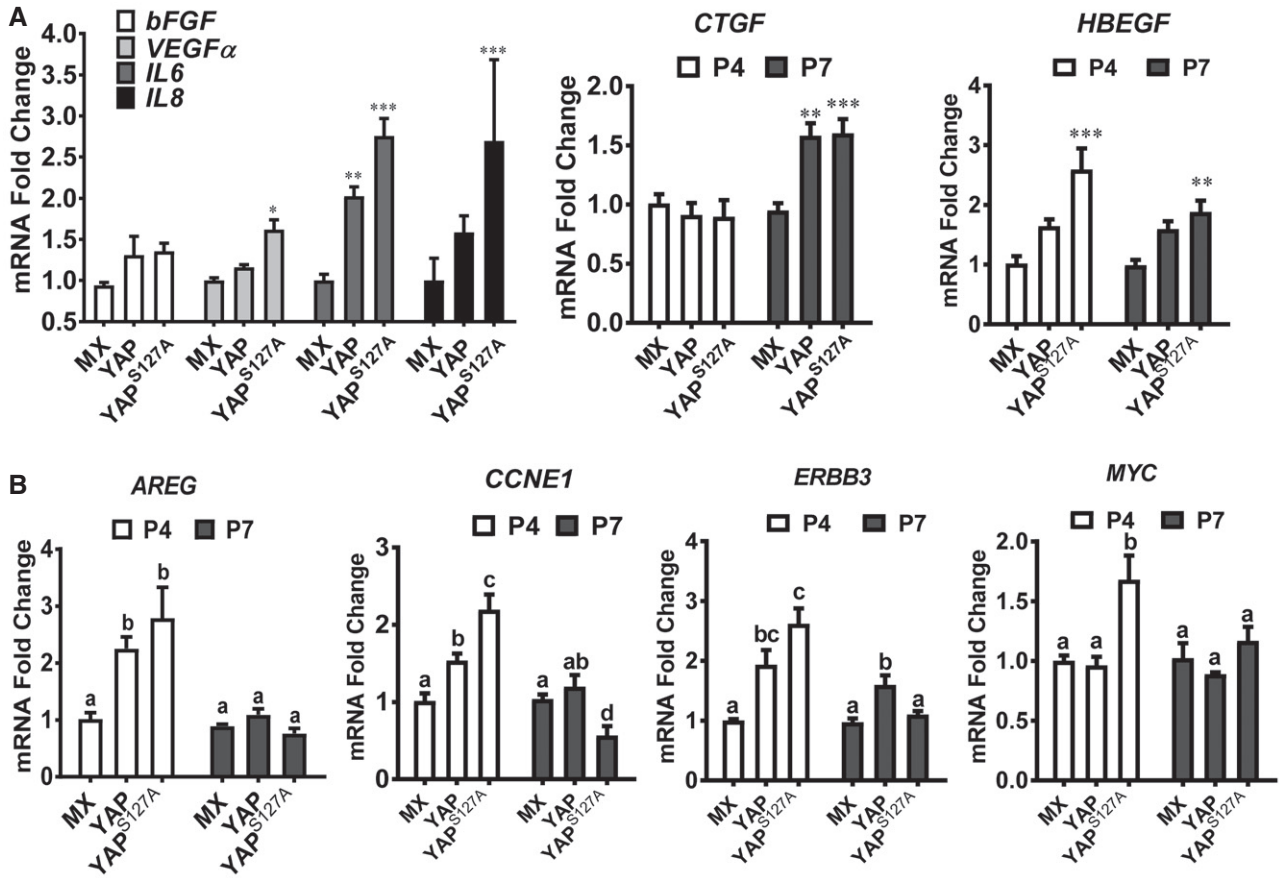

Figure EV2. YAP induced cellular senescence in hOSE cells.

A Relative mRNA levels of SASP factors (FGF2, VEGFA, IL-6, IL-8, CTGF, and HBEGF) in hOSE-MX cells (hOSEs transfected with empty MXIV vectors), hOSE-YAP cells (hOSEs transfected with vectors expressing wild-type YAP), and hOSE-YAP^{S127A} cells (hOSEs transfected with vectors expression constitutively active YAP, indicated as YAP^{S127A}) at their 7th passage. Relative mRNA levels of CTGF and HBEGF in these cells at their 4th passage were also presented. Data were normalized with mRNA levels of GAPDH. Each bar represents mean ± SEM (n = 4). *P < 0.05, **P < 0.01, ***P < 0.001, compared to the MX control cells in the same group.

B mRNA expressions of YAP1 target genes (*CCNE1*, *MYC*, *ERBB3*, and *HBEGF*) in hOSE-MX cells, hOSE-YAP cells, and hOSE-YAP^{S127A} cells at their 4th and 7th passages. Data were normalized with mRNA level of GAPDH. Each bar represents mean ± SEM (n = 4). Bars with different letters are significantly different from each other.

Data information: Data were analyzed for significance using one-way ANOVA with Tukey's *post hoc* tests.

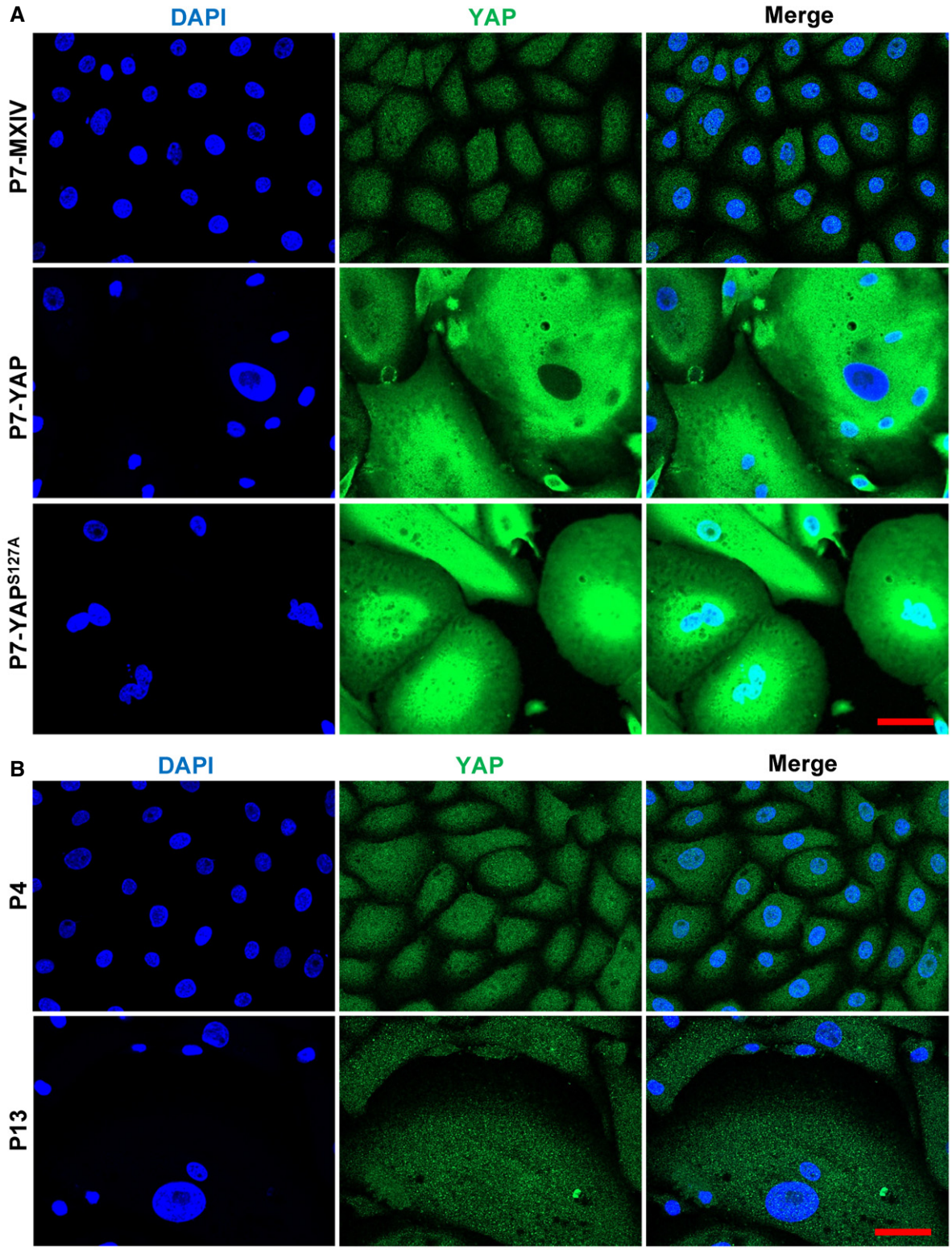

Figure EV3. YAP activity was suppressed in senescent cells.

A Representative images showing the expression and location of YAP in hOSE-MXIV, hOSE-YAP, and hOSE-YAP^{S127A} cells at the 7th passage (P7). Scale bar = 20 μm.

B Representative images showing the expression and location of YAP in hOSE cells at the 4th (P4) and 13th (P13) passages. YAP was visualized using an Alexa-488 (green)-conjugated secondary antibody. Nuclei were stained with DAPI (blue). Scale bar = 20 μm.

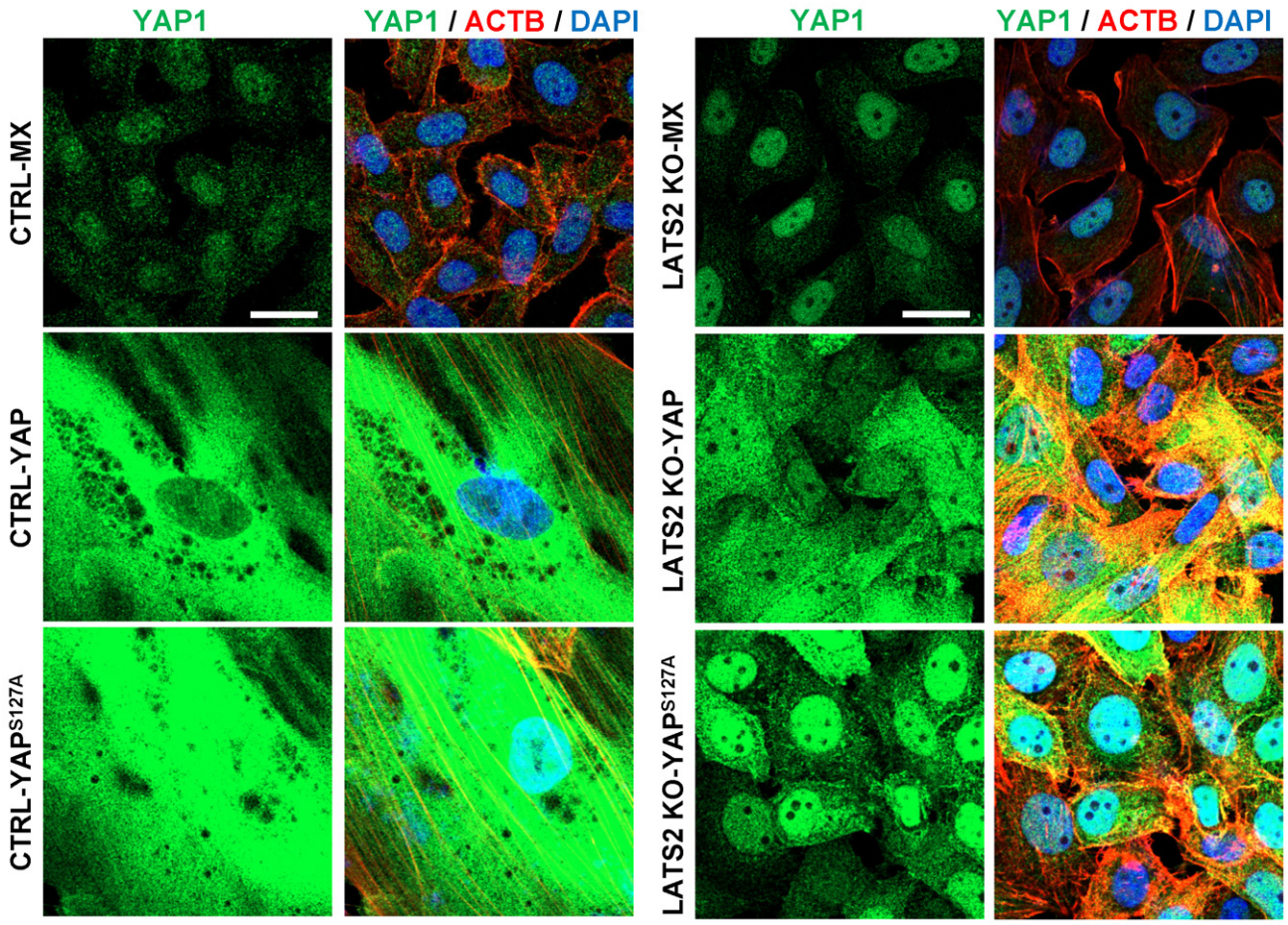

Figure EV4. LATS2 deletion impeded YAP-induced cellular senescence.

Representative images showing the expression and location of YAP1 in hOSE-MX, hOSE-YAP, and hOSE-YAP^{S127A} cells with or without knockout of LATS2 using CRISPR-LATS2-CAS9 vectors. Cells were fixed and stained at their 7th passage. YAP1 was visualized using an Alexa-488-conjugated 2nd antibody (green). Actin filaments were stained with rhodamine-phalloidin (red). Nuclei were stained with DAPI (blue). Scale bar = 20 μm.

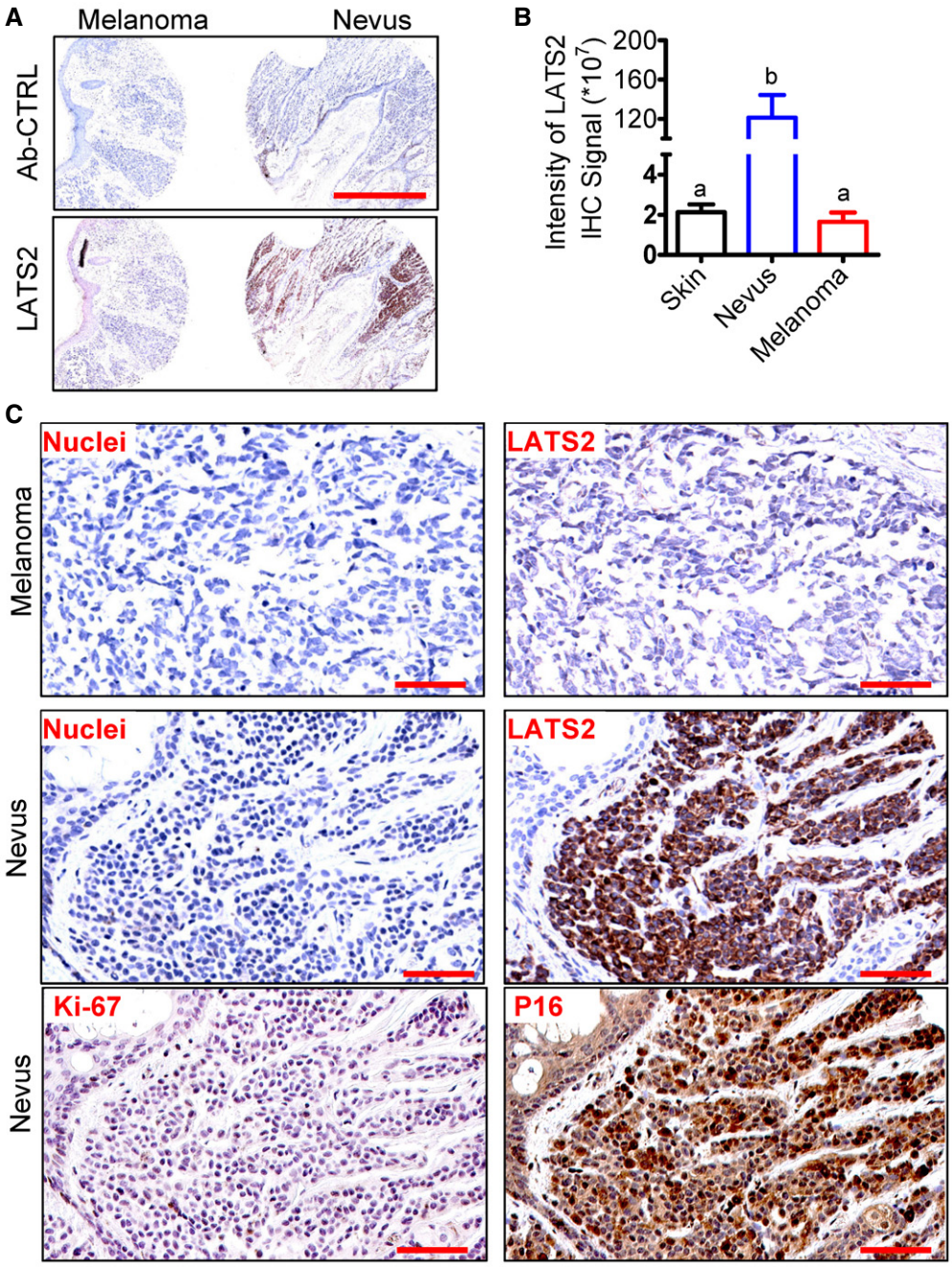

Figure EV5. LATS2 is up-regulated in human senescent tissues.

A Representative images showing the expression of LATS2 in nevus and melanoma tissues examined by immunohistochemistry. Scale bar: 1.0 mm.

B Quantitative data showing the immunosignal intensity of LATS2 in the normal skin (n = 8), nevus (n = 9), and melanoma tissues (n = 8). Each bar represents means ± SEM. Bars with different letters are significantly different from each other. Data were analyzed for significance using one-way ANOVA with Tukey's *post hoc* tests.

C Representative high-resolution images showing the expression and cellular location of LATS2, Ki67, and p16 (another known senescence marker) in nevus and melanoma tissues. LATS2 and P16 were visualized using a DAB staining kit and shown as brown. Nuclei were stained with hematoxylin (blue). Scale bar: 100 μm.