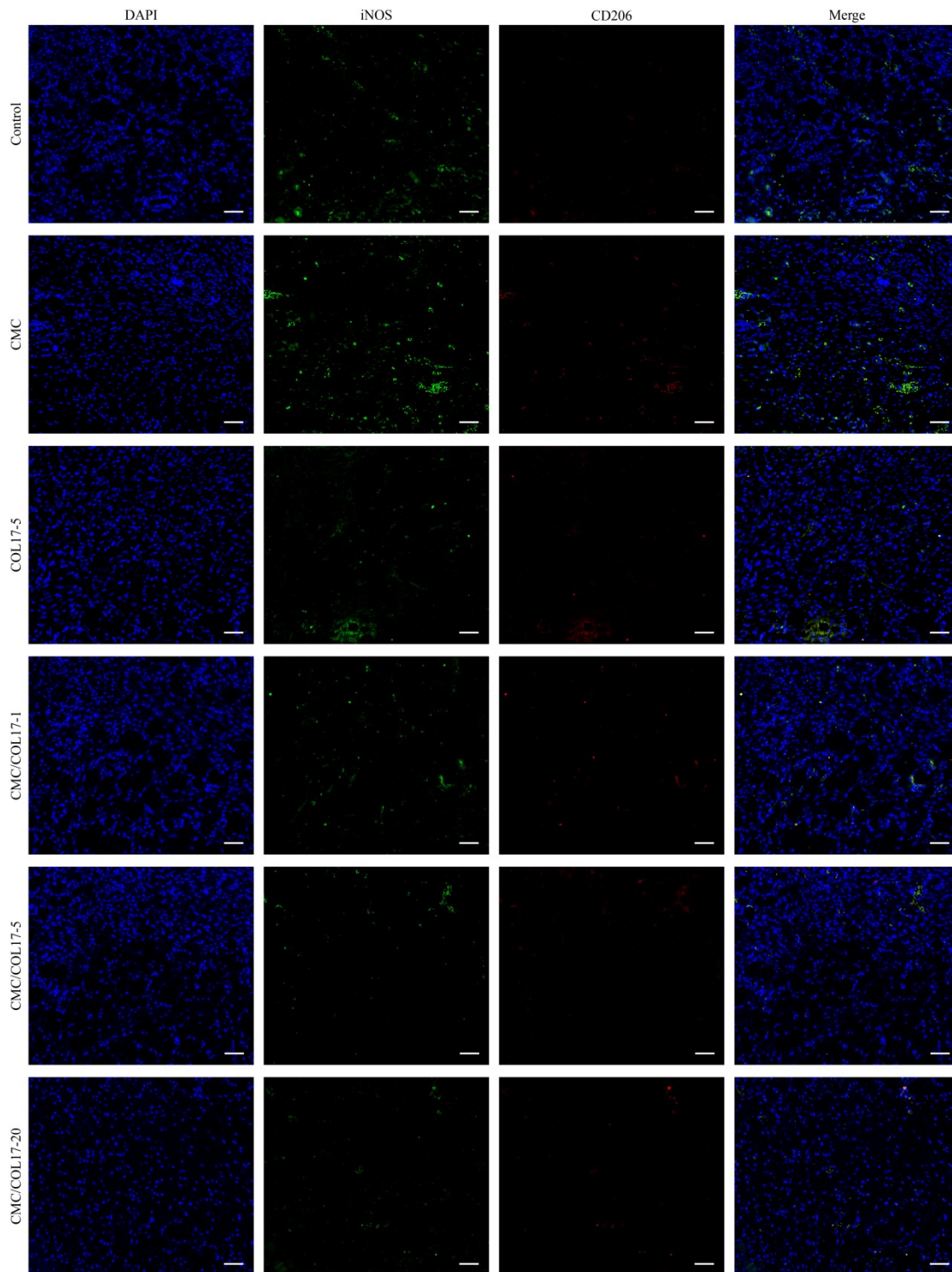
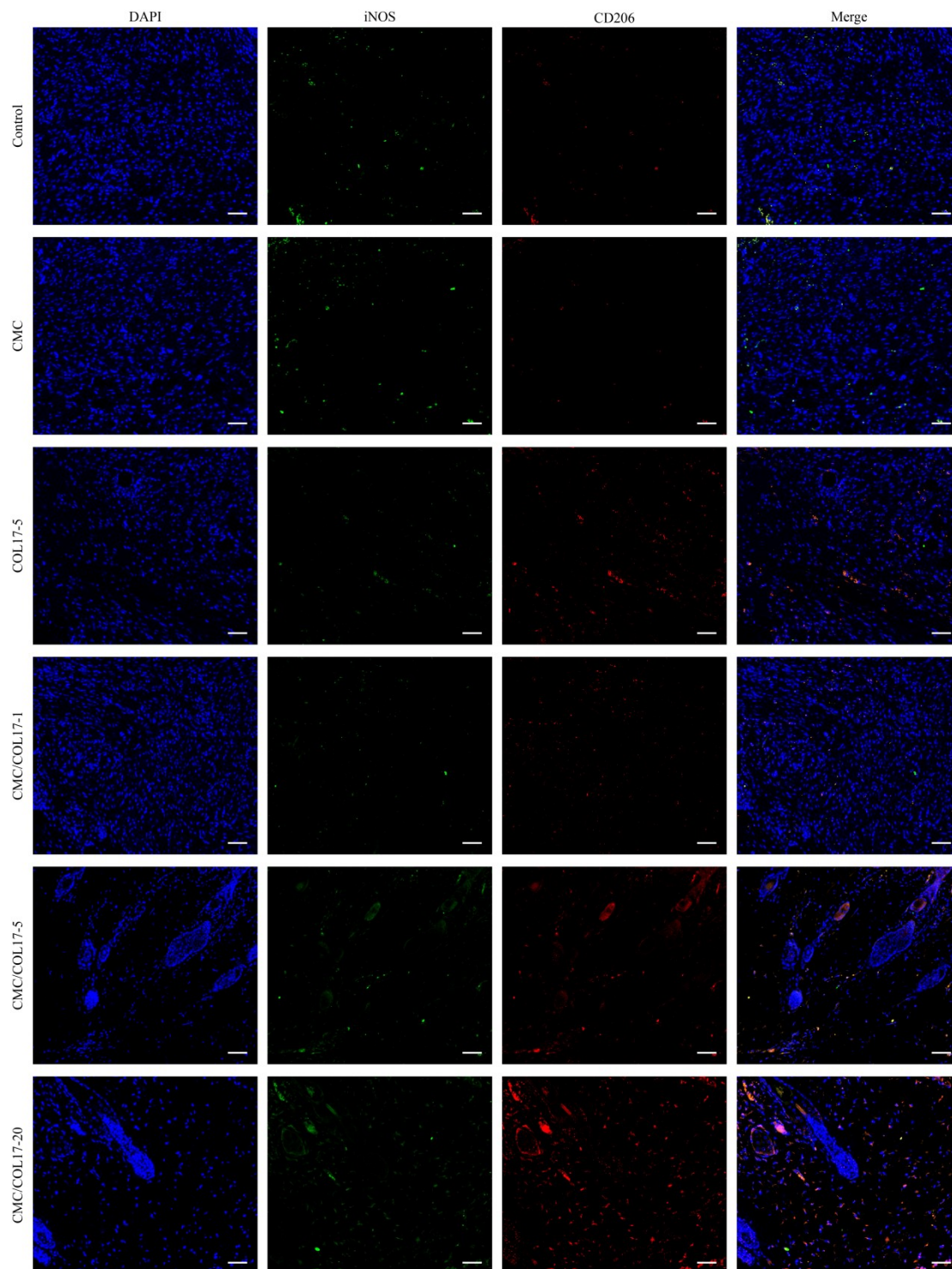


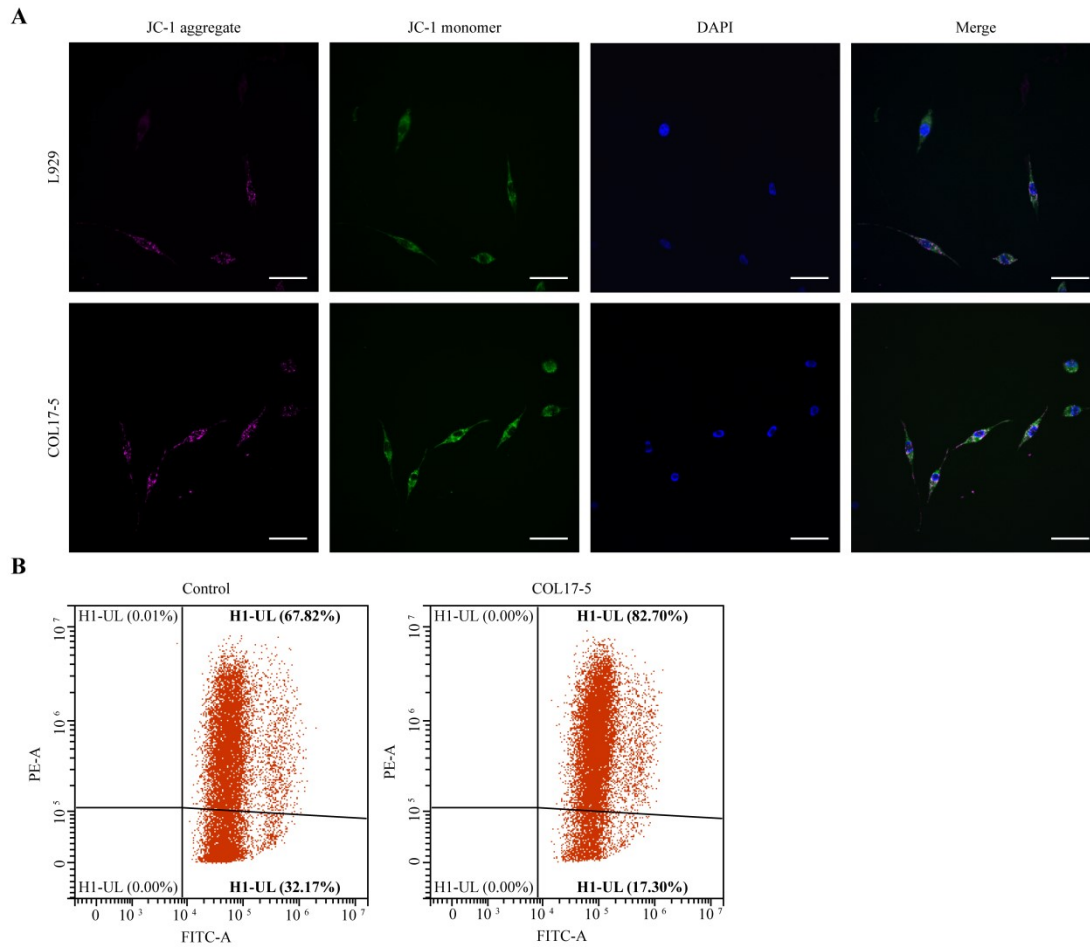
**Fig S1. CMC/COL17 hydrogels promote wound closure and enhance tissue maturation and collagen remodeling on day 10.** (A) H&E staining of wound sections collected on day 10 after treatment with ddH<sub>2</sub>O, CMC, COL17-5, CMC/COL17-1, CMC/COL17-5, or CMC/COL17-20. Scale bar: 200 µm. (B) Quantification of neoepidermal thickness. (C) Quantification of residual wound gap length. (D) Quantification of granulation tissue area. (E) Sirius red staining of corresponding sections on day 10. Scale bar: 10 µm. (F) Quantification of Collagen I positive objects. (G) Quantification of Collagen III positive objects. Data are presented as mean ± SD. ns, not significant; \*P < 0.05; \*\*P < 0.01; \*\*\*P < 0.001; \*\*\*\*P < 0.0001.



**Fig S2. CMC/COL17 hydrogel suppresses M1-associated responses on day 7.** Immunofluorescence analysis of macrophage polarization during wound healing on day 7. Blue: DAPI. Red: CD206. Green: iNOS. Scale bar: 50  $\mu$ m.



**Fig S3. CMC/COL17 hydrogel enhances M2-like macrophage polarization on day 10.** Immunofluorescence analysis of macrophage polarization during wound healing on day 10. Blue: DAPI. Red: CD206. Green: iNOS. Scale bar: 50  $\mu$ m.



**Fig S4. COL17 improves mitochondrial membrane potential in fibroblasts. (A)** JC-1 staining of L929 cells treated with or without 5 mg/mL COL17, showing changes in mitochondrial membrane potential. **(B)** Flow cytometric analysis of JC-1 red/green fluorescence ratio in L929 cells with or without 5 mg/mL COL17 treatment. Scale bar: 50  $\mu$ m.