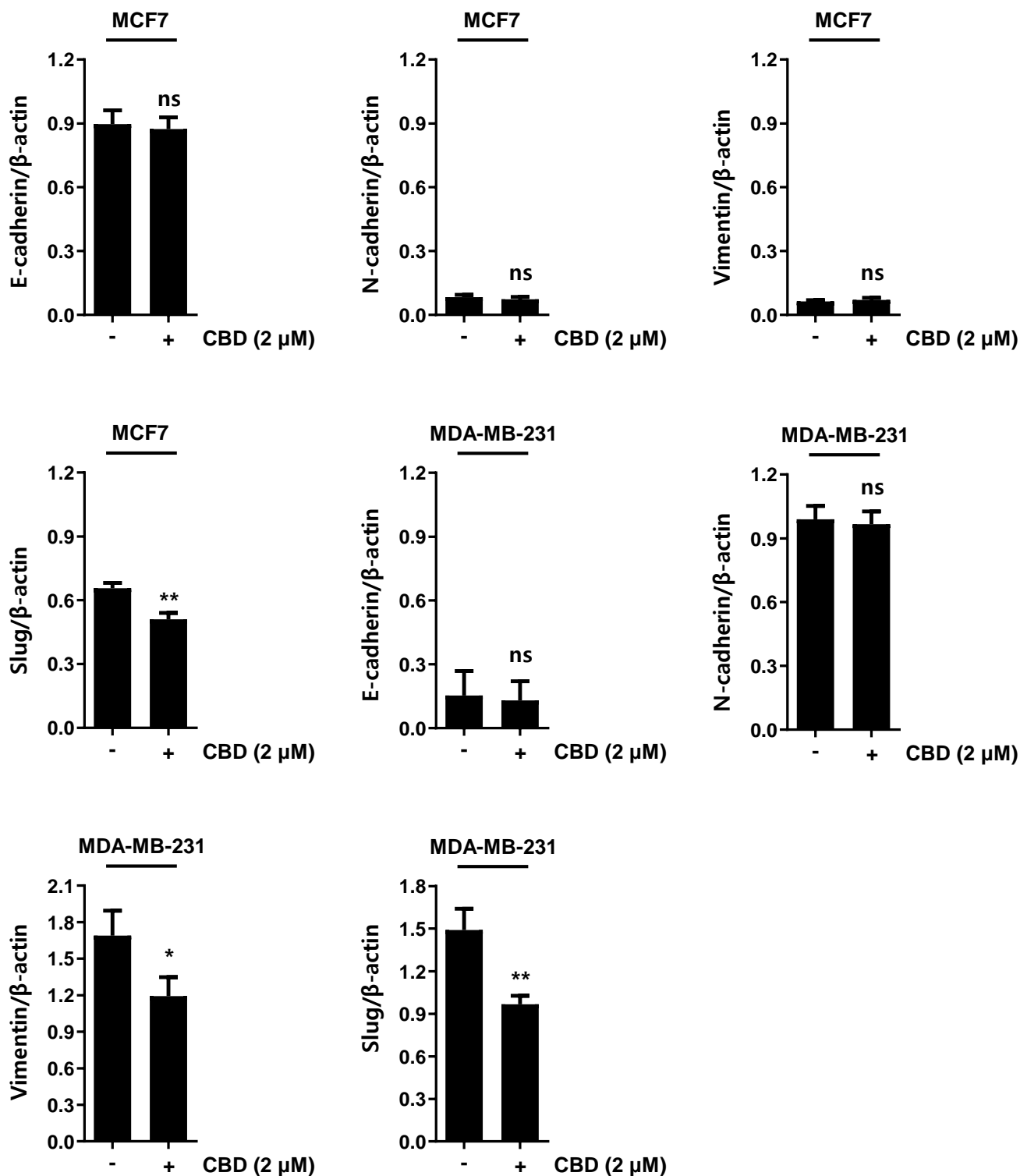


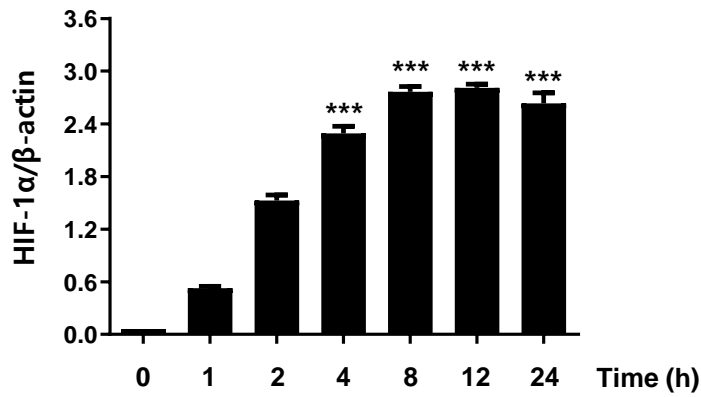
## **Supplementary Figures :**

# **Cannabidiol suppresses angiogenesis and stemness of breast cancer cells by downregulation of hypoxia-inducible factors -1 $\alpha$**

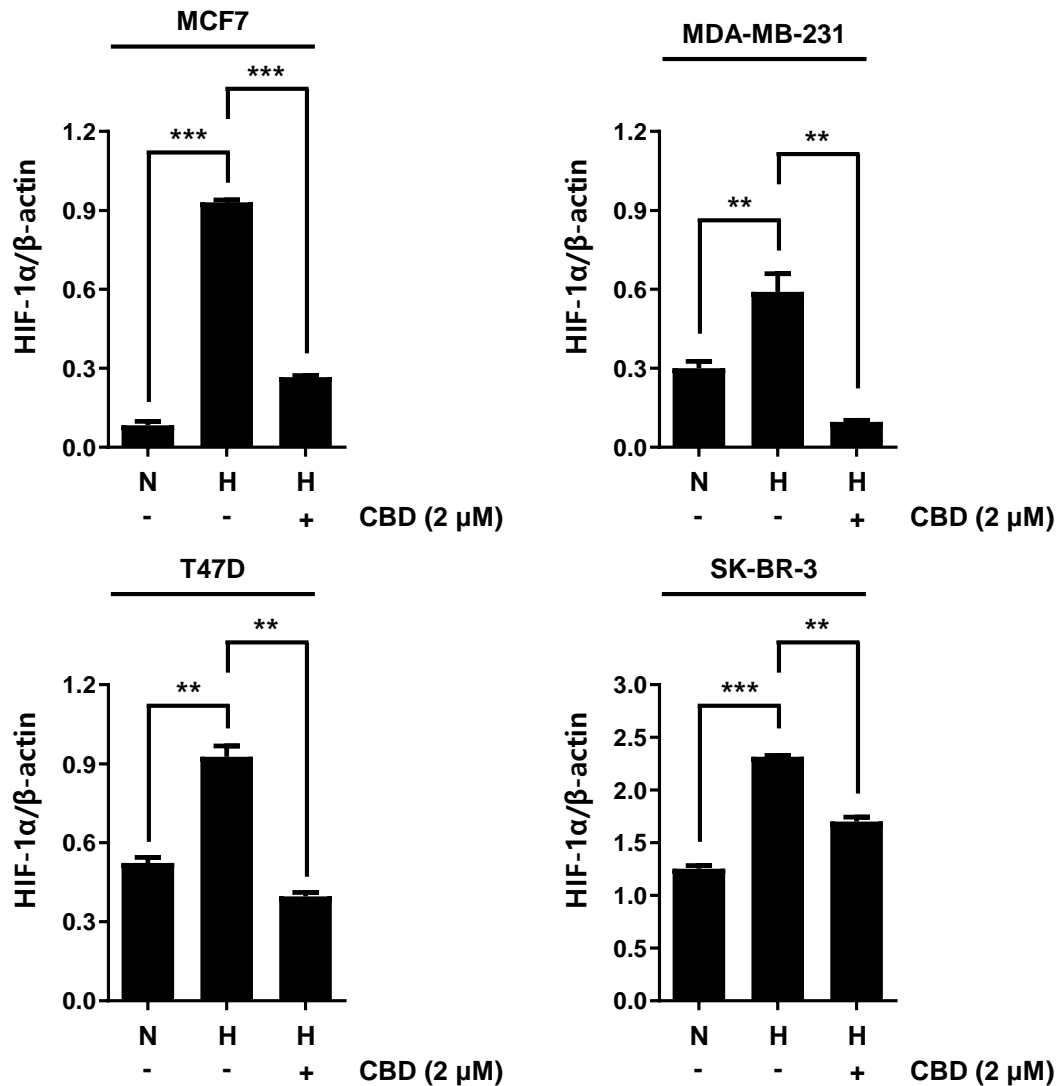
**Min Jee Job<sup>1†</sup>, Bu Gyeom Kim<sup>1†</sup>, Hye Kyeong Yun<sup>1</sup>, Soyeon Jeong<sup>2</sup>, Bo Ram Kim<sup>2</sup>, Jung Lim Kim<sup>2</sup>, Seong Hye Park<sup>1</sup>, Dae Yeong Kim<sup>1</sup>, Sun Il Lee<sup>3</sup>, Sang Cheul Oh<sup>1,2</sup>, Dae-Hee Lee<sup>4\*</sup> , and Woo Young Kim<sup>3\*</sup>**



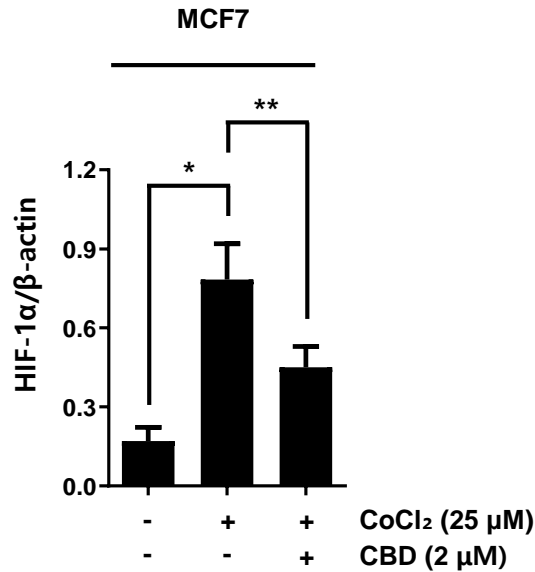
**Figure S1.** Quantifications and statistics of western blot assays relative to Figure 1B. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values  $< 0.05$  (\*, \*\*, and \*\*\* indicate  $P < 0.05$ ,  $P < 0.01$ , and  $P < 0.001$ , respectively)



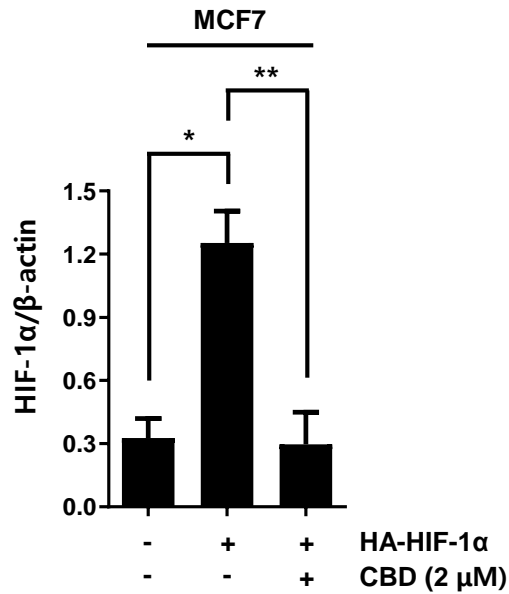
**Figure S2.** Quantifications and statistics of western blot assays relative to Figure 2A. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



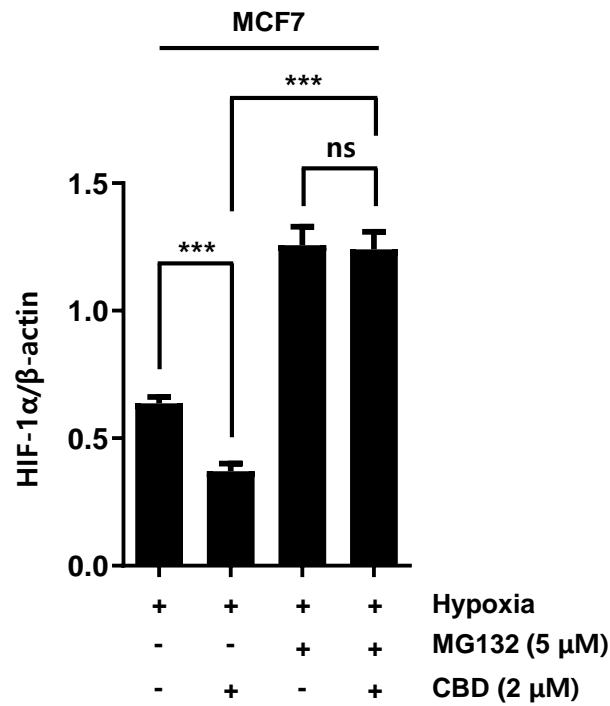
**Figure S3.** Quantifications and statistics of western blot assays relative to Figure 2B. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



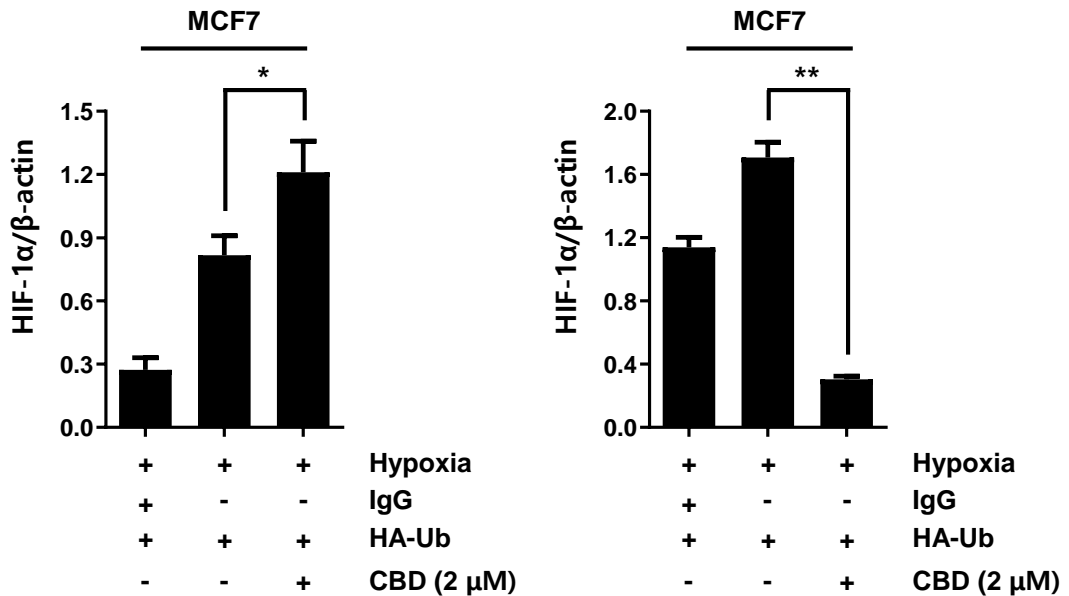
**Figure S4.** Quantifications and statistics of western blot assays relative to Figure 2C. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



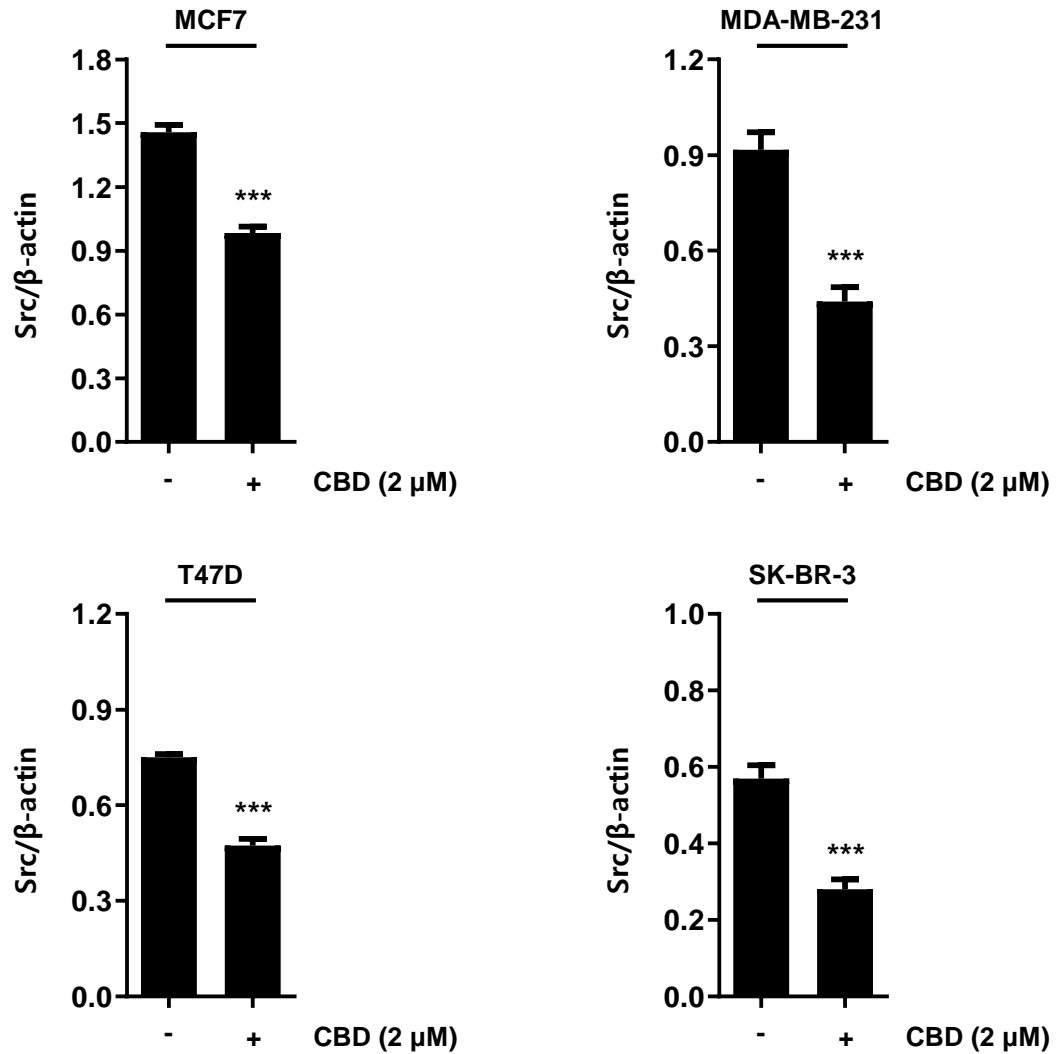
**Figure S5.** Quantifications and statistics of western blot assays relative to Figure 2D. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



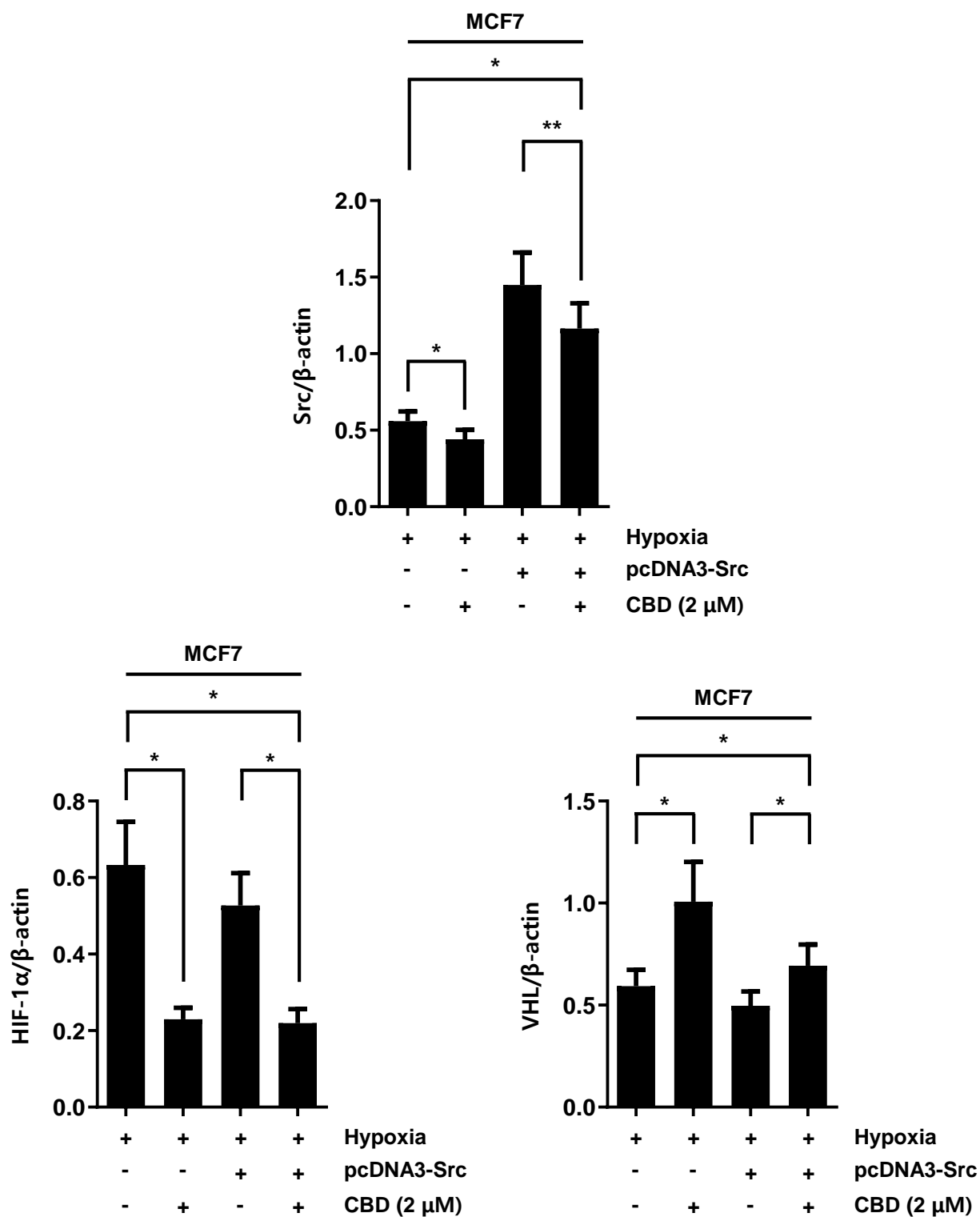
**Figure S6.** Quantifications and statistics of western blot assays relative to Figure 2G. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



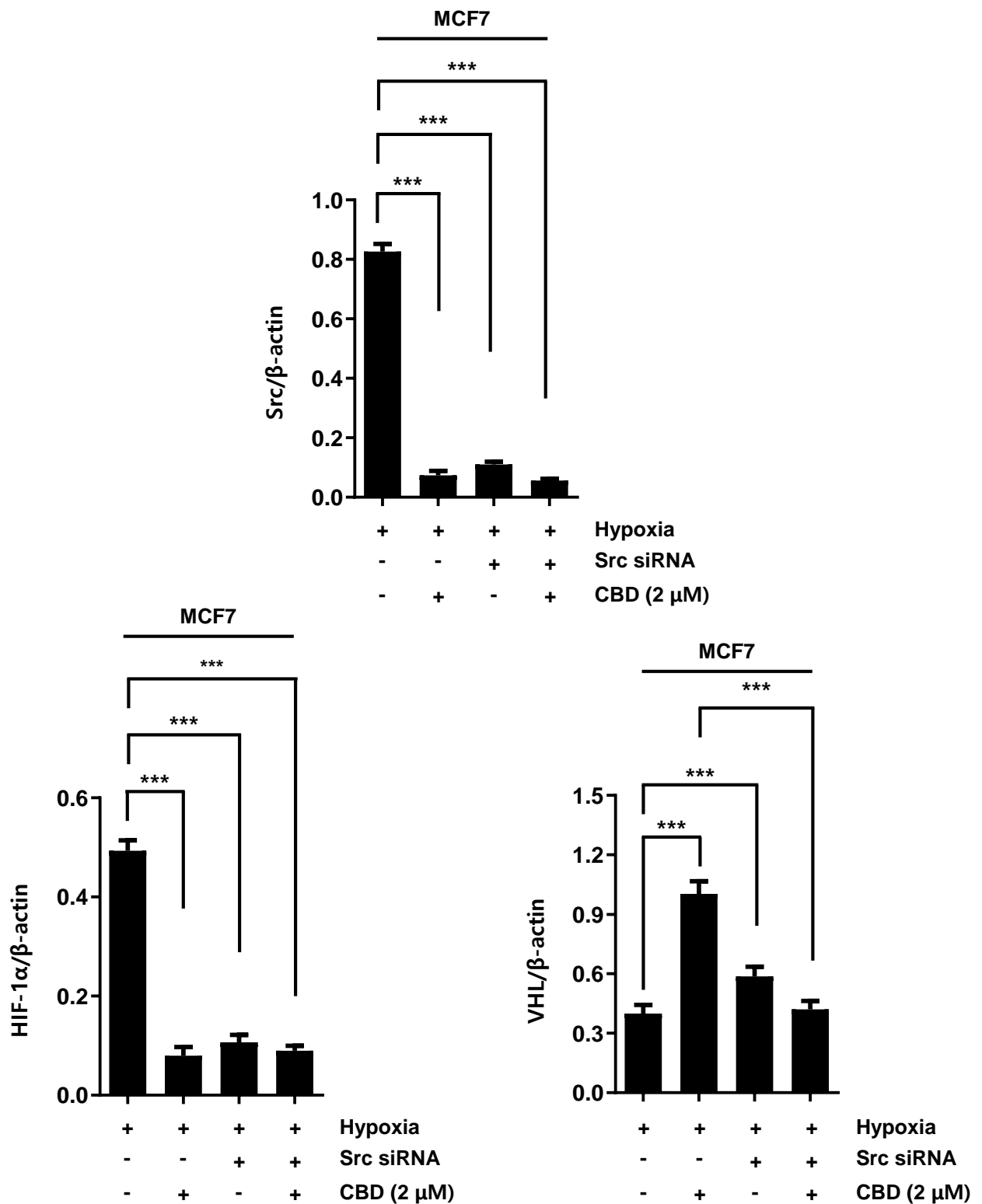
**Figure S7.** Quantifications and statistics of western blot assays relative to Figure 2H. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



**Figure S8.** Quantifications and statistics of western blot assays relative to Figure 3A. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values  $< 0.05$  (\*, \*\*, and \*\*\* indicate  $P < 0.05$ ,  $P < 0.01$ , and  $P < 0.001$ , respectively)

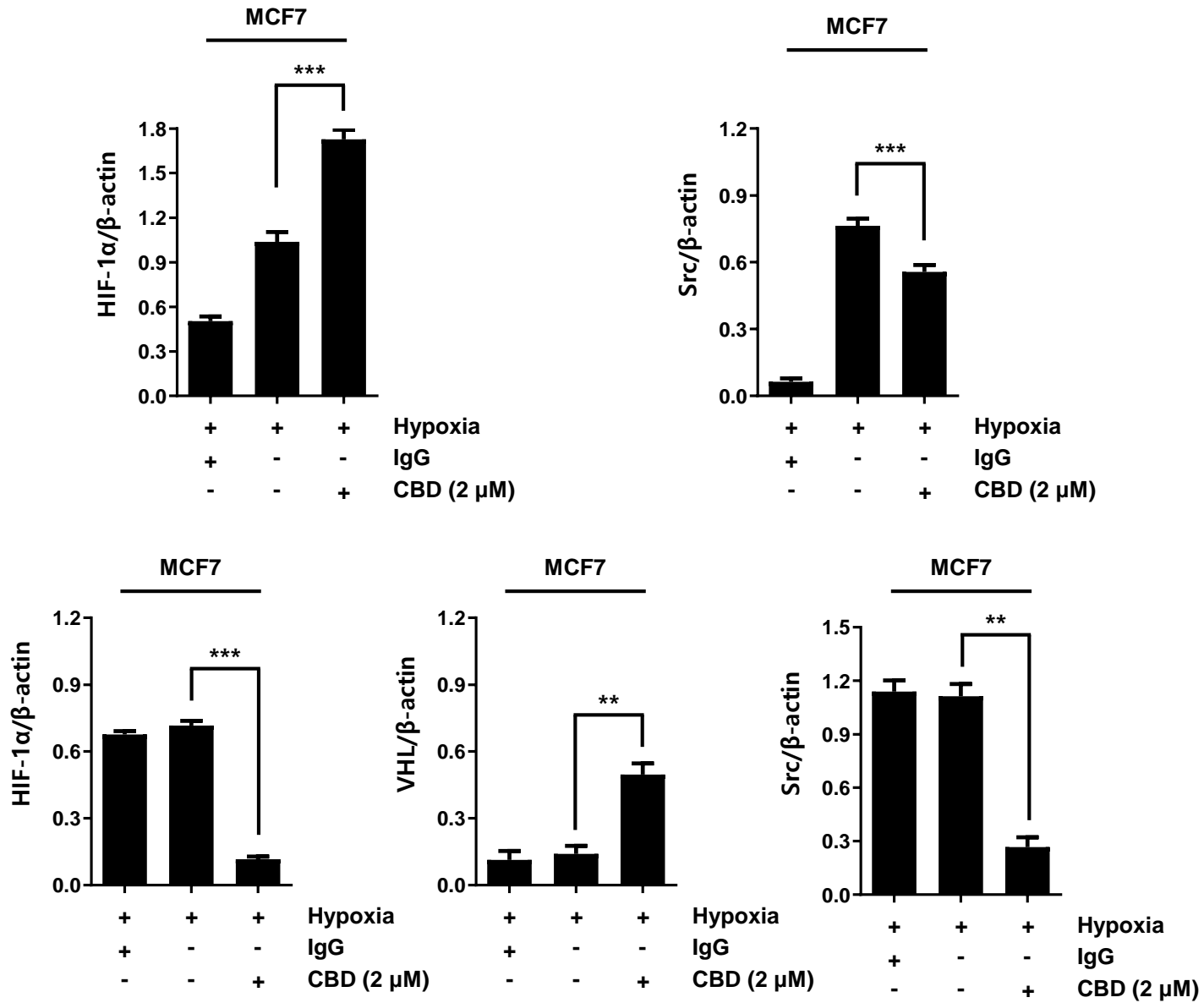


**Figure S9.** Quantifications and statistics of western blot assays relative to Figure 3C. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)

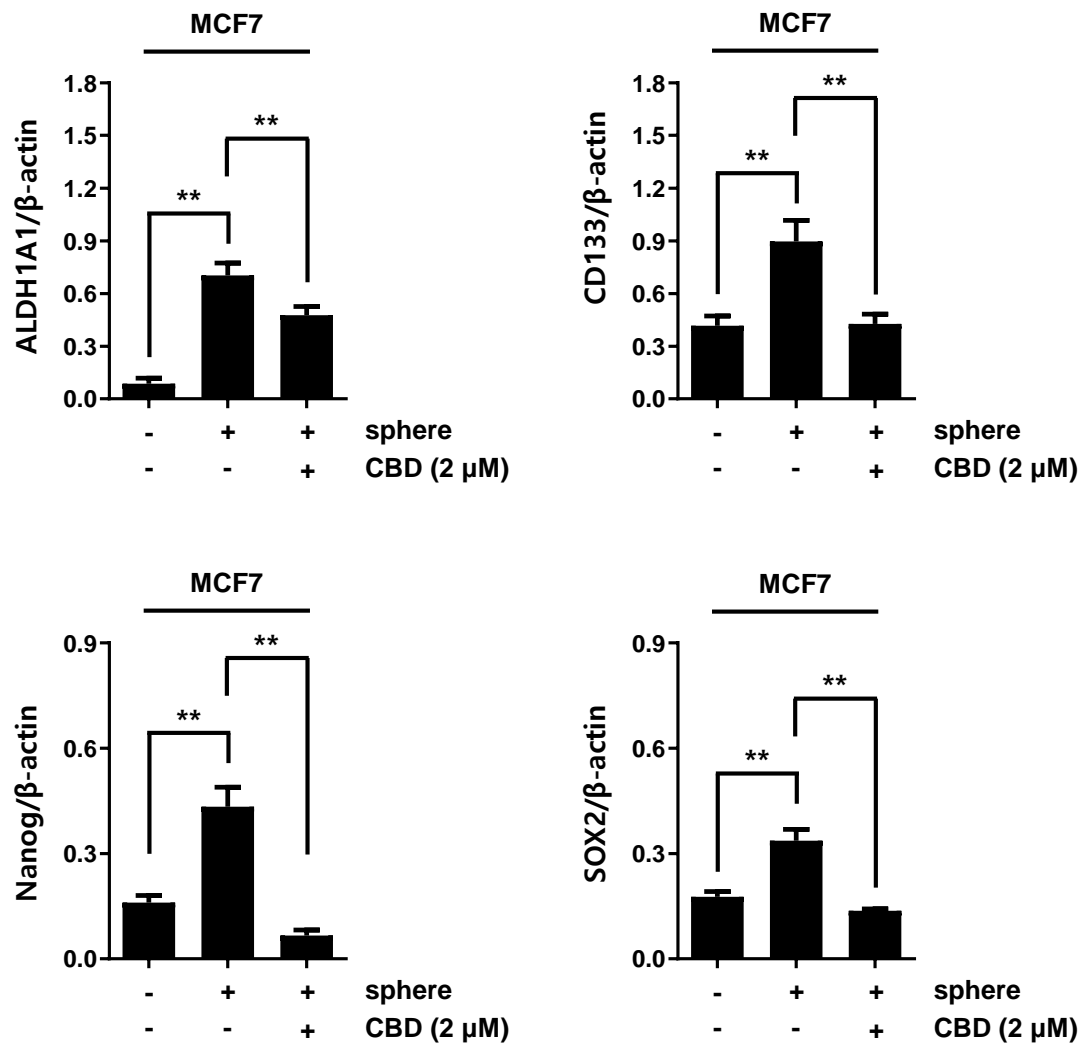


**Figure S10.** Quantifications and statistics of western blot assays relative to Figure 3D. Blots were quantified using ImageJ software and normalized with β-actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)

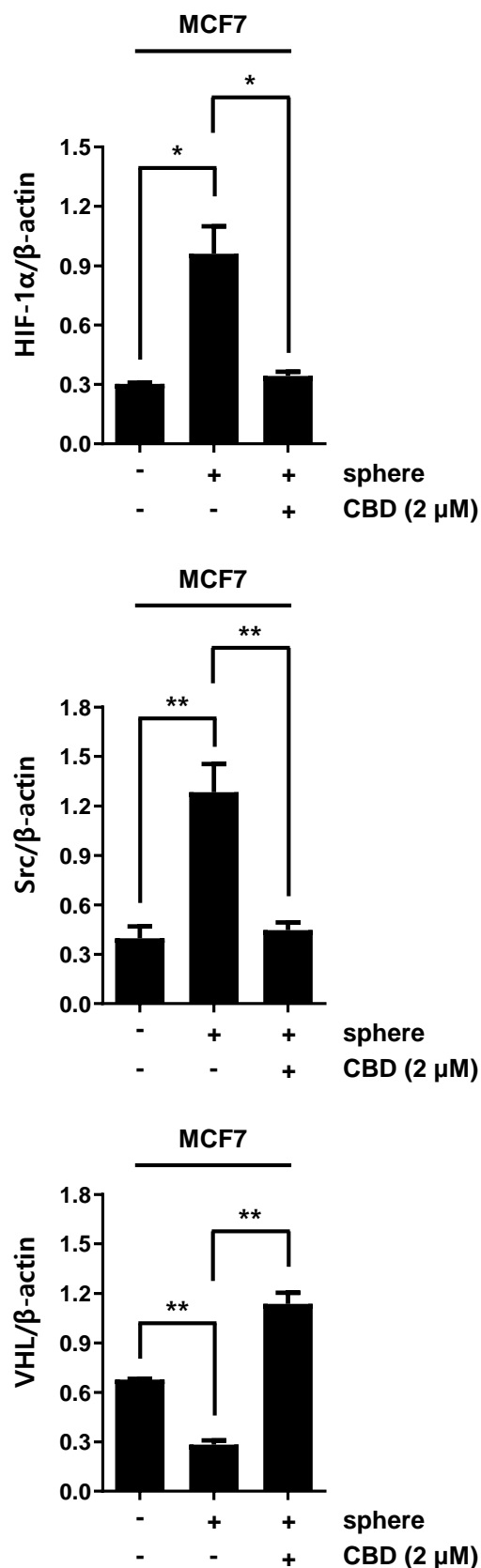




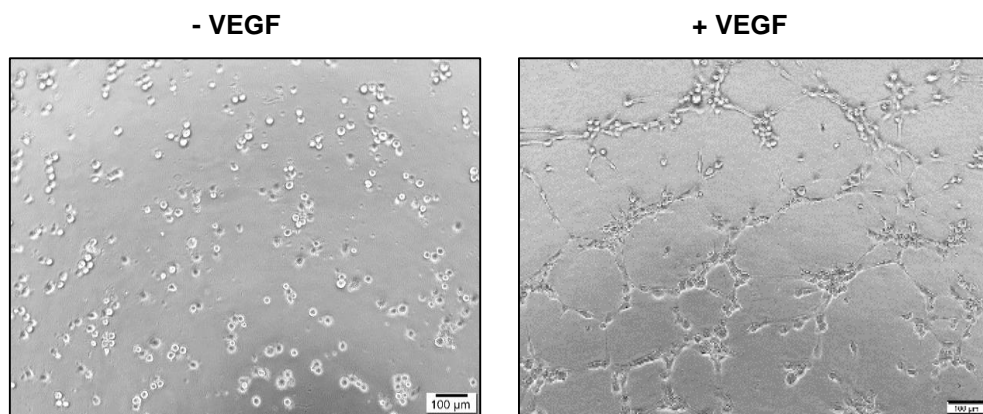
**Figure S11.** Quantifications and statistics of western blot assays relative to Figure 3E. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



**Figure S12.** Quantifications and statistics of western blot assays relative to Figure 5F. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



**Figure S13.** Quantifications and statistics of western blot assays relative to Figure 5G. Blots were quantified using ImageJ software and normalized with  $\beta$ -actin bands as a loading control. Statistical significance was defined as P values < 0.05 (\*, \*\*, and \*\*\* indicate P < 0.05, P < 0.01, and P < 0.001, respectively)



**Figure S14.** The angiogenic potential was determined by HUVEC tube-formation assay. HUVECs were grown on matrigel-coated 48-well plates with conditioned media with or without VEGF. Capillary tube formation was captured using a light microscope.

SDS-PAGE gel showing E-cadherin and herectin bands. Molecular weight markers are indicated on the left: 245, 180, 135, and 100 kDa. Handwritten labels 'E-cad' and 'herectin' are next to their respective bands. A handwritten '120' is at the bottom left.

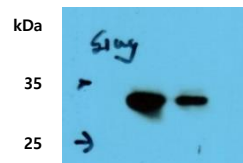
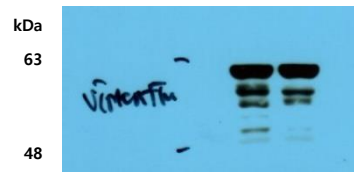
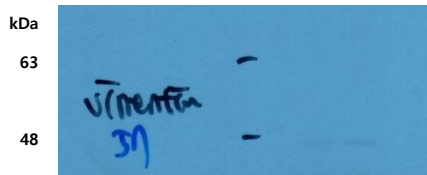
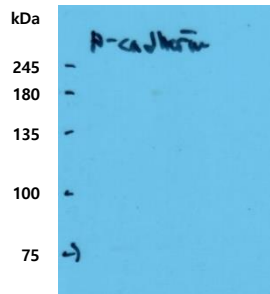


Figure 2A

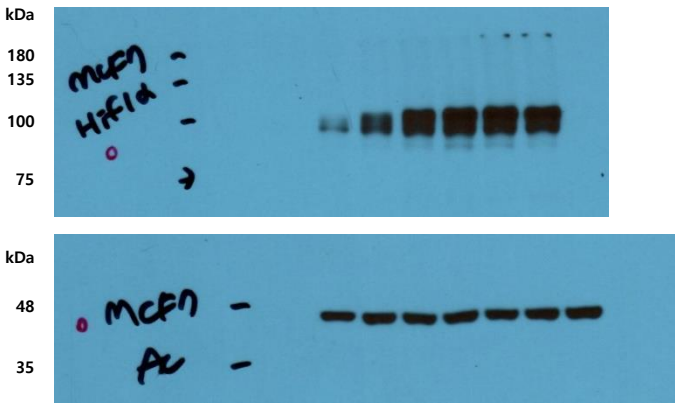


Figure 2B

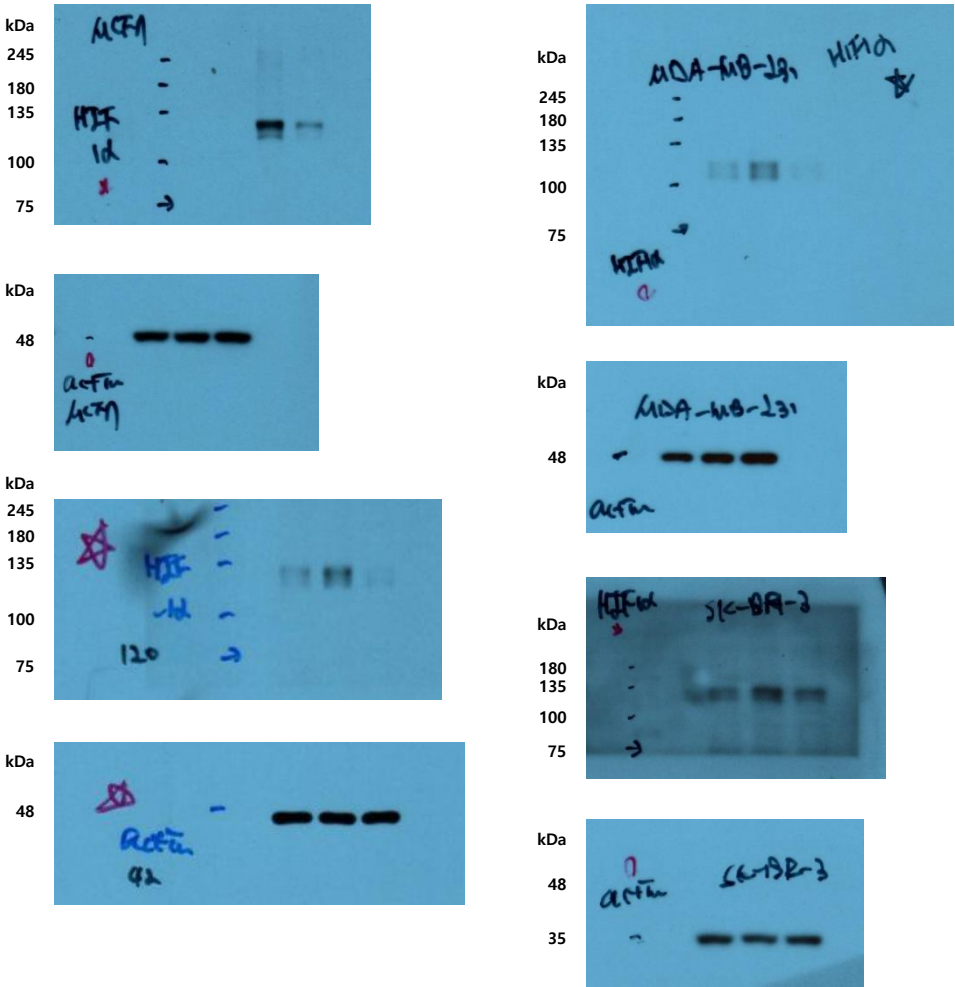


Figure 2C

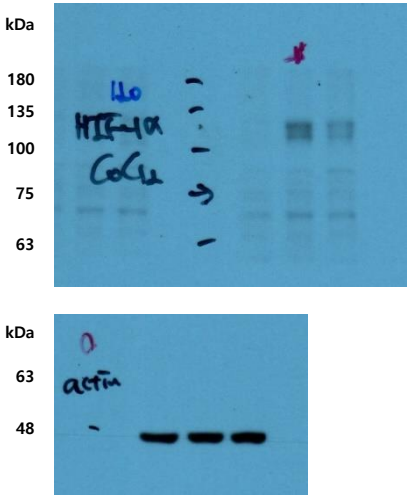


Figure 2D

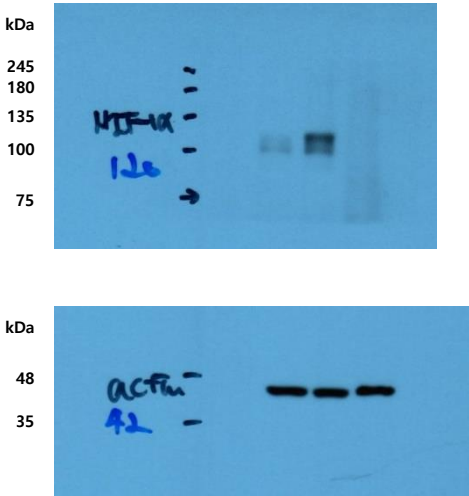


Figure 2G

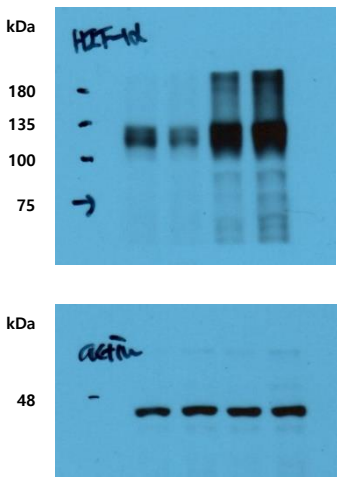


Figure 2H

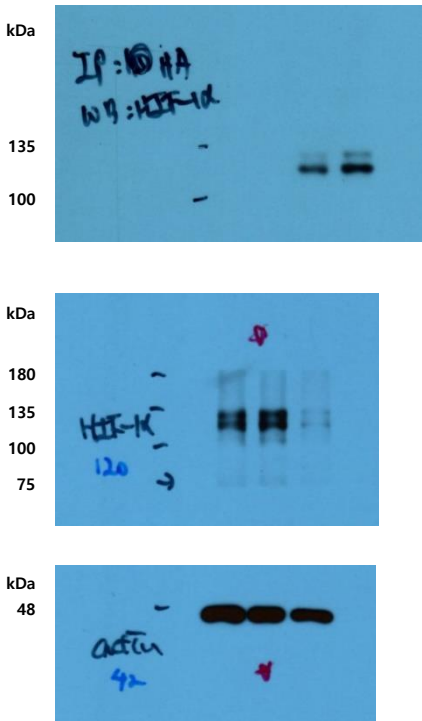




Figure 3A

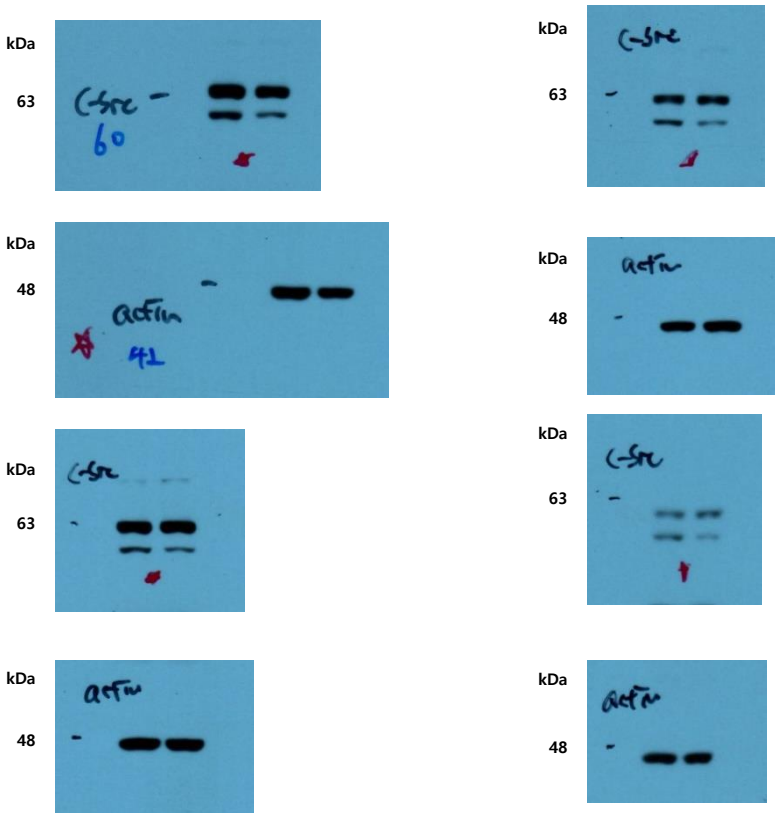


Figure 3C

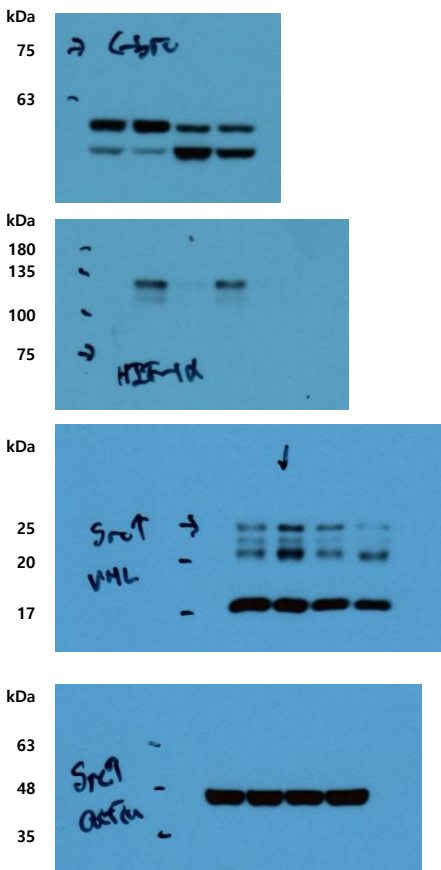


Figure 3D

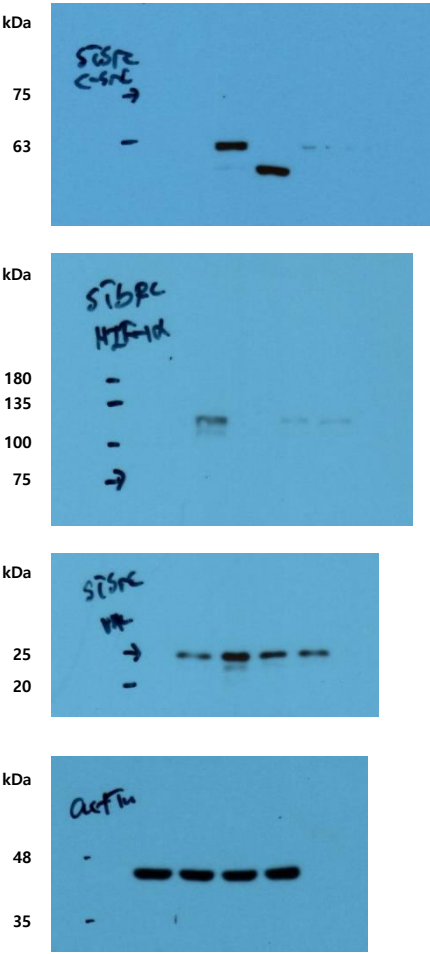


Figure 3E

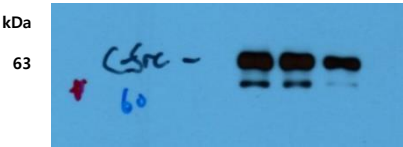
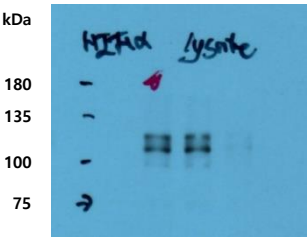
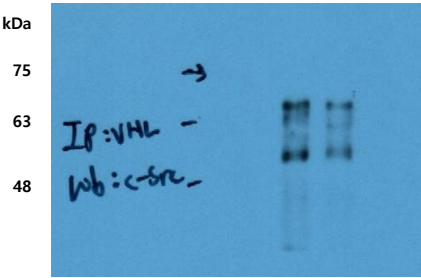
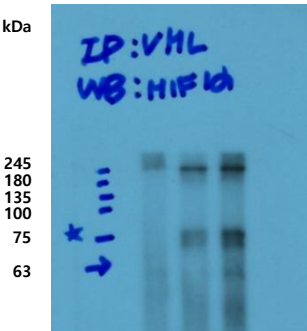


Figure 5F

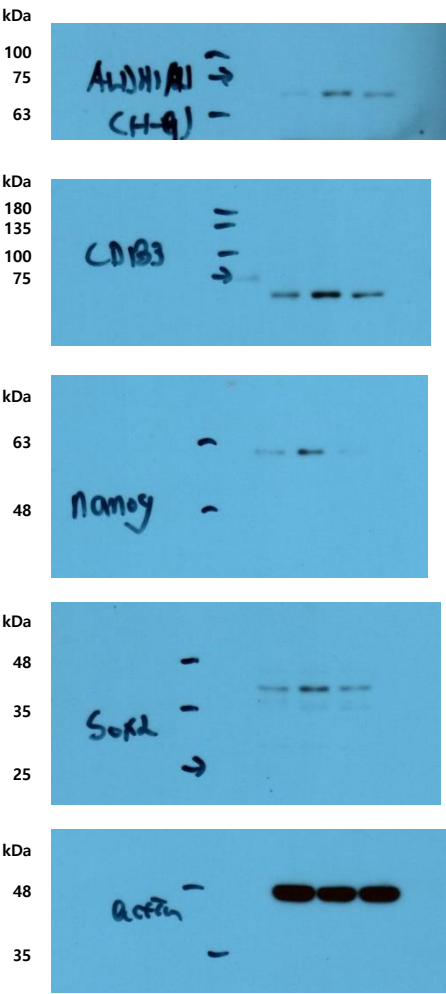


Figure 5G

