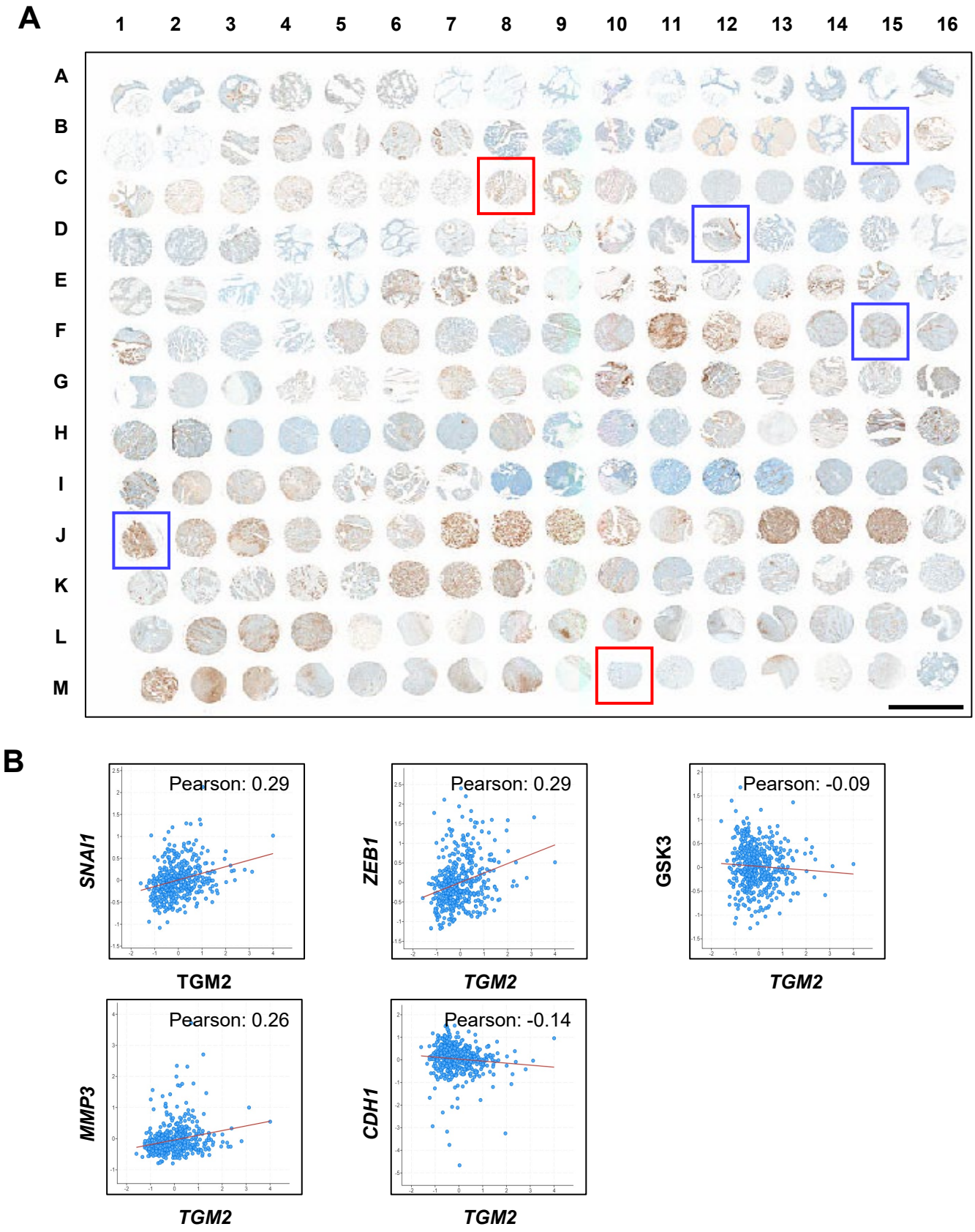
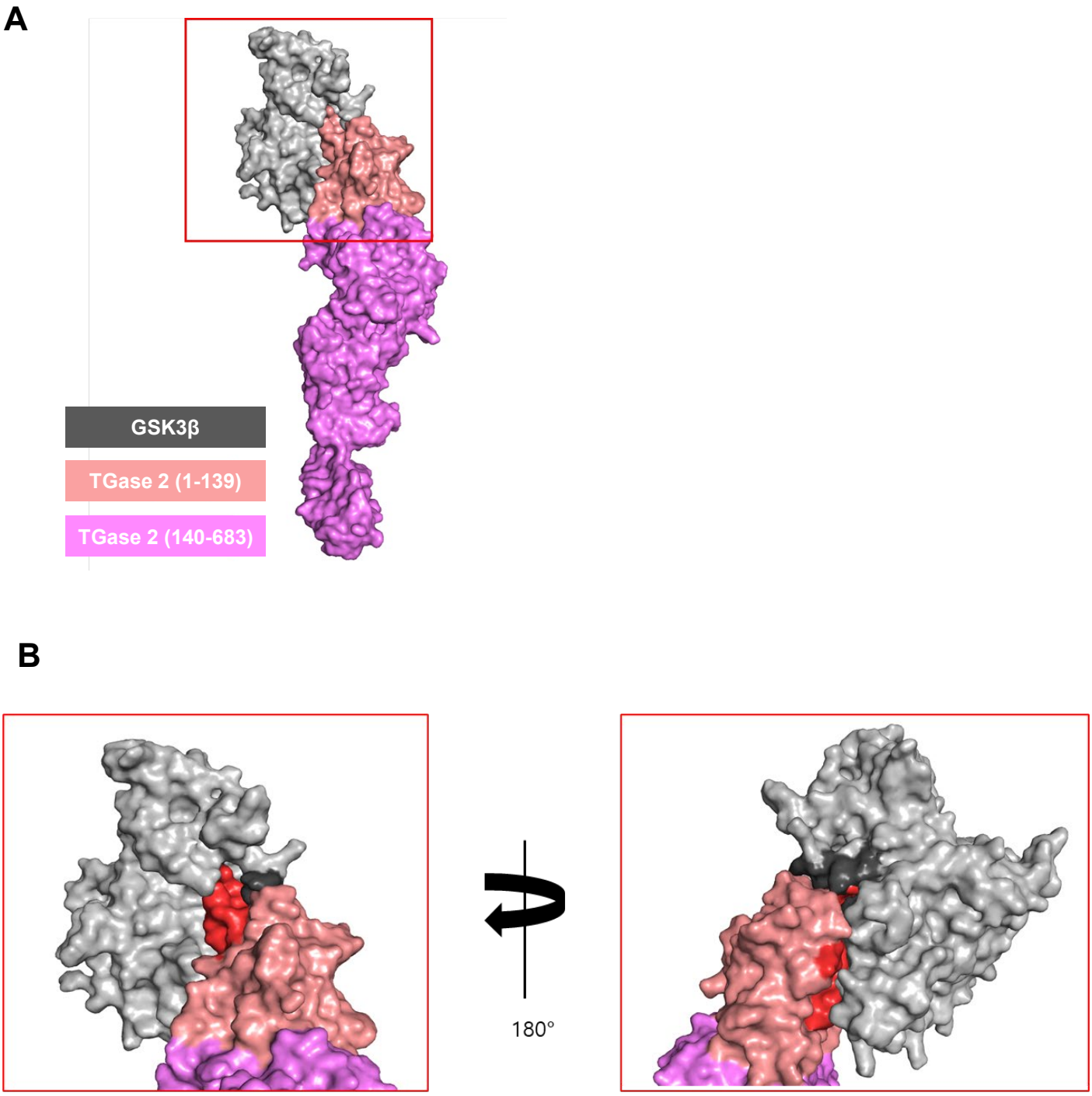
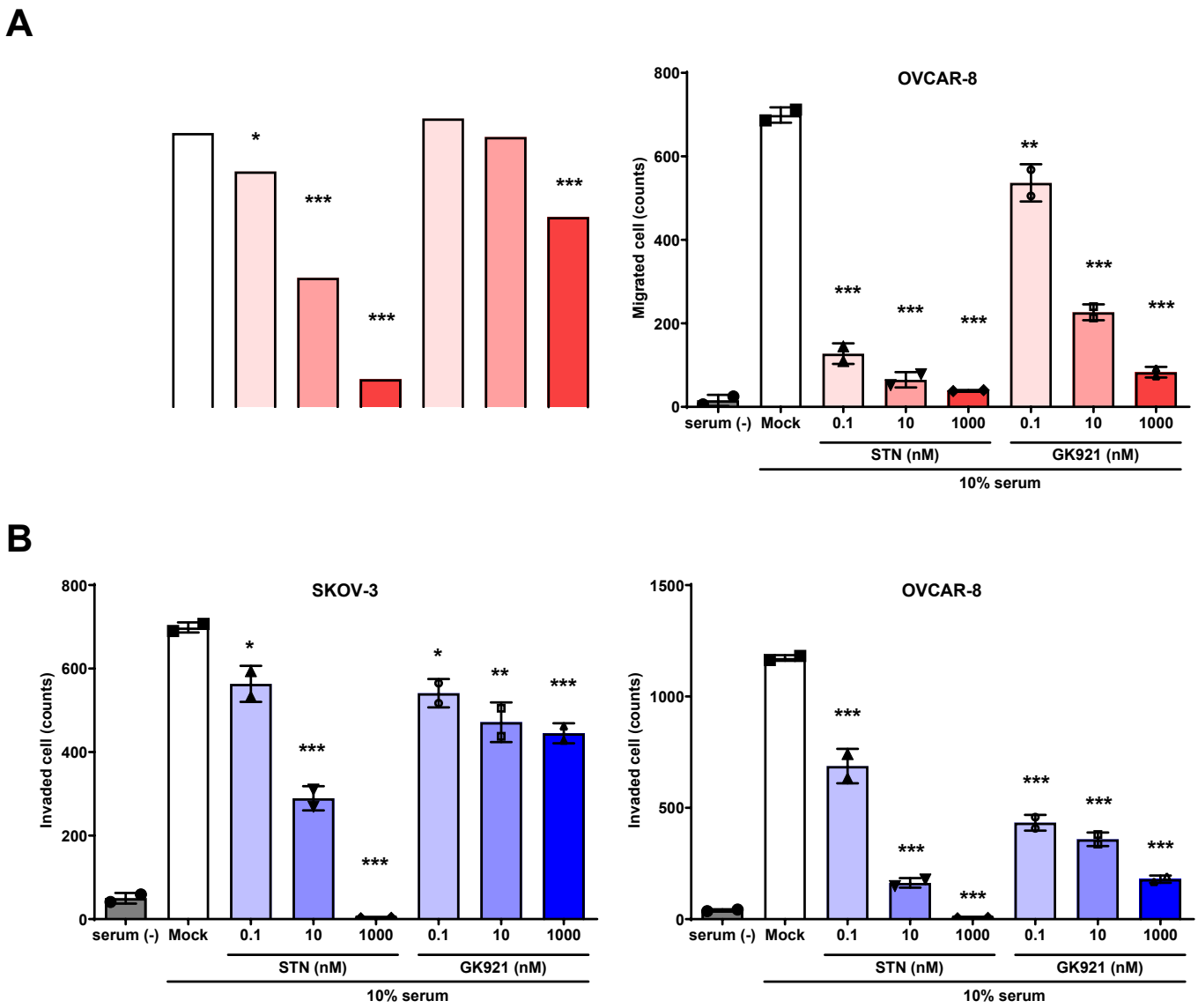


Supplemental Figure 1. TGase 2 expression in OVC TMA. A Ovarian cancer patient tissue microarray (TMA) containing 69 cases/207 cores within normal tissue samples, with triplicate cores per case (OV208a), was purchased from Tissue Array (Derwood, MD, US). IHC images of TMA (OV208a) stained with anti-TG2 (PA5-23219). Red boxes highlight the images shown in Figure 1*a*. Blue boxes highlight the images shown in Figure 1b. (Scale bar = 2 mm). **B** Scatter plot showing the correlation between *TGM2* mRNA abundance and the expression of key epithelial–mesenchymal transition (EMT) genes.

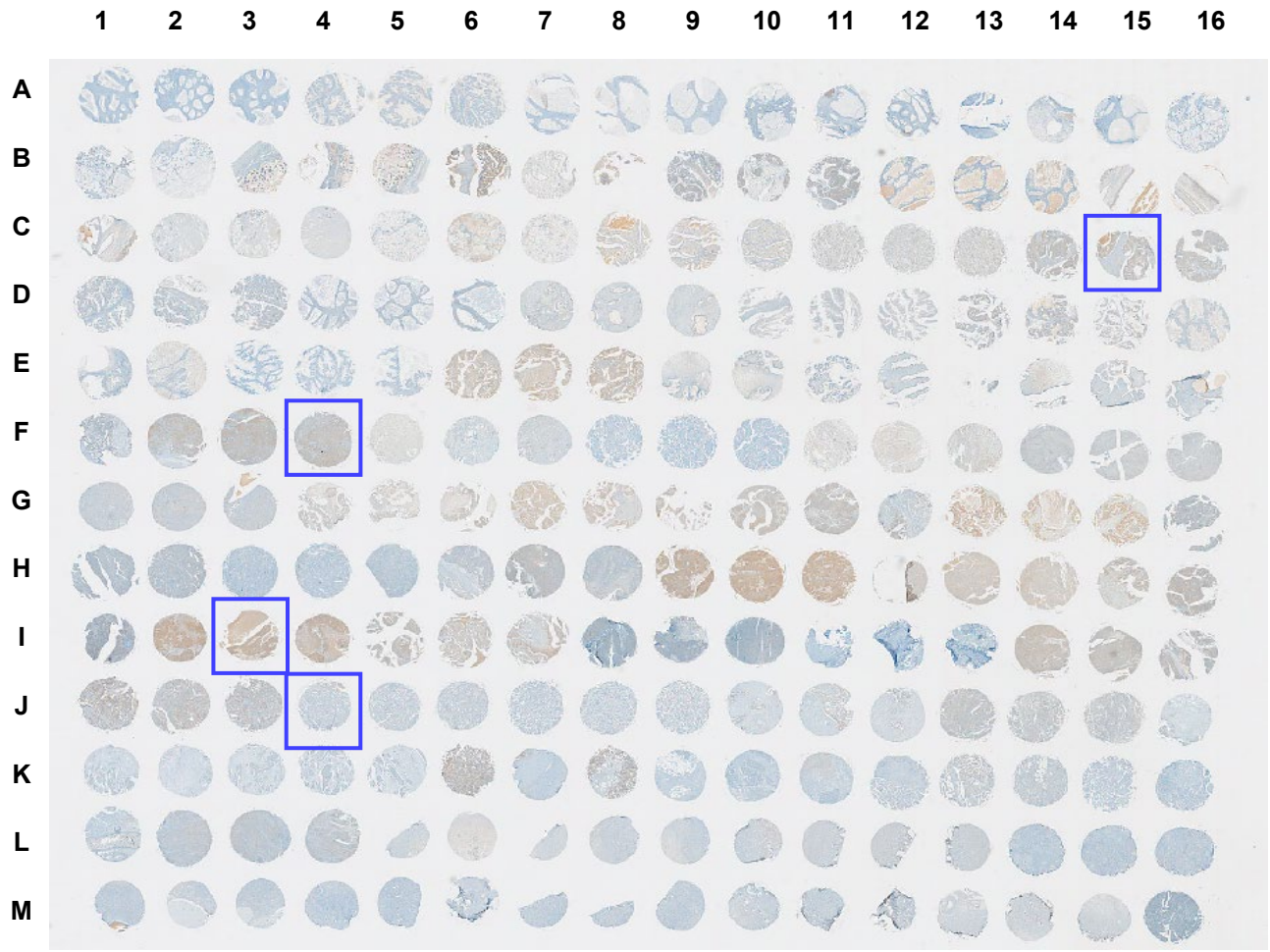


Supplementary Figure S2. Direct binding of TGase 2 and GSK3β. **(a)** Overall structure of docking result. The GSK3β (PDB code 4NM5) is drawn in gray, and the TGase 2 (PDB code 2Q3Z) is drawn in apricot (residues 1-139) and pink (residues 140-683), respectively. **(b)** Binding site of the GSK3 β (black-gray) and the TGase 2(red) were predicted by the ClusPro server.



Supplementary Figure S3. TGase 2 inhibitors suppress migration and invasion of ovarian cancer cells. A Effects of TGase 2 inhibitors on the migration of SKOV-3 and OVCAR-8 ovarian cancer cells. For the migration assay, the upper and lower chambers of Transwell inserts were coated with fibronectin. After 1 h, cells that had migrated to the underside of the filter were fixed, stained, and quantified as described in Materials and Methods.**B** Effects of TGase 2 inhibitors on the invasion of SKOV-3 and OVCAR-8 cells. For the invasion assay, Transwell chambers were coated with Matrigel. SKOV-3 and OVCAR-8 cells were treated with streptonigrin[1] (0.1, 10, and 1000 nM) or GK921[2] (0.1, 10, and 1000 nM). After 24 h, invasive cells on the membrane underside were fixed, stained, and counted as described in Materials and Methods. *p<0.05, **p < 0.01, and ***p < 0.001.

1. Lee SH, Lee WK, Kim N, et al. Renal Cell Carcinoma Is Abrogated by p53 Stabilization through Transglutaminase 2 Inhibition. Cancers (Basel) 2018; 10(11).
2. Kim N, Kang JH, Lee WK, et al. Allosteric inhibition site of transglutaminase 2 is unveiled in the N terminus. Amino Acids 2018; 50(11): 1583-94.



Supplementary Figure S4. GSK3β expression in OVC TMA. Ovarian cancer patient tissue microarray (TMA) containing 69 cases/207 cores within normal tissue samples, with triplicate cores per case (OV208a), was purchased from Tissue Array (Derwood, MD, US). IHC images of TMA (OV208a) stained with anti- GSK3β (#9315, cell signaling). Blue boxes highlight the images shown in Figure 6D (Scale bar = 2 mm).