Supplemental Figure Legends:

Supplemental Fig 1. Epithelial and stromal PD-L1 expression. AQUA scores for PD-L1 in the epithelium (A) and stroma (B) represented in heat maps for a single whole tissue section. Examples of PD-L1 staining in epithelium (C) and stroma (D) with insets of the tumor (green) and stromal (blue) compartments. Higher magnification in (E,F). (blue=DAPI, green=pan-cytokeratin, red=PD-L1)

Supplemental Fig 2. Validation of specificity of PD-L1 antibody used in this study. (A) Western blot of positive and negative cell line controls (provided by Cell Signaling Technology). (B) average quantitative scores of PD-L1 expression in mel624 and mel624-transfected with PD-L1 as positive controls. (C) regression of quantitative scores of antibody used in this study with previously published specific anti-PD-L1 antibody clone 5H1.([32](#_ENREF_32)) (D,E) Image of tissue microarray histospot of placental tissue (D) and at higher magnification (E).

Supplemental Fig 3. Correlation with PD-L1 expression and pCR in patient subsets. Continuous epithelial and stromal PD-L1 expression stratified by no pCR vs. pCR in A) lymphocyte-predominant breast cancers, B) hormone-receptor positive breast cancers, C) HER2-amplified, D) triple-negative breast cancers.

Supplemental Fig 4. Joinpoint analysis of PD-L1 quantitative scores in the tumor mask (A) and stromal compartment (B). Visual threshold of detection for both epithelial and stromal AQUA scores lay within the range of 500-800. Joinpoint #2 for both graphs lies within this range and was used as a cut off for PD-L1 low vs. high expression.

Supplemental Fig 5. Contingency tables of PD-L1 in the epithelium (A) and stroma (B) dichotomized by Joinpoint into low and high with pCR.

Supplemental Table 1. Exclusion of Ki67 from Table 4 shows that both stromal and epithelial PD-L1 expressions are highly significant in multivariate analysis.