

**Table S1.** Radiomic features identified in each Region to distinguish positive from negative HER-2 2+.

No.	Feature Family	Descriptor	Statistic	Image	Location	Coefficient in LR model
Intratumoral radiomic features						
I1	Gabor	$f = 2, \theta = 22.5^\circ$	Median	ADC	Intratumor	-0.366
I2	Gabor	$f = 32, \theta = 0^\circ$	Kurtosis	DWI <sub>b0</sub>	Intratumor	0.404
I3	Laws	R5S5	Skewness	DWI <sub>b0</sub>	Intratumor	-0.755
I4	laws	E5L5	Skewness	ADC	Intratumor	-0.617
I5	Gabor	$f = 16, \theta = 0^\circ$	Kurtosis	ADC	Intratumor	-0.387
I6	Laws	E5E5	Median	DWI <sub>b800</sub>	Intratumor	-0.669
I7	Gabor	$f = 8, \theta = 0^\circ$	Skewness	DWI <sub>b0</sub>	Intratumor	0.578
I8	Laws	L5E5	Median	ADC	Intratumor	-0.708
I9	Gabor	$f = 32, \theta = 112.5^\circ$	Kurtosis	DWI <sub>b800</sub>	Intratumor	0.346
Peritumoral radiomic features						
P1	Gabor	$f = 4, \theta = 67.5^\circ$	Kurtosis	DWI <sub>b800</sub>	Peritumor	0.484
P2	Laws	E5R5	Skewness	DWI <sub>b0</sub>	Peritumor	-0.369
P3	Laws	W5W5	SD	DWI <sub>b800</sub>	Peritumor	0.358
P4	Laws	R5W5	Mean	DWI <sub>b0</sub>	Peritumor	0.334
P5	Gabor	$f = 8, \theta = 112.5^\circ$	Median	ADC	Peritumor	0.373
P6	Gabor	$f = 32, \theta = 112.5^\circ$	Kurtosis	DWI <sub>b800</sub>	Peritumor	0.394
P7	Gabor	$f = 8, \theta = 90^\circ$	Kurtosis	ADC	Peritumor	0.404
P8	Laws	L5E5	Median	ADC	Peritumor	-0.553
P9	Laws	E5L5	Skewness	ADC	Peritumor	-0.687
Combined radiomic features						
C1	Gabor	$f = 4, \theta = 67.5^\circ$	Kurtosis	DWI <sub>b800</sub>	Peritumor	0.416
C2	Laws	E5R5	Skewness	DWI <sub>b0</sub>	Peritumor	-0.540
C3	Laws	R5S5	Skewness	DWI <sub>b0</sub>	Intratumor	-0.739

C4	Laws	E5L5	Skewness	ADC	Peritumor	-0.564
C5	Gabor	$f = 16, \theta = 0^\circ$	Kurtosis	ADC	Intratumor	-0.605
C6	Gabor	$f = 32, \theta = 0^\circ$	Kurtosis	DWI <sub>b0</sub>	Peritumor	0.485
C7	Laws	W5W5	SD	DWI <sub>b800</sub>	Peritumor	0.412
C8	Gabor	$f = 16, \theta = 45^\circ$	Median	ADC	Peritumor	0.405
C9	Laws	R5R5	SD	DWI <sub>b0</sub>	Intratumor	0.373
C10	Gabor	$f = 8, \theta = 90^\circ$	Skewness	ADC	Peritumor	0.316
C11	Laws	E5E5	Median	DWI <sub>b800</sub>	Intratumor	-0.584
C12	Gabor	$f = 8, \theta = 0^\circ$	Skewness	DWI <sub>b0</sub>	Intratumor	0.643
C13	Laws	L5E5	Median	ADC	Intratumor	-0.650

---

Abbreviations: SD, standard deviation; LR, logistic regression.

**Intra-rad-score, peri-rad-score, and com-rad-score calculation formulas in predicting HER-2 2+ status:**

$$\text{Intra-rad-score} = -0.506 - 0.366 \times I1 + 0.404 \times I2 - 0.755 \times I3 - 0.617 \times I4 - 0.387 \times I5 \\ - 0.669 \times I6 + 0.578 \times I7 - 0.708 \times I8 + 0.346 \times I9$$

$$\text{Peri-rad-score} = -0.344 + 0.484 \times P1 - 0.369 \times P2 + 0.358 \times P3 + 0.334 \times P4 + 0.373 \\ \times P5 + 0.394 \times P6 + 0.404 \times P7 - 0.553 \times P8 - 0.687 \times P9$$

$$\text{Com-rad-score} = -0.633 + 0.416 \times C1 - 0.540 \times C2 - 0.739 \times C3 - 0.564 \times C4 - 0.605 \\ \times C5 + 0.485 \times C6 + 0.412 \times C7 + 0.405 \times C8 + 0.373 \times C9 + 0.316 \times C10 - 0.584 \times \\ C11 + 0.643 \times C12 - 0.650 \times C13$$