

Supplementary Table 1A. Diagnostic performance of Models A-D in HR-positive/HER2-negative breast cancer

Parameter	Model A	Model B	Model C	Model D
Sensitivity	0.71 (0.42–0.92)	0.43 (0.18–0.71)	0.71 (0.42–0.92)	0.71 (0.42–0.92)
Specificity	0.65 (0.55–0.74)	0.99 (0.94–1.00)	0.94 (0.87–0.98)	0.91 (0.83–0.96)
PPV	0.23 (0.11–0.38)	0.86 (0.42–1.00)	0.62 (0.35–0.85)	0.53 (0.29–0.76)
NPV	0.94 (0.87–0.98)	0.92 (0.85–0.97)	0.96 (0.90–0.99)	0.96 (0.89–0.99)
FPR	0.35 (0.26–0.45)	0.01 (0.00–0.06)	0.06 (0.02–0.13)	0.09 (0.04–0.17)
Accuracy	0.66 (0.57–0.74)	0.92 (0.85–0.97)	0.91 (0.84–0.96)	0.88 (0.80–0.94)

FPR: False-positive rate; NPV: Negative predictive value; PPV: Positive predictive value; HER2: Human epidermal growth factor receptor 2; HR: Hormone receptor

Supplementary Table 1B. Diagnostic performance of Models A-D in HER2-positive breast cancer

Parameter	Model A	Model B	Model C	Model D
Sensitivity	0.40 (0.23–0.59)	0.53 (0.34–0.72)	0.70 (0.51–0.85)	0.53 (0.34–0.72)
Specificity	0.80 (0.66–0.90)	1.00 (0.93–1.00)	0.82 (0.69–0.91)	1.00 (0.93–1.00)
PPV	0.55 (0.32–0.76)	1.00 (0.79–1.00)	0.70 (0.51–0.85)	1.00 (0.79–1.00)
NPV	0.69 (0.55–0.81)	0.78 (0.66–0.88)	0.82 (0.69–0.91)	0.78 (0.66–0.88)
FPR	0.20 (0.10–0.34)	0.00 (0.00–0.07)	0.18 (0.09–0.31)	0.00 (0.00–0.07)
Accuracy	0.65 (0.54–0.76)	0.82 (0.72–0.90)	0.78 (0.67–0.88)	0.82 (0.72–0.90)

FPR: False-positive rate; NPV: Negative predictive value; PPV: Positive predictive value; HER2: Human epidermal growth factor receptor 2

Supplementary Table 1C. Diagnostic performance of Models A-D in triple-negative breast cancer

Parameter	Model A	Model B	Model C	Model D
Sensitivity	0.72 (0.47–0.90)	0.33 (0.13–0.59)	0.44 (0.22–0.69)	0.44 (0.22–0.69)
Specificity	0.45 (0.29–0.62)	1.00 (0.91–1.00)	0.93 (0.80–0.98)	0.93 (0.80–0.98)
PPV	0.37 (0.21–0.55)	1.00 (0.54–1.00)	0.73 (0.39–0.94)	0.73 (0.39–0.94)
NPV	0.78 (0.60–0.90)	0.77 (0.60–0.89)	0.79 (0.62–0.91)	0.79 (0.62–0.91)
FPR	0.55 (0.38–0.71)	0.00 (0.00–0.09)	0.07 (0.02–0.20)	0.07 (0.02–0.20)
Accuracy	0.53 (0.38–0.67)	0.79 (0.64–0.90)	0.78 (0.63–0.89)	0.78 (0.63–0.89)

Subgroup analyses were performed according to breast cancer subtype. FPR: False-positive rate; NPV: Negative predictive value; PPV: Positive predictive value