

## Supplementary

**Table S1** Hyperparameters of SVM for base binary classifiers among the four models

Model	<i>EGFR<sup>+</sup> &amp; TP53<sup>+</sup> vs. EGFR<sup>+</sup> &amp; TP53<sup>-</sup></i>		<i>EGFR<sup>+</sup> &amp; TP53<sup>+</sup> vs. EGFR<sup>-</sup></i>		<i>EGFR<sup>+</sup> &amp; TP53<sup>-</sup> vs. EGFR<sup>-</sup></i>	
	Gamma	C	Gamma	C	Gamma	C
Clinical model	0.0001	1	0.001	100	0.0001	100
Semantic model	0.01	10	0.0001	10	0.01	100
Radiomics model	0.0001	100	0.1	100	0.0001	100
Integrated model	0.1	10	0.0001	100	0.1	1

EGFR, epidermal growth factor receptor; SVM, support vector machine.