

Table S3 Prediction performances on different designed negatives

<sup>1</sup> dataset type	<sup>2</sup> sensitivity(%)	<sup>3</sup> precision (%)	<sup>4</sup> accuracy (%)	<sup>5</sup> AUC	<sup>6</sup> MCC
<i>min</i>	94.51	96.69	99.42	0.9916	0.9521
<i>mlt</i>	88.68	96.42	99.04	0.9941	0.9189
<i>mle</i>	89.08	96.01	99.04	0.9948	0.9192
<i>max</i>	80.47	88.05	97.99	0.9831	0.8329

<sup>1</sup>: refers to negative data expansion rules described in Sec. 1.3 in Supplementary Materials. 10 *subpos* first-layer SVM models were utilized to produce the two-layer SVM model from datasets with 24,500 negatives.

<sup>2</sup>:  $\text{sensitivity} = TP / (TP + FN)$ .

<sup>3</sup>:  $\text{precision} = TP / (TP + FP)$ .

<sup>4</sup>:  $\text{accuracy} = (TP + TN) / (TP + FN + TN + FP)$ .

<sup>5</sup>: area under the ROC curve.

<sup>6</sup>:  $(TP \times TN - FP \times FN) / \sqrt{(TP + FN) \times (TN + FP) \times (TP + FP) \times (TN + FN)}$ .

(*TP*: a number of known positives predicted as positive. *FP*: a number of negatives predicted as positive. *FN*: a number of known positives predicted as negative. *TN*: a number of negatives predicted as negative.)