

Supplementary Materials

# Prediction of Synthetic Lethality in *Escherichia coli* Based on Feature Engineering Through Graph Embedding

Qian Xu <sup>1,2,†</sup>, Yi-Miao Feng <sup>3,†</sup>, Hai-Xia Guo <sup>1</sup>, Ya-Wei Su <sup>1</sup>, Xiao-Ru Chen <sup>4</sup>, Hao-Ran Sun <sup>5</sup>, Jing Feng <sup>4</sup> and Feng-Biao Guo <sup>1,2,\*</sup>

<sup>1</sup> School of Pharmaceutical Sciences, Wuhan University, Wuhan 430072, China

<sup>2</sup> Key Laboratory of Combinatorial Biosynthesis and Drug Discovery, Ministry of Education, Wuhan University, Wuhan 430072, China

<sup>3</sup> School of Information Science and Technology, ShanghaiTech University, Shanghai 201210, China

<sup>4</sup> Institute of Artificial Intelligence, School of Computer Science, Wuhan University, Wuhan 430072, China

<sup>5</sup> School of Cyber Science and Engineering, Wuhan University, Wuhan 430072, China

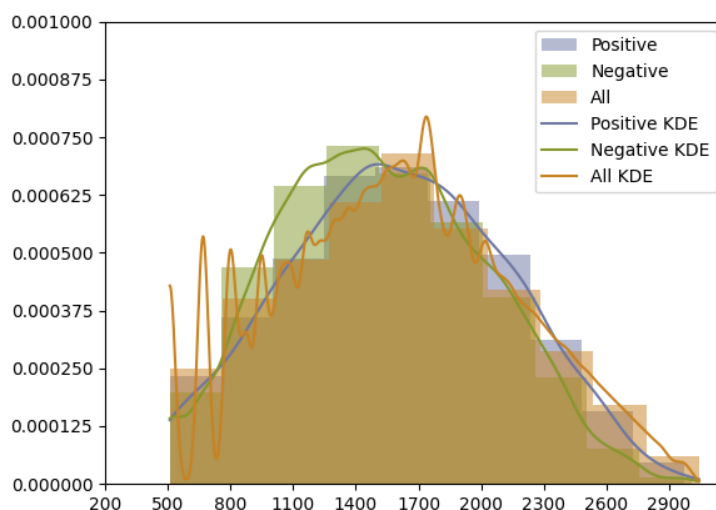
\* Correspondence: fbguo@whu.edu.cn

† These authors contributed equally to this work.

**How To Cite:** Xu, Q.; Feng, Y.-M.; Guo, H.-X.; et al. Prediction of Synthetic Lethality in *Escherichia coli* Based on Feature Engineering Through Graph Embedding. *eMicrobe* **2026**, 2(1), 6. <https://doi.org/10.53941/emicrobe.2026.100006>

**Table S1.** The fitness features in conjunction with different *n*-value and model performance.

Union		<i>n</i> -Value	ACC.	AUC	Prec.	Sen.	F1
1	cos	95	0.9213 ± 0.0016	0.9272 ± 0.0026	0.7972 ± 0.0126	0.5778 ± 0.0093	0.6699 ± 0.0066
	euc	80					
3	cos	75,85,95	0.9203 ± 0.0027	0.9188 ± 0.0051	0.8005 ± 0.0146	0.5638 ± 0.0151	0.6615 ± 0.013
	euc						
4	cos	65,75,85,95	0.9143 ± 0.0027	0.9128 ± 0.0054	0.7714 ± 0.0152	0.5401 ± 0.0206	0.6351 ± 0.0151
	euc						
5	cos	55,65,75,85,95	0.8991 ± 0.0031	0.904 ± 0.0054	0.7219 ± 0.0178	0.4397 ± 0.0243	0.5461 ± 0.0203
	euc						
10	cos	50,55,60,65,70,75,80,85,90,95	0.869 ± 0.0033	0.8521 ± 0.0045	0.5758 ± 0.0341	0.1983 ± 0.0181	0.2948 ± 0.0238
	euc						



**Figure S1.** Example graph of distribution histograms and nuclear density (KDE) curves of degree centrality characteristics for different sample sets.