Electronic Supplementary Material (ESI) for Molecular BioSystems.

Table S1 Predictive performances of models trained on combination of 126 features from PSTNP and features selected by different F-score thresholds of EIIP for identifying enhancers and non-enhancers.

Threshold	Number of features from EIIP	Sn(%)	Sp(%)	Acc(%)	MCC
0.01	55	87.60	87.53	87.57	0.7513
0.02	49	88.01	88.01	88.01	0.7601
0.03	47	88.14	88.27	88.21	0.7602
0.04	39	87.80	88.27	88.04	0.7608
0.05	**32**	**87.94**	**88.61**	**88.27**	**0.7655**
0.06	27	87.47	87.13	87.30	0.7460
0.07	22	87.94	87.74	87.84	0.7567
0.09	20	87.74	87.53	87.63	0.7527
0.1	17	85.11	86.52	85.82	0.7164

Table S2 Predictive performances of models trained on different number of features from EIIP combined with PSTNP(126)+EIIP for identifying enhancers and non-enhancers.

Number of features from EIIP	Sn(%)	Sp(%)	Acc(%)	MCC
28	87.40	87.80	87.60	0.7520
30	87.74	88.07	87.90	0.7581
32	**87.94**	**88.61**	**88.27**	**0.7655**
34	87.94	88.41	88.17	0.7635
36	87.80	88.34	88.07	0.7615
38	87.74	88.27	88.01	0.7601

Table S3 Predictive performances of models trained on features selected by different F-score thresholds of PSTNP for identifying strong enhancers and weak enhancers.

Threshold	Number of features from PSTNP	Sn(%)	Sp(%)	Acc(%)	MCC
0.06	8	82.35	47.84	65.09	0.3216
0.055	25	85.04	78.44	81.74	0.6362
0.05	49	86.66	83.83	85.24	0.7051
0.045	87	91.64	88.68	90.16	0.8036
0.04	129	91.64	90.97	91.31	0.8262
0.035	171	92.72	90.03	91.37	0.8278
0.03	191	92.72	90.16	91.44	0.8291
0.02	**198**	**92.72**	**90.30**	**91.51**	**0.8304**

Table S4 Predictive performances of models trained on features selected by different F-score thresholds of EIIP and PSTNP(198) for identifying strong enhancers and weak enhancers.

Threshold	Number of features from EIIP	Sn(%)	Sp(%)	Acc(%)	MCC
0.04	7	95.69	94.74	95.22	0.9044
0.03	8	96.36	95.55	95.96	0.9192
0.02	16	96.77	96.63	96.70	0.9340
0.01	25	97.44	97.84	97.64	0.9528
0.005	**37**	**97.98**	**98.11**	**98.05**	**0.9609**
0.004	38	97.98	98.11	98.05	0.9609
0.003	44	97.84	97.98	97.91	0.9582
0.002	50	97.98	98.11	98.05	0.9609
0.001	53	97.98	97.98	97.98	0.9596

Table S5 Comparison prediction results of different k neighbors.

k	Sn(%)	Sp(%)	Acc(%)	MCC
15	79.51	82.01	80.76	0.6154
23	80.32	82.14	81.23	0.6248
31	81.00	81.60	81.30	0.6260
39	80.86	81.40	81.13	0.6227
45	81.33	81.33	81.33	0.6267
47	81.60	81.54	81.57	0.6314
49	**81.81**	**81.40**	**81.60**	**0.6321**
51	81.81	81.33	81.57	0.6314
55	81.74	81.06	81.40	0.6280

Table S6 Comparison prediction results of different k neighbors.

k	Sn(%)	Sp(%)	Acc(%)	MCC
11	90.57	91.64	91.11	0.8222
19	91.78	91.64	91.71	0.8342
25	92.72	91.51	92.12	0.8424
27	**93.13**	**91.37**	**92.25**	**0.8451**
29	93.13	91.11	92.12	0.8425
35	92.45	90.97	91.71	0.8343
45	92.18	90.70	91.44	0.8289

Table S7 Comparison prediction results of different nTrees

Random Forest (nTree)	Sn(%)	Sp(%)	Acc(%)	MCC
Random Forest(50)	76.01	80.53	78.27	0.5659
Random Forest(100)	78.17	81.00	79.58	0.5919
Random Forest(200)	77.49	81.60	79.55	0.5915

Table S8 Comparison prediction results of different nTrees.

Random Forest (nTree)	Sn(%)	Sp(%)	Acc(%)	MCC
Random Forest(50)	86.12	84.10	85.11	0.7023
Random Forest(100)	87.74	86.52	87.13	0.7426
Random Forest(200)	88.81	86.25	87.53	0.7509

Supplement table:

Table S9 Rules of composition of heat maps (Fig.4 and Fig.5)

AAA	AAC	ACA	ACC	CAA	CAC	CCA	CCC
AAG	AAT	ACG	ACT	CAG	CAT	CCG	CCT
AGA	AGC	ATA	ATC	CGA	CGA	CTA	CTC
AGG	AGT	ATG	ATT	CGG	CGT	CTG	CTT
GAA	GAC	GCA	GCC	TAA	TAC	TCA	TCC
GAG	GAT	GCG	GCT	TAG	TAT	TCG	TCT
GGA	GGC	GTA	GTC	TGA	TGC	TTA	TTC
GGG	GGT	GTG	GTT	TGG	TGT	TTG	TTT