

---

## SUPPLEMENTARY MATERIAL

# Splice2Deep: An Ensemble of Deep Convolutional Neural Networks for Improved Splice Site Prediction in Genomic DNA

Somayah Albaradei<sup>1,2\*</sup>, Arturo Magana-Mora<sup>1,3\*</sup>, Maha Thafar<sup>1,4</sup>, Mahmut Uludag<sup>1</sup>, Vladimir B. Bajic<sup>1</sup>, Takashi Gojobori<sup>1,5</sup>, Magbubah Essack<sup>1#</sup>, Boris R. Jankovic<sup>1#</sup>

<sup>1</sup>Computer, Electrical and Mathematical Sciences and Engineering Division (CEMSE), Computational Bioscience Research Center, Computer (CBRC), King Abdullah University of Science and Technology (KAUST), Thuwal 23955-6900, Kingdom of Saudi Arabia.

<sup>2</sup>Faculty of Computing and Information Technology, King Abdulaziz University, Kingdom of Saudi Arabia.

<sup>3</sup>Saudi Aramco, EXPEC-ARC, Drilling Technology Team, Dhahran, 31311, Kingdom of Saudi Arabia.

<sup>4</sup>Faculty of Computers and Information Systems, Taif University, Kingdom of Saudi Arabia.

<sup>5</sup>Biological and Environmental Sciences and Engineering Division (BESE), King Abdullah University of Science and Technology (KAUST), Thuwal 23955-6900, Kingdom of Saudi Arabia.

\*First author.

#To whom correspondence should be addressed. Tel: +966 (54) 470 0746; Email: [magbubah.essack@kaust.edu.sa](mailto:magbubah.essack@kaust.edu.sa); Email: [boris.jankovic@kaust.edu.sa](mailto:boris.jankovic@kaust.edu.sa)

---

**Supplementary Table S1.** Sensitivity (Sn) and Specificity (Sp) comparison of Splice2Deep and the state-of-the-art tools for the prediction of SS on the five selected organisms. N/A indicates that the tool is not available for that specific organism.

<i>Splice site</i>	<i>Model</i>	<i>Homo sapiens</i>		<i>Arabidopsis thaliana</i>		<i>Oryza sativa japonica</i>		<i>Drosophila melanogaster</i>		<i>Caenorhabditis elegans</i>	
		<i>Sp.</i>	<i>Sn.</i>	<i>Sp.</i>	<i>Sn.</i>	<i>Sp.</i>	<i>Sn.</i>	<i>Sp.</i>	<i>Sn.</i>	<i>Sp.</i>	<i>Sn.</i>
AcSS	Genesplicer	97.3	69.28	97.67	77.85	97.5	70.92	93.4	83.93	N/A	N/A
	SplicePredictor	91.86	84.16	96.83	87.44	98.2	80.65	94.92	82.47	N/A	N/A
	DeepSS	92.93	90.18	N/A	N/A	N/A	N/A	N/A	N/A	90.49	90.86
	Splicerover	97.39	90.77	93.12	94.02	N/A	N/A	N/A	N/A	N/A	N/A
	Splice2Deep	97.8	95.61	94.86	95.53	93.62	94.16	95.04	94.09	97.78	98.38
DoSS	Genesplicer	98.6	60.36	97.58	84.12	97.71	74.62	93.7	86.66	N/A	N/A
	SplicePredictor	97.24	79.15	96.04	88.94	97.86	77.14	96.12	81.46	N/A	N/A
	DeepSS	93.63	91.18	N/A	N/A	N/A	N/A	N/A	N/A	91.94	91.68
	Splicerover	96.44	90.01	94.12	95.02	N/A	N/A	N/A	N/A	N/A	N/A
	Splice2Deep	98.83	95.93	95.67	95.5	94.41	94.25	93.71	90.46	97.74	97.63