

Supplemental Material

Predicting spikes with artificial neural network

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Table S1 Sample numbers in training and testing the ANNs

Models	Constant current		Sinusoidal current	
	Total samples	Positive samples	Total samples	Positive samples
RS_Adaptation	19803	3016	22718	3510
RS_NoAdaptation	78304	12852	75948	12606
FS_Adaptation	73326	11966	71187	11620
FS_NoAdaptation	43996	7280	46918	7742
Bursting_RS	34215	5304	41971	6864
Bursting_FS	48467	7820	53807	8756
Phasic Spiking	48197	8000	51030	8400
Class I excitable	76149	12495	86745	14174
Class II excitable	64948	10800	78646	13056

Table S2 Time difference between actual spike time and predicted spike time

(N = 100, unit: ms)

Models	Constant (ms)	Sinusoidal (ms)	Slope (ms)	Noise (ms)
RS_Adaptation	0.070 ± 0.033	0.072 ± 0.039	0.124 ± 0.008	0.070 ± 0.032
RS_NoAdaptation	0.029 ± 0.011	0.034 ± 0.017	0.048 ± 0.004	0.029 ± 0.011
FS_Adaptation	0.075 ± 0.044	0.079 ± 0.045	0.091 ± 0.068	0.075 ± 0.044
FS_NoAdaptation	0.094 ± 0.012	0.092 ± 0.048	0.105 ± 0.048	0.089 ± 0.012
Bursting_RS	0.058 ± 0.006	0.087 ± 0.110	0.040 ± 0.004	0.063 ± 0.021
Bursting_FS	0.019 ± 0.013	0.022 ± 0.012	0.097 ± 0.090	0.023 ± 0.013
Phasic Spiking	0.109 ± 0.067	0.101 ± 0.062	0.130 ± 0.020	0.110 ± 0.067
Class I excitable	0.076 ± 0.016	0.065 ± 0.031	0.111 ± 0.006	0.086 ± 0.048
Class II excitable	0.091 ± 0.036	0.088 ± 0.038	0.112 ± 0.012	0.093 ± 0.039

Values are given as mean ± std