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**Cortical drive and thalamic feed-forward inhibition control  
thalamic output synchrony during absence seizures**

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25 **SUPPLEMENTARY TABLES**

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**A**

		GAERS								
		TC			Wake Active NRT			Wake Quiescent NRT		
		Seizure	Wake	Sleep	Seizure	Wake	Sleep	Seizure	Wake	Sleep
<b>Total Firing (Hz)</b>	<b>Mean</b>	<b>5.4</b>	<b>11.4</b>	<b>5.5</b>	<b>52.0</b>	<b>38.6</b>	<b>19.2</b>	<b>3.8</b>	<b>4.6</b>	<b>4.8</b>
	<b>9th Pctile</b>	1.0	3.2	7.9	11.5	21.2	10.9	0.1	0.8	0.0
	<b>91st Pctile</b>	10.9	18.6	9.7	72.5	55.9	33.0	10.0	8.0	12.5
<b>Burst Firing (Hz)</b>	<b>Mean</b>	<b>0.9</b>	<b>0.4</b>	<b>0.8</b>	<b>1.6</b>	<b>0.3</b>	<b>0.4</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>
	<b>9th Pctile</b>	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1
	<b>91st Pctile</b>	0.8	0.5	1.0	3.7	0.4	0.8	1.3	0.5	0.7
<b>Tonic Firing (Hz)</b>	<b>Mean</b>	<b>2.8</b>	<b>9.3</b>	<b>2.4</b>	<b>14.1</b>	<b>25.0</b>	<b>9.7</b>	<b>2.1</b>	<b>2.9</b>	<b>2.7</b>
	<b>9th Pctile</b>	0.6	2.1	0.7	1.1	13.1	5.6	0.0	0.6	0.0
	<b>91st Pctile</b>	4.7	14.3	4.6	24.3	31.9	17.4	5.7	5.9	6.5

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**B**

		GAERS			GHB		
		TC	WA NRT	WQ NRT	TC	WA NRT	WQ NRT
<b>Total Firing (per SWC)</b>	<b>Mean</b>	<b>0.9</b>	<b>6.2</b>	<b>0.5</b>	<b>0.9</b>	<b>2.4</b>	<b>2.4</b>
	<b>9th Pctile</b>	0.1	1.4	0.0	0.2	1.2	1.2
	<b>91st Pctile</b>	1.8	10.7	1.4	2.2	5.2	1.2
<b>Burst Firing (per SWC)</b>	<b>Mean</b>	<b>0.1</b>	<b>0.2</b>	<b>0</b>	<b>0.1</b>	<b>0.2</b>	<b>0</b>
	<b>9th Pctile</b>	0.0	0	0	0	0	0
	<b>91st Pctile</b>	0.4	0.5	0.5	0.3	0.3	0.1
<b>Tonic Firing (per SWC)</b>	<b>Mean</b>	<b>0.4</b>	<b>1.7</b>	<b>0.3</b>	<b>0.5</b>	<b>0.8</b>	<b>0.8</b>
	<b>9th Pctile</b>	0.1	0.0	0.0	0.1	0.5	0.5
	<b>91st Pctile</b>	0.8	3.3	3.3	1.3	1.4	1.4

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32 **Supplementary Table 1. Firing rates of TC and NRT neurons during different**  
33 **behavioral states in GAERS and during GHB-elicited ASs.**

34 Mean firing rates in Hz (A) and per-SWC (B) (with 9<sup>th</sup> and 91<sup>st</sup> percentiles (Pctile)) for each  
35 neuronal population (GAERS TC n = 139; wake-active, WA, NRT n = 13; wake-quiescent,  
36 WQ, NRT n = 12) (GHB TC n = 39; wake-active, WA, NRT; n = 18, wake-quiescent, WQ,  
37 NRT n = 3) during wake/interictal periods, ASs and non-REM sleep.

38

	GAERS		GHB	
	TC	WA NRT	TC	WA NRT
<b>Total Firing</b>	-15 ms	+9 ms	-13 ms	+8 ms
<b>Burst Firing</b>	-16 ms	+7 ms	-14 ms	-2 ms
<b>Tonic Firing</b>	-17 ms	+28 ms	-7 ms	+10 ms

39 **Supplementary Table 2. Latency of the peak of TC and NRT neuron firing to the SWC**  
40 **spike during ASs in GAERS and GHB models.**

41 Values are the latency of the peak of different firing types (total, burst, tonic) of TC and  
42 wake-active (WA) NRT neurons with respect to the SWC spike (set as time 0), calculated  
43 from the SWC spike-triggered averages shown in Fig. 4a and Supplementary Fig. 8a. Wake-  
44 quiescent NRT neurons are not included because of the lack of identifiable peaks in their ictal  
45 firing (Supplementary Fig. 8a).

46

Neurons	$g_{SE}$ (% of Pas)	$g_{SI}$ (% of Pas)	$SD_{g_{SE}}$ (%)	$SD_{g_{SI}}$ (%)
TC	20	80	100	100
NRT1	20	80	60	60
NRT2	20	80	60	60
PY1	20	80	150	150
PY2	20	80	150	150

Synapses	G ( $\mu$ S)	Delay (ms)
TC-PY1 (AMPA)	0.02	2
TC-PY2 (AMPA)	0.01	2
PY1-TC1 (AMPA)	0.015	2
PY2-TC2 (AMPA)	0.0001	2
PY1-NRT1 (AMPA)	0.005	2
PY1-NRT2 (AMPA)	0.005	2
PY2-NRT1 (AMPA)	0.005	2
PY2-NRT2 (AMPA)	0.005	2
TC-NRT1 (AMPA)	0.03/0.001	0
TC-NRT2 (AMPA)	0.03/0.001	0
NRT1-TC (GABA-A)	0.1	0
NRT2-TC (GABA-A)	0.1	0

47

48 **Supplementary Table 3. Biophysical model main parameters.**

49 Note the two values of TC-NRT synaptic weight that were tested in Fig. 8c and d. Delay is  
50 the synaptic delay,  $g_{SE}$  is the average excitatory synaptic conductance,  $SD_{g_{SE}}$  is the standard  
51 deviation of the excitatory synaptic conductance.  $g_{SI}$  is the average inhibitory synaptic  
52 conductance, and  $SD_{g_{SI}}$  is the standard deviation of the inhibitory synaptic conductance. Pas  
53 is passive conductance.