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

Cian McCafferty^{1,2*#}, François David^{1,3#}, Marcello Venzi¹, Magor L. Lőrincz⁴, Francis Delicata^{1,5}, Zoe Atherton¹, Gregorio Recchia¹, Gergely Orban^{1,5}, Régis C. Lambert⁶, Giuseppe Di Giovanni^{1,5}, Nathalie Leresche⁶ and Vincenzo Crunelli^{1,5*}

¹Neuroscience Division, School of Bioscience, Cardiff University, Museum Avenue, Cardiff CF10 3AX, UK; ²Department of Neurology, Yale University School of Medicine, New Haven, Connecticut 06520, USA; ³Team Waking, Lyon Neuroscience Research Center, CRNL, INSERM U1028, CNRS UMR5292, University of Lyon 1, Lyon, France; ⁴Department of Physiology, Anatomy and Neuroscience, University of Szeged, Szeged, Hungary; ⁵Department of Physiology and Biochemistry, University of Malta, Msida, Malta; ⁶Sorbonne Université, CNRS, Inserm, Neuroscience Paris Seine - Institut de Biologie Paris Seine (NPS - IBPS), F-75005 Paris, France.

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
Total Firing (Hz)	Mean	5.4	11.4	5.5	52.0	38.6	19.2	3.8	4.6	4.8
	9th Pctile	1.0	3.2	7.9	11.5	21.2	10.9	0.1	0.8	0.0
	91st Pctile	10.9	18.6	9.7	72.5	55.9	33.0	10.0	8.0	12.5
Burst Firing (Hz)	Mean	0.9	0.4	0.8	1.6	0.3	0.4	0.3	0.2	0.2
	9th Pctile	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1
	91st Pctile	0.8	0.5	1.0	3.7	0.4	0.8	1.3	0.5	0.7
Tonic Firing (Hz)	Mean	2.8	9.3	2.4	14.1	25.0	9.7	2.1	2.9	2.7
	9th Pctile	0.6	2.1	0.7	1.1	13.1	5.6	0.0	0.6	0.0
	91st Pctile	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
Total Firing (per SWC)	Mean	0.9	6.2	0.5	0.9	2.4	2.4
	9th Pctile	0.1	1.4	0.0	0.2	1.2	1.2
	91st Pctile	1.8	10.7	1.4	2.2	5.2	1.2
Burst Firing (per SWC)	Mean	0.1	0.2	0	0.1	0.2	0
	9th Pctile	0.0	0	0	0	0	0
	91st Pctile	0.4	0.5	0.5	0.3	0.3	0.1
Tonic Firing (per SWC)	Mean	0.4	1.7	0.3	0.5	0.8	0.8
	9th Pctile	0.1	0.0	0.0	0.1	0.5	0.5
	91st Pctile	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 9th and 91st 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.

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	GAERS		GHB	
	TC	WA NRT	TC	WA NRT
Total Firing	-15 ms	+9 ms	-13 ms	+8 ms
Burst Firing	-16 ms	+7 ms	-14 ms	-2 ms
Tonic Firing	-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).

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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 (μ 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

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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.