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Supplemental Information

Sex-Specific Disruption of Distinct mPFC Inhibitory Neurons in Spared-Nerve Injury Model of Neuropathic Pain

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Table S1: Comparison of PL-PVIN and PL-SOM+ male and female sham mice, Related to Figures 1 and 3

PVIN	Total		L2/3		L5	
	Male (n = 20 neurons; 9 mice)	Female (n = 16 neurons; 6 mice)	Male (n = 6 neurons, 6 mice)	Female (n = 8 neurons; 5 mice)	Male (n = 14 neurons, 7 mice)	Female (n = 8 neurons; 4 mice)
Subthreshold properties						
Resting potential (mV)	-77.15 ± 1.3	-74.6 ± 2	-77.9 ± 3.8	-73.6 ± 2.5	-76.1 ± 1.7	-75.5 ± 3.3
Voltage sag (%)	9.4 ± 1.3	7.9 ± 0.77	6.9 ± 1.8	6.3 ± 1.1	10.2 ± 1.7	9.6 ± 1.7
Input resistance (MΩ)	109.2 ± 7	126.4 ± 8.2*$	120.7 ± 17.6	125.7 ± 9.7	102.4 ± 6.5	133.9 ± 13.7*#
Firing properties						
Threshold (mV)	-35.3 ± 1.5	-34.65 ± 1.7	-31.6 ± 1.9	-34.1 ± 1.8	-36.9 ± 1.8	-35.2 ± 3
Threshold (pA)	375 ± 21.9	250 ± 25.4*$	400 ± 40.8	275 ± 24.9$	350 ± 27	250 ± 46.1$
Frequency/current (Hz/pA)	0.59 ± .05	0.62 ± .05	0.70 ± .09	0.54 ± 0.03	0.54 ± .06	0.71 ± 0.08
APs @400 pA	26.5 ± 5.6	52.5 ± 7.6***#	12.5 ± 13	43 ± 9.1$	29.1 ± 6.1	63.5 ± 12.4***#
Height (mV)	49.4 ± 3	49.5 ± 2.7	38.6 ± 5.1	49.1 ± 3.7	54 ± 2.9	49.9 ± 3.7
Slow afterhyperpolarization (mV)	-18.07 ± 1.2	-13.9 ± 2.3	-19.2 ± 1.1	-12.3 ± 3.3	-17 ± 1.6	-15.6 ± 3.4
SOM+	**Total**		**L2/3**		**L5**	
	Male (n = 19 neurons; 7 mice)	Female (n = 17 neurons; 8 mice)	Male (n = 8 neurons, 4 mice)	Female (n = 9 neurons, 4 mice)	Male (n = 11 neurons, 7 mice)	Female (n = 8 neurons, 4 mice)
Subthreshold properties						
Resting potential (mV)	-72.3 ± 1.7	-71.8 ± 1.7	-71.5 ± 5.3	-70.1 ± 2.5	-63.5 ± 1.9	-74.9 ± 2.3
Voltage sag (%)	9.5 ± 2.1	6.9 ± 1.1	9.1 ± 2.8	5.6 ± 1.5	9.7 ± 3	8.4 ± 1.5
Input resistance (MΩ)	236 ± 15.4	224.6 ± 22.2$	288.1 ± 24.5	282.9 ± 36.2	218.8 ± 10	233.8 ± 23
Firing properties						
Threshold (mV)	-43.4 ± 1.2	-40.4 ± 1.4	-44.9 ± 1.9	-41.9 ± .82	-42.4 ± 1.5	-38.7 ± 2.8
Threshold (pA)	50 ± 9.2	50 ± 11.2$	50 ± 14.9	100 ± 14.4$	100 ± 11.9	100 ± 18.9$
Frequency/current (Hz/pA)	0.38 ± .03	0.34 ± .02	0.36 ± .03	0.31 ± .03	0.39 ± .05	0.38 ± .04
APs @200 pA	26.5 ± 2	21.6 ± 2.7	28.5 ± 3.3	21 ± 2.7	25.1 ± 2.7	23.4 ± 5.2
Height (mV)	64.4 ± 2.8	63.9 ± 2.7	64.1 ± 4.3	69.8 ± 2.5	64.7 ± 3.8	57.4 ± 4.1
Slow afterhyperpolarization (mV)	-7.8 ± .57	-10.1 ± .98	-7.9 ± .80	-8.4 ± .83	-9 ± 1.8	-12 ± 1.7

#: Student's unpaired *t*-test; Data shown as mean ± standard error of the mean

$: Mann-Whitney U test; Data shown are median ± standard error of the mean

Statistical comparisons are for Sham Male vs Female; *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$

Table S2: Comparison of PL-PVINs from sham and SNI male and female mice, Related to Figure 1

Male	Total		L2/3		L5	
	Sham (n = 20 neurons; 9 mice)	SNI (n = 18 neurons; 6 mice)	Sham (n = 6 neurons, 6 mice)	SNI (n = 7 neurons, 5 mice)	Sham (n = 14 neurons, 7 mice)	SNI (n = 11 neurons, 5 mice)
Subthreshold properties						
Resting potential (mV)	-77.15 ± 1.3	-78.3 ± 1.1	-77.9 ± 3.8	-77.9 ± 3.7	-76.1 ± 1.7	-78.7 ± 1.5
Voltage sag (%)	9.4 ± 1.3	6.1 ± 0.43*$	6.9 ± 1.8	5.6 ± 0.65	10.2 ± 0.57	6.5 ± 1.7
Input resistance (MΩ)	109.2 ± 7	121.3 ± 6.5$	120.7 ± 17.7	118.1 ± 6.8	102.4 ± 6.5	126.3 ± 9.8*#
Firing properties						
Threshold (mV)	-35.3 ± 1.5	-35.2 ± 0.7	-31.6 ± 1.9	-35 ± 0.8	-36.9 ± 1.8	-35.38 ± 1.1
Threshold (pA)	375 ± 21.9	300 ± 19.3$	400 ± 40.8	300 ± 28.3$	300 ± 27	350 ± 27$
Frequency/current (Hz/pA)	0.59 ± 0.05	0.61 ± 0.03	0.70 ± 0.09	0.59 ± 0.04	0.54 ± 0.06	0.63 ± 0.05
APs @400 pA	26.5 ± 5.6	52 ± 5.2*$	12.5 ± 13	52 ± 7.1$	29.1 ± 6.1	51.1 ± 7.4*#
Height (mV)	49.4 ± 3	49.2 ± 1.7	38.6 ± 5.1	49.2 ± 1.6	54 ± 2.9	49 ± 2.7
Slow afterhyperpolarization (mV)	-18.07 ± 1.2	-18.26 ± 1.3$	-19.2 ± 1.1	-18.2 ± 1.7	-17 ± 1.6	-18 ± 1.8
Female	Total		L2/3		L5	
	Sham (n = 16 neurons; 6 mice)	SNI (n = 23 neurons; 7 mice)	Sham (n = 8 neurons; 5 mice)	SNI (n = 10 neurons; 6 mice	Sham (n = 8 neurons; 4 mice)	SNI (n = 13 neurons; 5 mice)
Subthreshold properties						
Resting potential (mV)	-74.6 ± 2	-69 ± 2	-73.6 ± 2.5	-67.7 ± 3.8	-75.5 ± 3.3	-70 ± 2.1
Voltage sag (%)	7.1 ± 0.73	7.1 ± 0.90	6.3 ± 1.1	5.1 ± 0.61	10.3 ± 1.9	8 ± 1.4
Input resistance (MΩ)	129.8 ± 8.2	125.9 ± 8.9	125.7 ± 9.7	138.4 ± 13.8	134.5 ± 13.7	111.1 ± 11.4$
Firing properties						
Threshold (mV)	-34.65 ± 1.7	-35.56 ± .88	-34.1 ± 1.8	-34 ± 1	-35.2 ± 3	-36.8 ± 1.3
Threshold (pA)	250 ± 25.4	250 ± 21.2$	275 ± 24.9	225 ± 35.1$	250 ± 46	300 ± 25.7$
Frequency/current (Hz/pA)	0.62 ± 0.05	0.61 ± 0.03	0.54 ± 0.03	0.62 ± 0.05	0.71 ± 0.08	0.61 ± 0.04
APs @400 pA	52.5 ± 7.6	53 ± 5.9	43 ± 9.1	74 ± 9$	63.5 ± 12.4	58 ± 7.9$
Height (mV)	49.5 ± 2.7	54.4 ± 2.1	49.1 ± 3.7	56.7 ± 3	49.9 ± 3.7	52.8 ± 2.8
Slow afterhyperpolarization (mV)	-13.9 ± 2.3	-10.1 ± 1.5	-12.3 ± 3.3	-13.5 ± 2.4	-15.6 ± 3.4	-7.8 ± 1.8*#

#: Student's unpaired *t*-test; Data shown as mean ± standard error of the mean

$: Mann-Whitney U test; Data shown are median ± standard error of the mean

Statistical comparisons are for Sham vs SNI; *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$

Table S3: Comparison of PL-SOM+ from sham and SNI male and female mice, Related to Figure 3

Male	Total		L2/3		L5	
	Sham (n = 20 neurons; 7 mice)	SNI (n = 18 neurons; 8 mice)	Sham (n = 8 neurons, 4 mice)	SNI (n = 9 neurons, 5 mice)	Sham (n = 14 neurons, 7 mice)	SNI (n = 11 neurons, 7 mice)
Subthreshold properties						
Resting potential (mV)	-72.3 ± 1.7	-75.9 ± 1.7	-71.5 ± 5.3	69.2 ± 2.6	-63.5 ± 1.9	80.3 ± 1.7*#
Voltage sag (%)	6 ± 2.1	6.1 ± 1.2$	9.1 ± 2.8	9 ± 2$	9.7 ± 3	5.3 ± 0.78$
Input resistance (MΩ)	262.5 ± 15.4	218 ± 19.1	288.1 ± 24.5	227.4 ± 27.2	205.2 ± 10	198.1 ± 28.2$
Firing properties						
Threshold (mV)	-43.4 ± 1.2	-41.1 ± 1.2	-44.9 ± 1.9	-41 ± 1.8	-42.4 ± 1.5	-41.7 ± 1.6
Threshold (pA)	50 ± 9.2	100 ± 28.4*$	50 ± 14.9	75 ± 32.7$	100 ± 11.9	150 ± 43.9*$
Frequency/current (Hz/pA)	0.38 ± 0.03	0.40 ± 0.04	0.36 ± 0.03	0.40 ± 0.06	0.39 ± 0.05	0.39 ± 0.06
APs @ 200 pA	26.5 ± 2.1	17.7 ± 3.2	28.5 ± 3.3	18.8 ± 3.3	25.1 ± 2.7	16.6 ± 5.3
Height (mV)	64.4 ± 2.8	58.1 ± 3.4	64.1 ± 4.3	60.2 ± 4.3	64.7 ± 3.8	55.6 ± 5.4
Slow afterhyperpolarization (mV)	-7.8 ± .57	-10.7 ± 1.3*	-7.9 ± .80	-11.1 ± 2	-9 ± 1.8	-12.3 ± 1.9$
Female	Total		L2/3		L5	
	Sham (n = 17 neurons; 8 mice)	SNI (n = 16 neurons; 7 mice)	Sham (n = 9 neurons, 4 mice)	SNI (n = 9 neurons, 4 mice)	Sham (n = 8 neurons, 4 mice)	SNI (n = 7 neurons, 4 mice)
Subthreshold properties						
Resting potential (mV)	-71.8 ± 1.7	-73.8 ± 1.8	-70.1 ± 2.5	-71.7 ± 1.7	-74.9 ± 2.3	-81.8 ± 3.5$
Voltage sag (%)	6.7 ± 1.1	5.3 ± 1.8$	5.1 ± 1.5	5.8 ± 2.6$	8.4 ± 1.5	3.1 ± 2.1
Input resistance (MΩ)	224.6 ± 22.2	209.3 ± 23.2$	282.9 ± 36.2	179.4 ± 23.7*#	213.3 ± 23	212.5 ± 40$
Firing properties						
Threshold (mV)	-40.4 ± 1.4	-39.1 ± 2	-41.9 ± .82	-37.8 ± 3.1	-38.7 ± 2.8	-40.9 ± 2.4
Threshold (pA)	100 ± 11.2	100 ± 31.9$	100 ± 14.4	200 ± 60.6$	100 ± 18.9	100 ± 24.1$
Frequency/current (Hz/pA)	0.34 ± 0.02	0.38 ± 0.03	0.31 ± 0.03	0.40 ± 0.03	0.38 ± 0.04	0.36 ± 0.04
APs @ 200 pA	21.6 ± 2.7	15.9 ± 3.1	21 ± 2.7	23 ± 4.5$	23.4 ± 5.2	18 ± 4.4
Height (mV)	63.9 ± 2.7	61.2 ± 3.2	69.8 ± 2.5	61.6 ± 4.8	57.4 ± 4.1	60.6 ± 4.4
Slow afterhyperpolarization (mV)	-10.1 ± 0.98	-9.7 ± 1.6	-8.4 ± 0.83	-8.9 ± 2.6	-12 ± 1.7	-10.8 ± 1.5

#: Student's unpaired *t*-test; Data shown as mean ± standard error of the mean

$: Mann-Whitney U test; Data shown are median ± standard error of the mean

Statistical comparisons are for Sham vs SNI; *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$

Table S4: Comparison of sEPSC from PL-PVIN and PL-SOM+ male and female mice, Related to Figures 2 and 4

PVIN			**L5**			
	Male Sham (n = 12 neurons; 5 mice)	Female Sham (n = 13 neurons; 5 mice)	Male Sham (n = 12 neurons; 5 mice)	Male SNI (n = 12 neurons; 5 mice)	Female Sham (n = 13 neurons; 5 mice)	Female SNI (n = 11 neurons; 4 mice)
Synaptic properties						
sEPSC amplitude (pA)	22.5 ± 1.9	19.4 ± .92	22.5 ± 1.9	19.6 ± 1.5	19.4 ± .92	18 ± 1.2
sEPSC frequency (Hz)	13.3 ± 1.3	30.7 ± 2.8	13.3 ± 1.3	17.1 ± 2	30.7 ± 2.8	34.3 ± 3.5
SOM+			**L2/3**			
	Male Sham (n = 7 neurons; 3 mice)	Female Sham (n = 7 neurons; 4 mice)	Male Sham (n = 7 neurons; 3 mice)	Male SNI (n = 8 neurons; 3 mice)	Female Sham (n = 7 neurons; 4 mice)	Female SNI (n = 7 neurons; 5 mice)
Synaptic properties						
sEPSC amplitude (pA)	21.5 ± 2.7	18.1 ± 1.2	21.5 ± 2.7	17.9 ± 1.5	18.1 ± 1.2	17.5 ± 1.7
sEPSC frequency (Hz)	7.2 ± 1.6	9.2 ± 1.6	7.2 ± 1.6	5.8 ± .88	9.2 ± 1.6	4.3 ± 1*#

#: Student's unpaired *t*-test; Data shown as mean ± standard error of the mean
$: Mann-Whitney U test; Data shown are median ± standard error of the mean
Statistical comparisons are for Sham Male vs Female; Male Sham vs SNI; Female Sham vs SNI;
*: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$