

Date of Surgery (mm/dd/yyyy)	Age	Sex	CA1	CA2	CA3	CA4	DG	Gliosis
01/28/2020	23	Female	<i>mildly decreased</i>	normal	significant loss of neurons	significant loss of neurons	mild dispersal	yes
11/5/2020	23	Female	normal	normal	decreased, involved by atypical cells	decreased, involved by atypical cells	mild dispersal and bilamination	yes
11/24/2020	63	Male	<i>significant loss of neurons</i>	normal	normal	normal	mild dispersal	yes
02/18/2021	49	Female	<i>normal</i>	normal	normal	normal	mild dispersal	yes
04/15/2021	42	Female	<i>normal</i>	normal	normal	normal	focal thinning	yes
04/27/2021	14	Male	normal	normal	normal	normal	mild dispersal	yes
06/8/2021	39	Male	significant loss of neurons	mild neuronal loss	mild neuronal loss	moderate neuronal loss	attenuated	yes
09/21/2021	25	Male	<i>significant loss of neurons</i>	moderate neuronal loss	mild neuronal loss	significant loss of neurons	mild dispersal	yes
11/18/2021	23	Male	normal	mild neuronal loss	normal	normal	mild dispersal	yes
10/11/2022	28	Female	significant loss of neurons	mild neuronal loss	normal	significant loss of neurons	mild dispersal	yes

Table 1. Patient record and pathology of tissue obtained from resection for experiments.

Bold text indicates the hippocampal region from which the tissue recordings were obtained. Bold red text denotes tissue that exhibited sclerosis or neuronal loss, a condition observed only in recordings from human hippocampal CA1. CA3 sample from 10/25/2022 is not listed in the table but was categorized as non-sclerotic by the pathologist in the post-surgery pathology report.

Region Parameter	hCA1 (n=17)	mCA1 (n=38)	hCA3 (n=18)	mCA3 (n=88)	hDG (n=16)	mDG (n=12)
AP threshold (mV)	-44.50 ±1.42 (-44.49)	-48.25 ±1.01 (-47.60)	-46.31 ±1.52 (-45.82)	-47.92 ±0.50 (-47.55)	-50.09 ±1.32 (-48.17)	-51.22 ±1.49 (-48.89)
	t-test, p = 0.04		Mann-Whitney, p = 0.13		t-test, p = 0.58	
Rheobase (pA)	407.10 ±92.29 (240.00)	155.30 ±11.44 (125.00)	514.40 ±66.55 (565.00)	359.70 ±18.83 (350.00)	123.40 ±20.03 (100.00)	65.00 ±5.57 (60.00)
	Mann-Whitney, p = 0.10		Mann-Whitney, p = 0.02		t-test + Wc, p = 0.01	
Ri (MΩ)	114.70 ±19.86 (80.84)	136.50 ±6.63 (134.30)	72.97 ±13.08 (50.44)	80.06 ±2.43 (77.40)	165.60 ±24.99 (131.80)	263.20 ±14.68 (269.50)
	t-test + Wc, p = 0.31		Mann-Whitney, p = 0.04		t-test + Wc, p = 0.003	
AP frequency (spikes/s)	17.27 ±1.17 (18.00)	10.92 ±1.00 (12.00)	17.13 ±0.41 (17.13)	11.18 ±0.70 (11.00)	26.29 ±3.48 (22.00)	12.32 ±0.86 (13.50)
	t-test, p = 0.0004		Mann-Whitney, p <0.0001		t-test + Wc, p = 0.001	
AP amplitude (mV)	93.29 ±2.34 (93.56)	96.62 ±1.19 (98.16)	98.87 ±1.67 (100.70)	94.75 ±0.73 (94.71)	102.80 ±0.94 (102.90)	106.10 ±1.61 (105.10)
	Mann-Whitney, p = 0.07		t-test, p = 0.02		t-test, p = 0.07	
AP FMHW (ms)	1.28 ±0.11 (1.40)	1.96 ±0.08 (1.94)	1.72 ±0.11 (1.57)	1.66 ±0.03 (1.64)	1.17 ±0.08 (1.11)	1.50 ±0.06 (1.46)
	Mann-Whitney, p <0.0001		Mann-Whitney, p = 0.76		Mann-Whitney, p = 0.0002	
AP AHP (mV)	15.11 ±1.78 (16.32)	2.41 ±0.69 (2.05)	7.47 ±0.77 (8.63)	9.08 ±0.35 (9.54)	9.46 ±1.28 (9.28)	7.90 ±1.31 (9.53)
	t-test + Wc, p <0.0001		Mann-Whitney, p = 0.03		Mann-Whitney, p = 0.39	
Sag (mV)	4.09 ±0.48 (3.81)	6.74 ±0.44 (6.62)	4.35 ±1.27 (3.67)	1.11 ±0.11 (0.87)	3.29 ±0.53 (2.47)	0.30 ±0.17 (0.45)
	t-test, p = 0.0006		Mann-Whitney, p <0.0001		t-test + Wc, p <0.0001	

Table 2. Quantification of intrinsic properties of different human and mouse hippocampal regions

Data presented as mean ± s.e.m. with the median in parenthesis. All tests were unpaired and two-tailed. Wc – Welch's correction for unequal variance.

Region Parameter	hCA1	mCA1	hCA3	mCA3	hDG
Distal PSP (mV)	7.35 ±1.03 (5.74) n = 13	0.51 ±0.11 (0.24) n = 15	5.54 ±1.00 (4.77) n = 7	0.91 ±0.19 (0.44) n = 63	5.38 ±0.78 (5.24) n = 13
Proximal PSP (mV)	6.77 ±0.73 (6.15) n = 11	4.01 ±0.28 (4.10) n = 15	2.44 ±0.64 (2.67) n = 6	2.28 ±0.31 (1.41) n = 65	10.71 ±2.12 (9.74) n = 4

Table 3. Postsynaptic potential (PSP) amplitudes evoked by distal vs. proximal dendritic stimulation in human and mouse hippocampal regionsData presented as mean ± s.e.m. with the median in parenthesis.

Region Frequency	hCA1	hCA3	hDG
5 Hz	1.07 ±0.07 (1.07) n = 9	0.86 ±0.05 (0.90) n = 7	0.86 ±0.03 (0.86) n = 13
10 Hz	1.00 ±.05 (0.99) n = 13	0.83 ±0.03 (0.85) n = 7	1.03 ±0.06 (1.07) n = 13
20 Hz	0.78 ±0.04 (0.77) n = 13	0.56 ±0.06 (0.59) n = 6	0.87 ±0.13 (0.74) n = 13

Table 4. Paired Pulse Ratio (PPR) from distal stimulation at 5, 10, and 20 Hz in human hippocampal regions.

Data presented as mean ± s.e.m. with the median in parenthesis.