

Related to	Descriptive statistics	Test(s)	Test statistics
Supplementary Fig. 1			
Group: mean ± SEM (no. of mice)			
S1C (inset)			P = 0.9503
Total power (μV ²)	Ctrl-Ab: 0.88490 ± 0.19456 (n=9) GluN1-Ab: 0.86954 ± 0.14719 (n=9)	Two-sample t-test, two-tailed	t = 0.0633 df = 16
S1D			P = 0.4894
Bandpower (norm.)	Ctrl-Ab: 0.00189 ± 1.76588E-4 (n=9) GluN1-Ab: 0.00177 ± 2.88959E-4 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = 0.70642 U = 49
Bandpower (μV ²)			P = 0.6375
	Ctrl-Ab: 4.5217 ± 1.2479 (n=9) GluN1-Ab: 3.8304e ± 0.71709 (n=9)	Two-sample t-test, two-tailed	t = 0.4803 df = 16
Peak power (norm.)			P = 0.2224
	Ctrl-Ab: 0.00418 ± 6.48068E-4 (n=9) GluN1-Ab: 0.00395 ± 0.00138 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = 1.23623 U = 55
Peak power (μV ²)			P = 0.5457
	Ctrl-Ab: 10.5569 ± 3.73331 (n=9) GluN1-Ab: 8.31071 ± 2.75882 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = 0.61812 U = 48
Peak frequency (Hz)			P = 0.2667
	Ctrl-Ab: 1.62972 ± 0.03259 (n=9) GluN1-Ab: 1.7039 ± 0.05853 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = -1.1101 U = 27.5
Figure 1			
Group: mean ± SEM (no. of mice)			
1E			
CaT frequency distributions [1/s]	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Permutation test of KLD, one-tailed, 1 million shuffles	P = 0.038
CaT frequency [1/s] (mean)			P = 0.1634
	Ctrl-Ab: 0.0556 ± 0.0029 (n=9) GluN1-Ab: 0.0476 ± 0.0047 (n=9)	Two-sample t-test, two-tailed	t = 1.4607 df = 16
1G (top)			P = 0.0320
CV of ICI (significantly high CVs, median)	Ctrl-Ab: 1.32 ± 0.0157 (n=9) GluN1-Ab: 1.3862 ± 0.0234 events (n=9)	Two-sample t-test, two-tailed	t = -2.3486 df = 16
1G (bottom)			P = 0.0214
CV2 of ICI (significantly low CV2s, mean)	Ctrl-Ab: 0.7793 ± 0.0058 (n=97) GluN1-Ab: 0.7503 ± 0.0098 (n=9)	Two-sample t-test, two-tailed	t = 2.5499 df = 16
1I (top)			P = 0.0255
correlation of CV and CV2 of cells	Ctrl-Ab: 0.1280 ± 0.0355 (n=9) GluN1-Ab: -0.0453 ± 0.0608 (n=9)	Two-sample t-test, two-tailed	t = 2.4623 df = 16
1I (bottom)			P = 0.01876
correlation of CV and median ICI of cells	Ctrl-Ab: -0.0519 ± 0.0463 (n=9) GluN1-Ab: -0.2844 ± 0.0646 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = 2.29586 U = 67
1J (top)			P = 0.0157
summed power of 0.05-2 Hz band	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	
1J (bottom)			P = 0.04
bandpower of 0.05-1 Hz band	Ctrl-Ab: 0.1319 ± 0.0039 (n=9) GluN1-Ab: 0.1114 ± 0.0083 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = 2.03095 U = 64
1K			P = 0.03147
Φ variability (coefficient of variation)	Ctrl-Ab: 0.6758 ± 0.0322 (n=9) GluN1-Ab: 0.9529 ± 0.1395 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = -2.11925 U = 16
1L			P = 0.0315
SE rate [Hz]	Ctrl-Ab: 0.09468 ± 0.00651 (n=9) GluN1-Ab: 0.07257 ± 0.00675 (n=9)	Two-sample t-test, two-tailed	t = 2.3571 df = 16
1M			P = 0.037
SE-size distributions [%]	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Permutation test of KLD, one-tailed, 1 million shuffles	
1N (inset)			P = 0.01419
synchronization capacity (SC, mean)	Ctrl-Ab: 1.7192 ± 0.0836 (n=9) GluN1-Ab: 2.5773 ± 0.3679 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = -2.38416 U = 13
1O			P = 0.04
bandpower (<0.05 Hz)	Ctrl-Ab: 0.0019 ± 0.0002 (n=9) GluN1-Ab: 0.0029 ± 0.0004 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = -2.03095 U = 17
1P			P = 0.0251
non-SE Φ activity [%] (median)	Ctrl-Ab: 1.4261 ± 0.0755 (n=9) GluN1-Ab: 1.0467 ± 0.1337 (n=9)	Two-sample t-test, two-tailed	t = 2.4701 df = 16
Supplementary Fig. 2			
Group: mean ± SEM (no. of mice)			
S2A			P = 0.3346
CV of ICI (mean)	Ctrl-Ab: 1.0745 ± 0.0261 (n=9) GluN1-Ab: 1.1139 ± 0.0297 (n=9)	Two-sample t-test, two-tailed	t = -0.9949 df = 16
S2B			P = 0.1666
CV2 of ICI (median)	Ctrl-Ab: 0.8563 ± 0.0086 (n=9) GluN1-Ab: 0.8311 ± 0.0151 (n=9)	Two-sample t-test, two-tailed	t = 1.4490 df = 16
S2D (top)			P = 0.0594
CV of ICI (significantly low CVs, mean)	Ctrl-Ab: 0.7531 ± 0.0106 (n=9) GluN1-Ab: 0.7165 ± 0.0146 (n=9)	Two-sample t-test, two-tailed	t = 2.0292 df = 16
S2D (bottom)			P = 0.2657
CV2 of ICI (significantly high CV2s, mean)	Ctrl-Ab: 1.2454 ± 0.0104 (n=9) GluN1-Ab: 1.2631 ± 0.0106 (n=9)	Two-sample t-test, two-tailed	t = -1.1561 df = 15
S2E (top)			P = 0.0295
correlation of CV and CaT frequency of cells	Ctrl-Ab: -0.1011 ± 0.0480 (n=9) GluN1-Ab: 0.0885 ± 0.0632 (n=9)	Two-sample t-test, two-tailed	t = -2.3893 df = 16
S2E (bottom)			P = 0.1143
correlation of CV2 and CaT frequency of cells	Ctrl-Ab: -0.6777 ± 0.0226 (n=9) GluN1-Ab: -0.6137 ± 0.0309 (n=9)	Two-sample t-test, two-tailed	t = -1.6702 df = 16
S2F (inset)			P = 0.0339
pICI (positive values, mean)	Ctrl-Ab: 0.1455 ± 0.0066 (n=9) GluN1-Ab: 0.1706 ± 0.0086 (n=9)	Two-sample t-test, two-tailed	t = -2.3189 df = 16
S2G			P = 0.005
distributions of Φ [%]	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Permutation test of KLD, one-tailed, 1 million shuffles	
S2H (top)			P = 0.93143
SE-threshold [%]	Ctrl-Ab: 4.3004 ± 0.1436 (n=9) GluN1-Ab: 4.6016 ± 0.44 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = -0.0883 U = 39
S2H (bottom)			P = 0.3262
fraction of time spent in SEs [%]	Ctrl-Ab: 2.82 ± 0.27 (n=9) GluN1-Ab: 2.38 ± 0.33 (n=9)	Two-sample t-test, two-tailed	t = 1.01288 df = 16
S2I (top)			P = 0.47563
SE duration (mean) [s]	Ctrl-Ab: 0.5143 ± 0.0154 (n=9) GluN1-Ab: 0.5411 ± 0.0329 (n=9)	Two-sample t-test (Welch correction), two-tailed	t = -0.7377 df = 11.3578
S2I (bottom)			P = 0.9951
SE duration (range) [s]	Ctrl-Ab: 0.6896 ± 0.0362 (n=9) GluN1-Ab: 0.6901 ± 0.00847 (n=9)	Two-sample t-test (Welch correction), two-tailed	t = -0.0062 df = 10.8189
Figure 2			
Group: mean ± SEM (no. of mice)			
2B (inset)			P = 0.02443
STTC of postive PN pairs (median)	Ctrl-Ab: 0.0135 ± 0.0006 (n=9) GluN1-Ab: 0.0191 ± 0.0036 (n=9)	Mann-Whitney U-test (exact), two-tailed	Z = -2.20755 U = 15
2C (inset)			P = 0.03147
STTC of significant PN pairs (median)	Ctrl-Ab: 0.0464 ± 0.0015 (n=9)	Mann-Whitney U-test (exact), tow-tailed	Z = -2.11925

	GluN1-Ab: 0.0664 ± 0.0101 (n=9)		U = 16
2E (top) mean STTC of positive PN pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0116
2E (bottom) Mean STTC of significant PN pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0045
2F median STTC of significant PN pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0352
2G mean PCC of all PN pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0315
Supplementary Fig. 3 Group: mean ± SEM (no. of mice)			
S3C fraction of significant PN pairs [%]	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1818
S3D median STTC of positive PN pairs (AUC)	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1381
At the first tiling-window (0.2 sec) STTC (median)	Ctrl-Ab: 0.0135 ± 0.0006 (n=9) GluN1-Ab: 0.0191 ± 0.0036 (n=9)	Mann-Whitney U-test (exact), two-tailed	P = 0.02443 Z = -2.20755 U = 15
At the second tiling-window (0.4 sec) STTC (median)	Ctrl-Ab: 0.0177 ± 0.0008 (n=9) GluN1-Ab: 0.0247 ± 0.0046 (n=9)	Mann-Whitney U-test (exact), two-tailed	P = 0.03998 Z = -2.03095 U = 17
S3E mean pCC of significant PN pairs Over 0.2-0.8 sec time slaces	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0373
Over all time slaces (0.2-9.6 sec)	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0672
S3F mean pCC of significant PN pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.007
S3G (left) mean PCC of all PN pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.039
S3G (right) mean PCC of positive PN pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0138
S3K (left) first bar vs second bar	pCC (w/ PC3): 0.3898 ± 0.01609 (#Trials=10) PCC (w/ PC3): 0.3688 ± 0.01678 (#Trials=10)	Paired sample t-test, two-tailed	P = 0.0024 t = 4.17288 df = 9
second bar vs third bar	PCC (w/ PC3): 0.3688 ± 0.01678 (#Trials=10) pCC (w/o PC3): 0.3541 ± 0.02472 (#Trials=10)	Paired sample t-test, two-tailed	P = 0.3537 t = -0.9779 df = 9
Figure 3 Group: mean ± SEM (no. of mice)			
3A (top) median node degree, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0526
3A (bottom) median node degree, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0232
3D (left, box plot) Gini of node degree (timescale: 0.2 sec)	Ctrl-Ab: 0.1689 ± 0.00565 (n=9) GluN1-Ab: 0.2238 ± 0.01964 (n=9)	Mann-Whitney U-test (exact), two-tailed	P = 0.0028 Z = -2.82567 U = 8
3D (right) Gini of node degree (all timescale)	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0068
3E (left, box plot) Gini of betweenness (timescale: 0.2 sec)	Ctrl-Ab: 0.2954 ± 0.0091 (n=9) GluN1-Ab: 0.3628 ± 0.0207 (n=9)	Two-sample t-test, two-tailed	P = 0.0089 t = -2.97718 df = 16
3D (right) Gini of betweenness (all timescale)	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0080
3F (top) median clustering coefficient, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0113
3F (bottom) median clustering coefficient, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0032
3I (top) Count	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0160
3I (bottom) Ratio	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0864
3J (right, top) median amplitude of all sEPSC [pA]	Ctrl-Ab: 18.8385 ± 1.6366 (n= 6 mice/11 cells) GluN1-Ab: 14.6348 ± 1.0622 (n=6 mice/14 cells)	Two-sample t-test, two-tailed	P = 0.0352 t = 2.2377 df = 23
3J (right, bottom) median amplitude of strong sEPSC [pA]	Ctrl-Ab: 82.7514 ± 21.4614 (n= 6 mice/11 cells) GluN1-Ab: 47.9356 ± 6.8489 (n=6 mice/14 cells)	Mann-Whitney U-test (exact), two-tailed	P = 0.10632 Z = 1.61497 U = 107
3K (yellow-colored period) fEPSP slope [rel.]	Ctrl-Ab: 6 mice, 16 slices GluN1-Ab: 7 mice, 21 slices	Mixed-model analysis: group x time	β = -0.000946 SE = 0.000244 P < 0.0001
Supplementary Fig. 4 Group: mean ± SEM (no. of mice)			
S4A (top) total #connections, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0374
S4A (bottom) total #connections, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0247
S4B (top) mean norm. node degree, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1170
S4B (bottom) mean norm. node degree, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1706
S4C (top) Gini of node degree, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1239
S4C (bottom) Gini of betweenness, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0154

S4D (top) Hub enrichment ratio of node degree, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0515
S4D (bottom) Hub enrichment ratio of node degree, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0044
S4E (top) Hub enrichment ratio of betweenness, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0035
S4E (bottom) Hub enrichment ratio of betweenness, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0087
S4F (top, left) median small-worldness, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0081
S4F (top, middle) mean betweenness, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0358
S4F (top, right) mean eigenvector centrality, based on STTC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0384
S4F (bottom, left) median small-worldness, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0032
S4F (bottom, middle) mean betweenness, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0300
S4F (bottom, right) mean eigenvector centrality, based on PCC	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0329
S4H (left) Count	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0129
S4H (right) Ratio	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1567
Figure 4 Group: mean $\pm$ SEM (no. of mice)			
4B (right, top) mean reliability of significant PNs	Ctrl-Ab: 0.01198 $\pm$ 0.0007 (n=9) GluN1-Ab: 0.0179 $\pm$ 0.0029 (n=9)	Mann-Whitney U-test (exact), tow-tailed	P = 0.01876 Z = -2.29586 U = 14
4B (right, bottom) mean latency of significant PNs	Ctrl-Ab: 0.2601 $\pm$ 0.0043 (n=9) GluN1-Ab: 0.23356 $\pm$ 0.0902 (n=9)	Mann-Whitney U-test (exact), tow-tailed	P = 0.01061 Z = 2.47246 U = 69
4C (top) mean reliability of significant PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.006
4C (bottom) mean latency of significant PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0059
4F (top, right) median MI of significant SE pattern pairs	Ctrl-Ab: 0.2188 $\pm$ 0.0098 (n=9) GluN1-Ab: 0.2786 $\pm$ 0.0302 (n=9)	Mann-Whitney U-test (exact), two-tailed	P = 0.05944 Z = -1.8553 U = 19
4F (top, left) Skewness of significant MI values	Ctrl-Ab: 1.3393 $\pm$ 0.1694 (n=9) GluN1-Ab: 0.9835 $\pm$ 0.1563 (n=9)	Mann-Whitney U-test (exact), two-tailed	P = 0.03998 Z = 2.03095 U = 64
4F (bottom) median of significant, thresholded SE patterns	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0210
4G (inset) median MI of significant binned-pattern pairs	Ctrl-Ab: 0.1673 $\pm$ 0.0051 (n=9) GluN1-Ab: 0.2068 $\pm$ 0.0208 (n=9)	Mann-Whitney U-test (exact), two-tailed	P = 0.03731 Z = -2.03727 U = 17
4H median MI of significant binned-pattern pairs (for statistics related to the star see 4G [inset])	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.3005
4I mean STTC of ensemble PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0892
At tiling window of 1.2 sec	Ctrl-Ab: 0.0853 $\pm$ 0.0029 (n=4) GluN1-Ab: 0.1270 $\pm$ 0.0109 (n=6)	Two-sample t-test (Welch correction), two-tailed	P = 0.01132 t = -3.68507 df = 5.68051
4J mean participation index of ensemble PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1482
At tiling window of 1.2 sec	Ctrl-Ab: 0.09286 $\pm$ 0.00399 (n=4) GluN1-Ab: 0.13351 $\pm$ 0.0106 (n=6)	Two-sample t-test (Welch correction), two-tailed	P = 0.0106 t = -3.58748 df = 6.30823
4K mean reliability of ensemble PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1344
At tiling window of 1.2 sec	Ctrl-Ab: 0.04175 $\pm$ 0.00407 (n=4) GluN1-Ab: 0.07071 $\pm$ 0.00764 (n=6)	Two-sample t-test (Welch correction), two-tailed	P = 0.0117 t = -3.34454 df = 7.26136
Supplementary Fig. 5 Group: mean $\pm$ SEM (no. of mice)			
S5A mean efficacy of significant PNs	Ctrl-Ab: 0.0112 $\pm$ 0.0006 (n=9) GluN1-Ab: 0.017 $\pm$ 0.0031 (n=9)	Mann-Whitney U-test (exact), two-tailed	P = 0.02443 Z = -2.20755 U = 15
S5B mean efficacy of significant PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0122
S5C (left) fraction of PNs with significant reliability	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1358
S5C (middle) fraction of PNs with significant efficacy	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1513
S5C (right) fraction of PNs with significant latency	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.3974
S5D (left) median MI of all SE pattern pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0254
S5D (right)			

fraction of SE pattern pairs with significant MI	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0901
S5E (left) median MI of all binned-pattern pairs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1564
S5E (right) fraction of binned pattern pairs with significant MI	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0279
S5F mean PI variability of ensemble PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.0628
At tiling window of 1.2 sec	Ctrl-Ab: 0.3766 ± 0.0364 (n=4) GluN1-Ab: 0.5138 ± 0.0211 (n=6)	Mann-Whitney U-test (exact), two-tailed	P = 0.01905 Z = -2.23861 U = 1
S5G (left) mean efficacy of ensemble PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.1276
At tiling window of 1.2 sec	Ctrl-Ab: 0.04165 ± 0.00375 (n=4) GluN1-Ab: 0.0706 ± 0.00772 (n=6)	Two-sample t-test (Welch correction), two-tailed	P = 0.0119 t = -3.3723 df = 6.9889
S5G (right) mean latency of ensemble PNs	Ctrl-Ab: (n=9) GluN1-Ab: (n=9)	Curve permutation, one-tailed, 1 million shuffles	P = 0.2388
Supplementary Fig. 6			
Group: mean ± SEM (no. of mice)			
S6B (left) Mean Intra-Ripple frequency	Ctrl-Ab: 140.32 ± 1.2911 (n=9) GluN1-Ab: 149.25 ± 3.1151 (n=8)	Mann-Whitney U-test (exact), two-tailed	P = 0.02065 Z = -2.26129 U = 12
S6B (right) Maximum Intra-Ripple frequency	Ctrl-Ab: 159.83 ± 1.6542 (n=9) GluN1-Ab: 169.35 ± 3.4103 (n=8)	Mann-Whitney U-test (exact), two-tailed	P = 0.01522 Z = -2.35751 U = 11
S6C Occurrence rate of SPW-Rs	Ctrl-Ab: 0.095128 ± 0.020281 (n=9) GluN1-Ab: 0.12458 ± 0.026018 (n=8)	Two-sample t-test, two-tailed	P = 0.38053 t = -0.90352 df = 15
S6D Ripple duration	Ctrl-Ab: 25.886 ± 1.1766 (n=9) GluN1-Ab: 28.038 ± 0.98725 (n=8)	Two-sample t-test, two-tailed	P = 0.18762 t = -1.38063 df = 15
S6E (left) Ripple amplitude (zscore)	Ctrl-Ab: 8.3404 ± 0.51882 (n=9) GluN1-Ab: 9.0522 ± 0.50619 (n=8)	Mann-Whitney U-test (exact), two-tailed	P = 0.67297 Z = -0.43301 U = 31
S6E (right) Ripple amplitude (mV)	Ctrl-Ab: 0.10113 ± 0.018624 (n=9) GluN1-Ab: 0.12872 ± 0.022319 (n=8)	Two-sample t-test, two-tailed	P = 0.35407 t = -0.95632 df = 15
S6F (left) SPW amplitude (zscore)	Ctrl-Ab: 4.1669 ± 0.2398 (n=9) GluN1-Ab: 4.7769 ± 0.2809 (n=8)	Two-sample t-test, two-tailed	P = 0.11729 t = -1.66189 df = 15
S6F (right) SPW amplitude (mV)	Ctrl-Ab: 0.15306 ± 0.022735 (n=9) GluN1-Ab: 0.1955 ± 0.025094 (n=8)	Mann-Whitney U-test (exact), two-tailed	P = 0.54142 Z = -0.62546 U = 29
S6G Fraction of ripples involved SE (%)	Ctrl-Ab: 47.41 ± 4.4864 (n=9) GluN1-Ab: 34.32 ± 7.048 (n=8)	Two-sample t-test, two-tailed	P = 0.12956 t = 1.60399 df = 15
S6I: maximum active cells fraction (zscore) (left): (+SE)	Ctrl-Ab: 4.8861 ± 0.16998 (n=9) GluN1-Ab: 7.655 ± 1.2555 (n=8)	Mann-Whitney U-test (exact), two-tailed	P = 0.00058 Z = -3.12731 U = 31
(right): (-SE)	Ctrl-Ab: 0.51118 ± 0.12863 (n=9) GluN1-Ab: 0.59927 ± 0.069059 (n=8)	Mann-Whitney U-test (exact), two-tailed	P = 0.27659 Z = -1.10659 U = 24
S6J: mean of active cells fraction (zscore) (left): (+SE)	Ctrl-Ab: 2.0579 ± 0.093411 (n=9) GluN1-Ab: 3.1393 ± 0.56781 (n=8)	Mann-Whitney U-test (exact), two-tailed	P = 0.0079 Z = -2.54996 U = 9
(right): (-SE)	Ctrl-Ab: 0.050727 ± 0.097164 (n=9) GluN1-Ab: 0.16582 ± 0.05615 (n=8)	Mann-Whitney U-test (exact), two-tailed	P = 0.32127 Z = -1.01036 U = 25