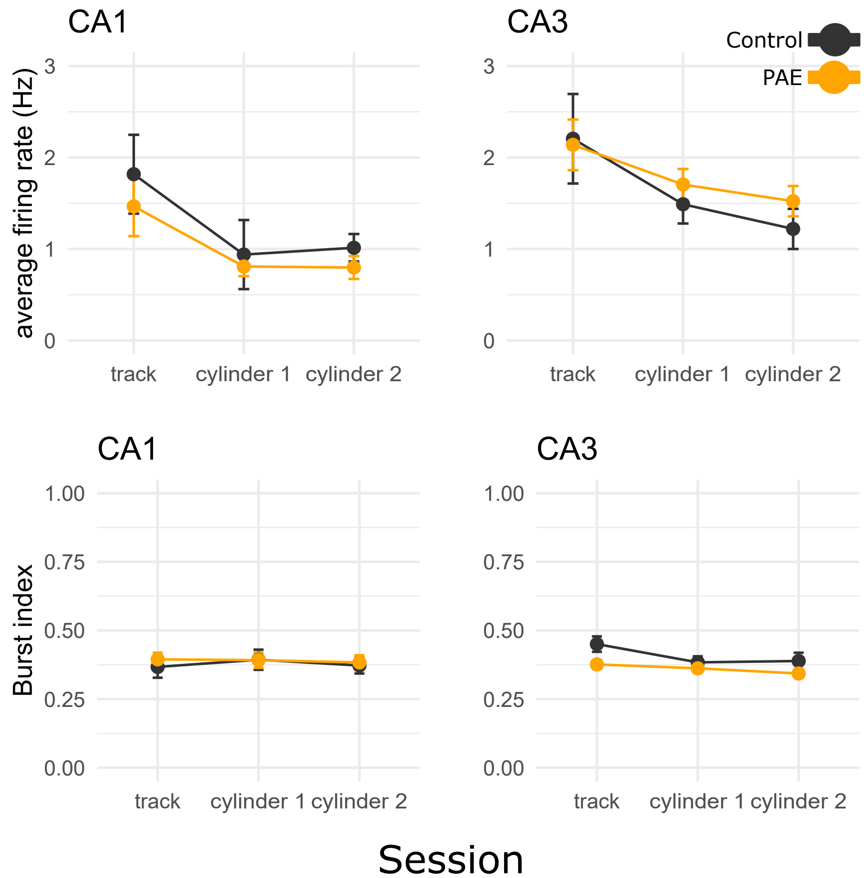

Figure S1: Average firing rate and burst index over recording sessions. Related to Figure 1. While CA1 average firing rates were similar between groups across sessions (all p $\geq$ 0.03174, WRS), CA1 and CA3 cells from both groups displayed decreased average firing rates in the first and second cylinder session compared to the linear track (control: ps $<$ 0.0005, PAE: ps $<$ 0.0001; Paired WRS), but had similar rates between cylinder sessions (control: ps $\geq$ 0.0303, PAE: ps $\geq$ 0.4357, Paired WRS). Burst index was calculated as the difference between the cell's burst rate and the expected burst rate derived from a homogeneous Poisson process with the same average firing rate. Bursts were defined as epochs of spikes with interspike intervals between 0ms and 10ms. Burst index from CA1 and CA3 cells was similar between groups across sessions (all p $\geq$ 0.01567, WRS). However, control CA3 cells displayed a decrease in burst index from the linear track to the first and second cylinder sessions (all ps $\leq$ 0.0009, Paired WRS). Data is represented as median $\pm$ standard error of the median. Neurons included met place cell criteria in each maze. Family-wise error was maintained at $\alpha \leq 0.05$ by adjusting the significance levels for individual tests to $\alpha \leq 0.005$.

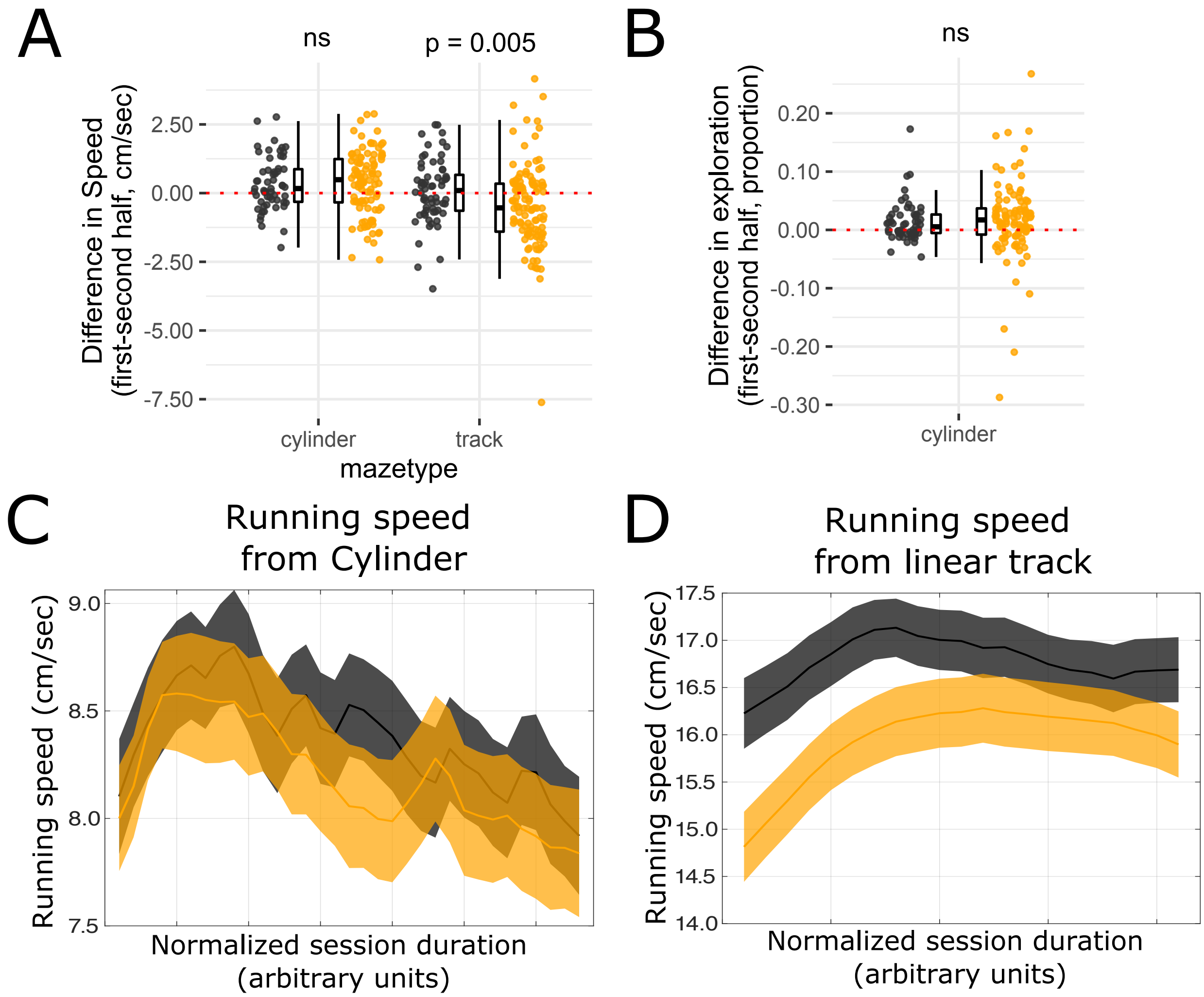

Figure S2: Behavioral stability between the first and second half of the session. Related to Figure 2. (A) Difference in running speed between the first and second halves of each recording session. PAE rats have a larger difference in running speed on the linear between the two halves compared to control rats (p = 0.005, WRS, effect size (r) = 0.21, Control median = 0.09, n = 64; PAE median = -0.54, n = 111). (B) Difference in the proportion of the cylinder explored between the first and second halves of each recording session was similar between groups. Note that both medians are above 0 indicating that exploration was higher in the first half compared to the second half of the session. Linear track data is not shown here because the extent of the track was sampled with each lap and rats from both groups completed similar numbers of laps. (C) Running speed over the duration of the cylinder sessions. (D) Running speed over the duration of the linear track sessions. Note the group difference here reflects the significant difference in A where PAE rats have a slightly slower running speed at the start of the trial. (C-D) Because all recording sessions had slightly different recording durations depending on the rat's motivation, we first calculated mean velocity from each session over 1 minute bins. The resulting speed vectors were linearly interpolated as to have as many points as the longest vector in the set. In effect, we can visualize fluctuations in velocity from the start to the end of each session on the same scale. Data is represented as mean ± standard error. (A-D) Orange represents data from PAE rats and black represents data from control animals.

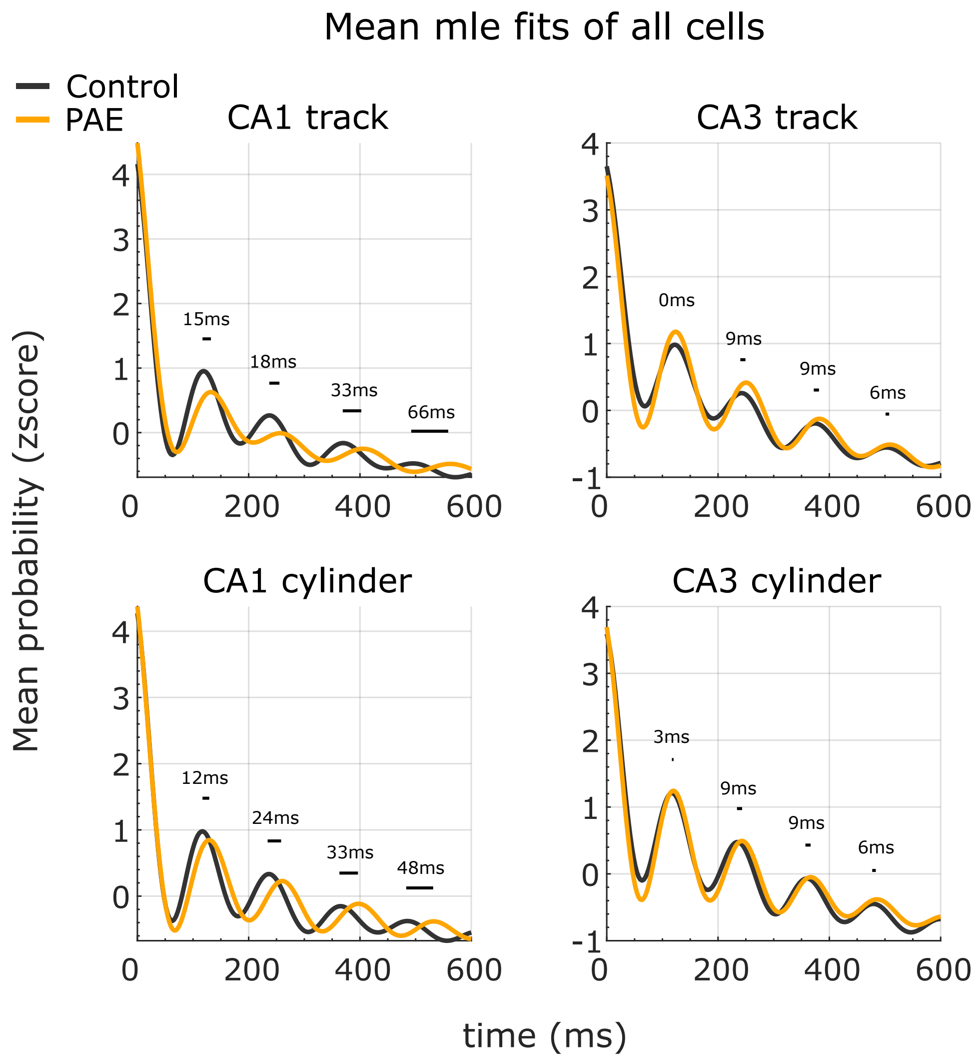

Figure S3: Mean maximum likelihood estimation fits for all cells. Related to Figure 5. While Figure 5C shows mean autocorrelogram fits of just spatially modulated cells, here we show mean fits from all theta rhythmic cells. Note that theta frequency is slightly slower in PAE cells. Dashes and numbers above each peak represent the time (ms) difference between the two groups at each theta peak.

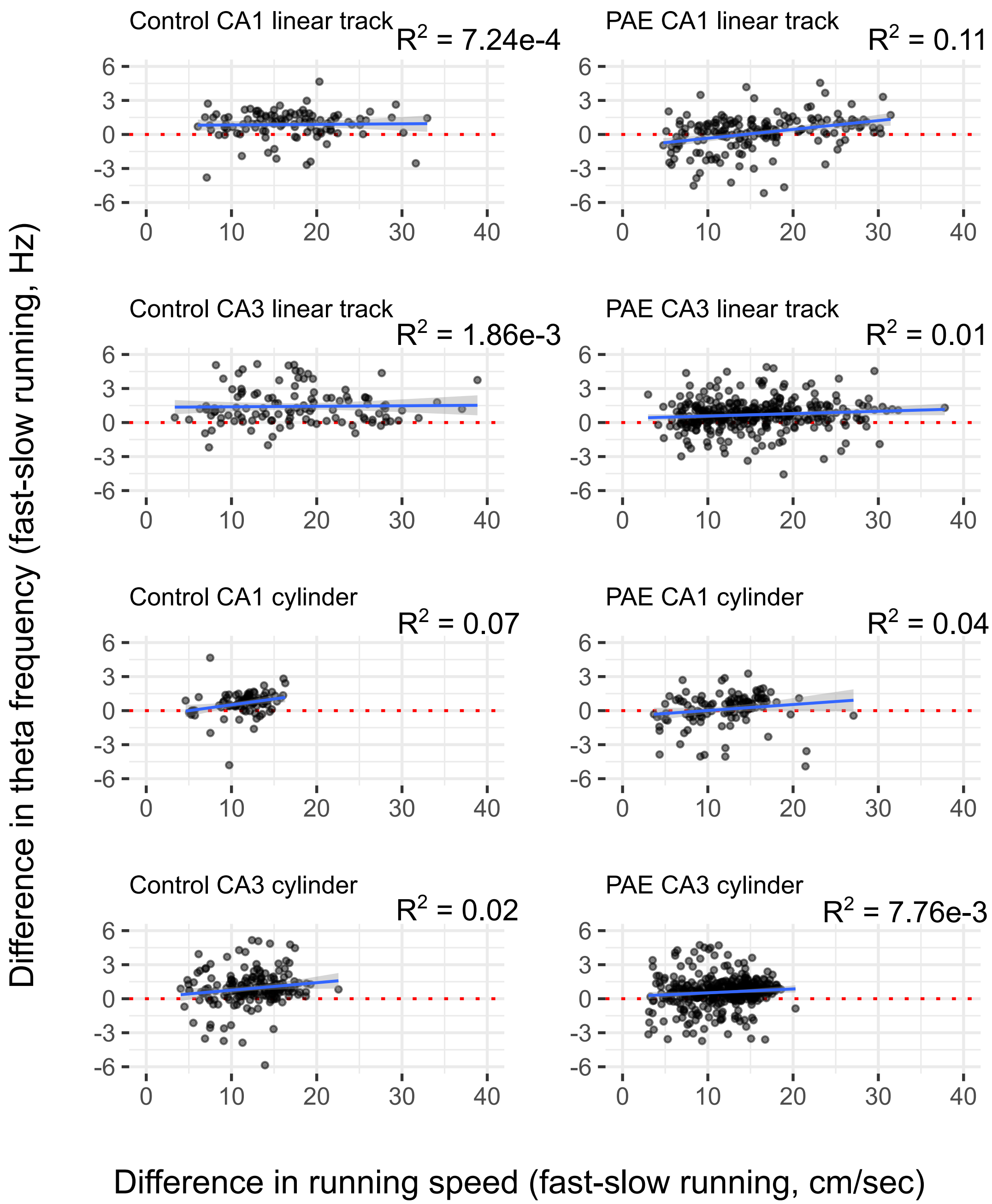

Figure S4: Association between intrinsic theta frequency and running speed. Related to Figure 6. Scatter plots show the relationship between the change in theta frequency (Hz) as a function of the magnitude difference between mean fast and slow running speed (cm/s). R-squared (R^2) for individual regression analyses are included in each subplot. Note that the change in running speed is a poor predictor of the change in frequency across all groups/conditions (R-squared values are ≤ 0.11). Values that fall along the red dashed line indicate no change in theta frequency. Line of best fit and corresponding confidence bounds for each regression are plotted in blue.

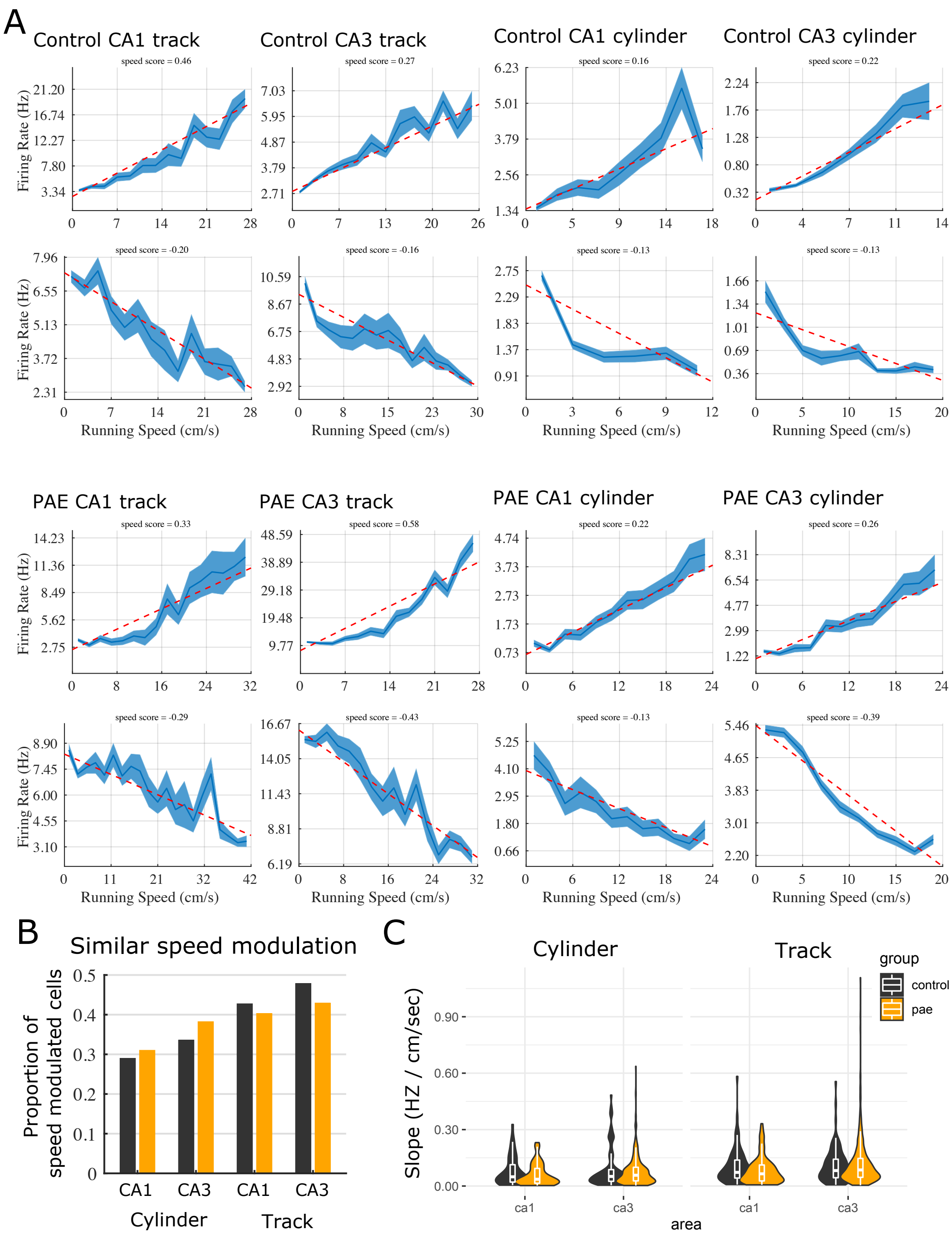

Figure S5: Speed modulation of HPC place cells are similar between groups. Related to Figure 6. (A) shows individual examples of positive and negative speed-modulated cells from both groups, HPC subregions, and spatial environments. The dashed red line indicates the linear function fit through the data. The solid blue line indicates the mean response, with blue shading denoting ± standard error of the mean. Each cell's "speed score" or speed firing rate correlation (r) is indicated above each plot. (B) The proportion of cells that are speed modulated is similar between groups (ps ≥ 0.18, WRS). (C) Slopes (Hz/cm/sec) are similar between groups (ps ≥ 0.098, WRS). Slopes here are represented in absolute value.

	Saccharin Control (n = 9)	5% Ethanol Group (n = 8)
Daily four-hour 5% ethanol consumption	NA	1.96 ± 0.14 g/kg/d
Maternal weight gain during pregnancy	105 ± 7 g	120 ± 7 g
Litter size	10 ± 0.8 live births	11.9 ± 0.8 live births
Pup birth weight	7.79 ± 0.38 g	7.84 ± 0.56 g

Table S1: Impact of 5% ethanol consumption on maternal weight gain, litter size, and pup birth weight. Related to STAR Methods. All values are represented as mean ± standard error of the mean.

Dependent Variable	n	Parameter estimate	Test	Test statistic	P-value	Effect measure	Effect size
Number of laps	C: 64, P: 111	C: 41, P: 40	Wilcoxon rank sum test	4182	0.05036	r	0.147
Linear track velocity	C: 64, P: 111	C: 9.35, P: 9.64	Wilcoxon rank sum test	3292	0.4214	r	0.060
Cylinder velocity	C: 57, P: 100	C: 8.35, P: 8.16	Wilcoxon rank sum test	3041	0.4868	r	0.055
Spatial Information Content linear track CA1	C: 220, P: 421	C: 0.51, P: 0.51	Wilcoxon rank sum test	48178	0.4015	r	0.033
Spatial Information Content linear track CA3	C: 215, P: 1049	C: 0.64, P: 0.40	Wilcoxon rank sum test	147395	1.234e-12	r	0.199
Spatial Information Content cylinder CA1	C: 162, P: 306	C: 0.72, P: 0.72	Wilcoxon rank sum test	24899	0.9356	r	0.003
Spatial Information Content cylinder CA3	C: 247, P: 839	C: 1.29, P: 0.61	Wilcoxon rank sum test	145298	<2.2e-16	r	0.291
Sparsity linear track CA1	C: 220, P: 421	C: 0.54, P: 0.55	Wilcoxon rank sum test	45640	0.7636	r	0.011
Sparsity linear track CA3	C: 215, P: 1049	C: 0.47, P: 0.60	Wilcoxon rank sum test	79562	9.765e-12	r	0.191
Sparsity cylinder CA1	C: 162, P: 306	C: 0.31, P: 0.33	Wilcoxon rank sum test	24907	0.931	r	0.004
Sparsity cylinder CA3	C: 247, P: 839	C: 0.20, P: 0.35	Wilcoxon rank sum test	64267	<2.2e-16	r	0.275
Peak firing rate linear track CA1	C: 220, P: 421	C: 7.62, P: 6.19	Wilcoxon rank sum test	51947	0.01134	r	0.100
Peak firing rate linear track CA3	C: 215, P: 1049	C: 11.38, P: 8.17	Wilcoxon rank sum test	137478	4.026e-07	r	0.142
Peak firing rate cylinder CA1	C: 162, P: 306	C: 6.83, P: 5.48	Wilcoxon rank sum test	28043	0.01931	r	0.108
Peak firing rate cylinder CA3	C: 247, P: 839	C: 9.44, P: 7.39	Wilcoxon rank sum test	120978	6.149e-05	r	0.121
Coherence linear track CA1	C: 220, P: 421	C: 2.51, P: 2.42	Wilcoxon rank sum test	50907	0.03893	r	0.081
Coherence linear track CA3	C: 215, P: 1049	C: 2.70, P: 2.42	Wilcoxon rank sum test	145828	1.2e-11	r	0.190
Coherence cylinder CA1	C: 162, P: 306	C: 2.19, P: 2.02	Wilcoxon rank sum test	29192	0.001551	r	0.146
Coherence cylinder CA3	C: 247, P: 839	C: 2.24, P: 2.07	Wilcoxon rank sum test	126441	1.38e-07	r	0.159
Stability linear track CA1	C: 220, P: 421	C: 0.79, P: 0.69	Wilcoxon rank sum test	56229	8.362e-06	r	0.175
Stability linear track CA3	C: 215, P: 1049	C: 0.83, P: 0.77	Wilcoxon rank sum test	132852	3.806e-05	r	0.115
Stability cylinder CA1	C: 162, P: 306	C: 0.43, P: 0.24	Wilcoxon rank sum test	30629	2.699e-05	r	0.194
Stability cylinder CA3	C: 247, P: 839	C: 0.52, P: 0.36	Wilcoxon rank sum test	129414	2.615e-09	r	0.180
Spatial correlation linear track CA1	C: 220, P: 421	C: 0.16, P: 0.35	Wilcoxon rank sum test	20555	0.0001676	r	0.171
Spatial correlation linear track CA3	C: 215, P: 1049	C: 0.21, P: 0.19	Wilcoxon rank sum test	67057	0.8464	r	0.006
Directionality index linear track CA1	C: 220, P: 421	C: 0.30, P: 0.24	Wilcoxon rank sum test	28819	0.06507	r	0.084
Directionality index linear track CA3	C: 215, P: 1049	C: 0.32, P: 0.19	Wilcoxon rank sum test	81396	1.495e-05	r	0.138
Mean angle of Rotation cylinder CA1	C: 96, P: 148	C: 44.80, P: 82.84	Watson Williams	6.466	0.0117	na	na
Mean angle of rotation cylinder CA3	C: 108, P: 398	C: 246.40, P: 73.20	Watson Williams	82.087	<2.2e-16	na	na
Distribution of angles CA3 control	108	na	Rayleigh test of nonuniformity	24.380	9.4667e-12	na	na
Distribution of angles CA1 PAE	148	na	Rayleigh test of nonuniformity	3.012	0.0488	na	na
Distribution of angles CA3 PAE	398	na	Rayleigh test of nonuniformity	31.677	9.4583e-15	na	na
Distribution of angles around 90 CA1 control	96	na	V test of nonuniformity	11.719	0.0230	na	na
Distribution of angles around 90 CA3 control	108	na	V test of nonuniformity	59.602	2.1244e-12	na	na
Distribution of angles around 90 CA1 PAE	148	na	V test of nonuniformity	-16.531	0.9878	na	na
Distribution of angles around 90 CA3 PAE	398	na	V test of nonuniformity	107.529	1.2434e-14	na	na
Normalized delta firing rate CA1	C: 96, P: 148	C: 0.27, P: 0.18	Wilcoxon rank sum test	29859	1.939e-05	r	0.199
Normalized delta firing rate CA3	C: 108, P: 398	C: 0.43, P: 0.18	Wilcoxon rank sum test	142264	<2.2e-16	r	0.275
Delta spatial information content CA1	C: 96, P: 148	C: 0.08, P: 0.04	Wilcoxon rank sum test	7512	0.2792	r	0.068
Delta spatial information content CA3	C: 108, P: 398	C: -0.07, P: 0.02	Wilcoxon rank sum test	26962	0.003245	r	0.120
Delta sparsity CA1	C: 96, P: 148	C: -0.02, P: -0.00	Wilcoxon rank sum test	6532	0.4595	r	0.046
Delta sparsity CA3	C: 108, P: 398	C: 0.02, P: -0.00	Wilcoxon rank sum test	36150	0.02879	r	0.089
Proportion of sig. theta cylinder ca1	C: 162, P: 306	C: 0.89, P: 0.74	Chi-squared	13.928	1.8988e-04	V	0.020
Proportion of sig. theta cylinder ca3	C: 247, P: 839	C: 0.95, P: 0.84	Chi-squared	32.012	1.5319e-08	V	0.018
Proportion of sig. theta linear track ca1	C: 220, P: 421	C: 0.84, P: 0.85	Chi-squared	0.8192	0.3654	V	0.001
Proportion of sig. theta linear track ca3	C: 215, P: 1049	C: 0.94, P: 0.85	Chi-squared	15.554	8.0171e-05	V	0.009
Theta frequency cylinder ca1	C: 162, P: 306	C: 8.42, P: 7.81	Wilcoxon rank sum test	14755	7.215e-10	r	0.360
Theta frequency cylinder ca3	C: 247, P: 839	C: 8.47, P: 8.12	Wilcoxon rank sum test	75874	4.921e-10	r	0.226
Theta frequency linear track ca1	C: 220, P: 421	C: 8.44, P: 7.65	Wilcoxon rank sum test	21929	5.534e-13	r	0.378
Theta frequency linear track ca3	C: 215, P: 1049	C: 8.41, P: 7.99	Wilcoxon rank sum test	51565	1.983e-05	r	0.158
Frequency difference cylinder ca1	C: 89, P: 117	C: 0.80, P: 0.51	Wilcoxon rank sum test	6382	0.005565	r	0.193
Frequency difference cylinder ca3	C: 179, P: 408	C: 0.78, P: 0.64	Wilcoxon rank sum test	42457	0.001688	r	0.129
Frequency difference linear track ca1	C: 106, P: 173	C: 1.02, P: 0.29	Wilcoxon rank sum test	12510	3.277e-07	r	0.305
Frequency difference linear track ca3	C: 115, P: 345	C: 1.19, P: 0.69	Wilcoxon rank sum test	24804	5.76e-05	r	0.187
Proportion speed modulated frequency cylinder ca1	C: 125, P: 170	C: 0.47 ,P: 0.34	Chi-squared	5.151	0.0232	V	0.012
Proportion speed modulated frequency cylinder ca3	C: 219, P: 552	C: 0.52, P: 0.43	Chi-squared	5.251	0.0219	V	0.004
Proportion speed modulated frequency track ca1	C: 129, P: 243	C: 0.52, P: 0.35	Chi-squared	10.422	0.0012	V	0.019
Proportion speed modulated frequency track ca3	C: 145, P: 580	C: 0.43, P: 0.40	Chi-squared	0.462	0.4967	V	4.52e-04
Proportion of sig. phase precession cylinder ca1	C: 162, P: 306	C: 0.25, P: 0.17	Chi-squared	2.489	0.1146	V	0.072
Proportion of sig. phase precession cylinder ca3	C: 247, P: 839	C: 0.37, P: 0.27	Chi-squared	14.183	0.0001658	V	0.096
Proportion of sig. phase precession linear track ca1	C: 220, P: 421	C: 0.28, P: 0.21	Chi-squared	2.49	0.1146	V	0.06
Proportion of sig. phase precession linear track ca3	C: 215, P: 1049	C: 0.49, P: 0.37	Chi-squared	4.706	0.03005	V	0.06
Circular-linear correlation cylinder ca1	C: 162, P: 306	C: -0.01, P: -0.01	Wilcoxon rank sum test	25599	0.5594	r	0.026
Circular-linear correlation cylinder ca3	C: 247, P: 839	C: -0.04, P: -0.02	Wilcoxon rank sum test	95289	0.05462	r	0.058
Circular-linear correlation linear track ca1	C: 220, P: 421	C: 0.01, P: 0.01	Wilcoxon rank sum test	46199	0.9604	r	0.001
Circular-linear correlation linear track ca3	C: 215, P: 1049	C: 0.01, P: 0.00	Wilcoxon rank sum test	116127	0.4909	r	0.019

Table S2: Table showing each statistical test conducted from the main texts. Related to STAR Methods. n = sample sizes, c = control, p = PAE