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Neural dynamics underlying associative learning in the dorsal and ventral hippocampus

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Figure	Variable	Unit of Comparison	n	Test	Results
	odor1/odor2 decoding accuracy vCA1	10 decoding iterations for each	n-matched pseudopopulation of 454	two-sided Mann-	colored-coded bar
Fig. 1g	vs dCA1	region	cells from 11 vCA1 and 5 dCA1 mice	Whitney U	above graph shows time bins where p < 0.01
Fig. 1i	decoding accuracy vs chance	10 decoding iterations for each region	pseudopopulation (see methods) of 454 cells (n-matched in vCA1 and dCA1) from 11 vCA1 and 5 dCA1 mice	two-sided Wilcoxon	color-coded bars above graph show time bins where $p < 0.01$
Fig. 2D	mean lick rate (Hz)	Trial type (Early session)	16 mice (11 vCA1 and 5 dCA1 mice)	two-sided Mann-	U =75.5, p =0.13, effect- size (r) = 0.28
Fig. 2D	mean lick rate (Hz)	Trial type (Late session)	16 mice (11 vCA1 and 5 dCA1 mice)	two-sided Mann- Whitney U	U = 0, p < 0.0001, effect-size (r) = 0.85
Fig. 2h	vCA1 vs dCA1 CS+/CS- decoding accuracies during odor period (Pre session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 4 dCA1 mice	two-sided Mann- Whitney U	U = 0, p = 0.00018, effect-size (r) = 0.85
Fig. 2h	vCA1 vs dCA1 CS+/CS- decoding accuracies during odor period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided Mann- Whitney U	U = 44, p = 0.68, effect- size (r) = 0.10
Fig. 2h	vCA1 vs dCA1 CS+/CS- decoding accuracies during trace period (Pre session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 4 dCA1 mice	two-sided Mann- Whitney U	U = 25, p = 0.064, effect-size (r) = 0.42
Fig. 2h	vCA1 vs dCA1 CS+/CS- decoding accuracies during trace period (Late	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided Mann- Whitney U	U = 32, p = 0.18, effect- size (r) = 0.30
Fig. 2i	CS+/baseline vs CS-/baseline decoding accuracies, vCA1 or dCA1	10 decoding iterations for each trial type	n-matched pseudopopulation of 454 cells from 11 vCA1 or 5 dCA1 mice	two-sided Mann- Whitney U	color-coded bars above graph show time bins where p < 0.01
Fig. 2j	vCA1 vs dCA1 CS+/baseline decoding accuracies during odor period (Pre session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 4 dCA1 mice	two-sided Mann- Whitney U	U =0, p = 0.00017, effect-size (r) = 0.85
Fig. 2j	vCA1 vs dCA1 CS+/baseline decoding accuracies during odor period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided Mann- Whitney U	U =69.5, p = 0.15, effect-size (r) = 0.33
Fig. 2j	vCA1 vs dCA1 CS+/baseline decoding accuracies during trace period (Pre session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 4 dCA1 mice	two-sided Mann- Whitney U	U =25.5, p = 0.069, effect-size (r) = 0.41
Fig. 2j	vCA1 vs dCA1 CS+/baseline decoding accuracies during trace period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided Mann- Whitney U	U =56, p = 0.68, effect- size (r) = 0.10
Fig. 2k	odor period vs trace period decoding accuracy vs chance	10 decoding iterations	pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Wilcoxon	W = 0, p = 0.005, effect- size (r) = 0.85
Fig. 2k	odor period vs trace period decoding accuracy vs chance	10 decoding iterations	pseudopopulation of 454 cells from 5 dCA1 mice	two-sided Wilcoxon	W = 0, p = 0.005, effect- size (r) = 0.85
Fig. 3e	Early vs Late CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect- size (r) = 0.85
F: 0	Early vs Ext CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 83.5, p = 0.038, effect-size (r) = 0.57
Fig. 3e	Early vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni	U =13.5 , p = 0.019, effect-size (r) = 0.62
Fig. 3e				correction for n=3	
Eize Or	Late vs Ext CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 3e	Late vs Reacq CS+/CS- decoding	10 decoding iterations for each	n-matched pseudopopulation of 454	two-sided Mann-	U = 99, p < 0.001,
Fig. 3e	accuracies during odor period (VCAT)		cells from TT VCAT mice	Bonferroni correction for n=3	effect-size(f) = 0.83
Fig. 3e	Ext vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=3	U = 2.5, p = 0.001, effect-size (r) = 0.80
Fig. 3e	Early vs Late CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 42, p = 1, effect-size (r) = 0.14
Fig. 6	Early vs Ext CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 70.5, p = 0.39, effect-size (r) = 0.35
rig. 3e				correction for n=3	
Fig. 3e	Early vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=3	U = 62.5, p = 1, effect- size (r) = 0.21

Figure	Variable	Unit of Comparison	n	Test	Results
	Late vs Ext CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 79.5, p = 0.1, effect- size (r) = 0.13
Fig. 3e	Late vs Reacq CS+/CS- decoding	10 decoding iterations for each	n-matched pseudopopulation of 454	correction for n=3 two-sided Mann-	U = 74, p = 0.22, effect-
Fig. 3e	accuracies during odor period (dCA1)		cells from 4 dCA1 mice	Whitney U, Bonferroni correction for n=3	size (r) = 0.41
Fig. 2e	Ext vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 42, p = 1, effect-size (r) = 0.13
Fig. 3e	Early vs Late CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 0a	Early vs Ext CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 58.5, p = 1, effect- size (r) = 0.14
Fig. 3e	Early vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 3e	Late vs Ext CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 3e	Late vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	correction for n=3 two-sided Mann- Whitney U, Bonferroni	U = 46.5, p = 1., effect- size (r) = 0.14
Fig. 3e	Ext vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	correction for n=3 two-sided Mann- Whitney U, Bonferroni	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 3e			n matched an and an an electron of AEA	correction for n=3	
Fig. 3e	Early vs Late CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size size (r) = 0.85
Fig. 3e	Early vs Ext CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=3	U = 26, p = 0.23, effect- size (r) = 0.41
Fig. 3e	Early vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 3e	Late vs Ext CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 3e	Late vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 80.5, p = 0.07, effect-size (r) = 0.52
Fig. 0c	Ext vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 3e	Across-session Early/Late vs Late/Reacq CS+/CS- decoding	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 mice	two-sided Mann- Whitney U	U = 10, p = 0.003, effect-size (r) = 0.68
Fig. 4c	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 4 dCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 4c	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 4c	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 4 dCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 4d	Early/Late vs Late/Reacq, odor period, CS- trials (vCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 78, p = 0.038, effect-size (r) = 0.47
1 19. 10	Early/Late vs Late/Reacq, odor period, CS+ trials (vCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 100, p = 0.0002, effect-size (r) = 0.85
Fig. 4d				correction for n=2	

Figure	Variable	Unit of Comparison	n	Test	Results
	Early/Late vs Late/Reacq, odor period, CS- trials (dCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 37, p = 0.35, effect- size (r) = 0.22
Fig. 4d	Early/Late vs Late/Reacq, odor period, CS+ trials (dCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 46, p = 0.79, effect- size (r) = 0.07
Fig. 40	Early/Late vs Late/Reacq, trace period, CS- trials (vCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 58, p = 0.57, effect- size (r) = 0.14
Fig. 4e	Early/Late vs Late/Reacq, trace period, CS+ trials (vCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 81, p = 0.021, effect-size (r) = 0.52
Fig. 4e	Early/Late vs Late/Reacq, traceperiod, CS- trials (dCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 56, p = 0.68, effect- size (r) = 0.1
Fig. 4o	Early/Late vs Late/Reacq, trace period, CS+ trials (dCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 97, p = < 0.001, effect-size (r) = 0.79
Fig. 5b	mean lick rate (Hz)	Trial type (CS1+ vs CS2+; Late session)	13 mice (8 vCA1 and 5 dCA1 mice)	two-sided Mann- Whitney U	U = 96, p = 0.61, effect- size (r) = 0.12
Fig. 5b	mean lick rate (Hz)	Trial type (CS3- vs CS4-; Late session)	13 mice (8 vCA1 and 5 dCA1 mice)	two-sided Mann- Whitney U	U = 79.5, p = 0.81, effect-size (r) = 0.05
Fig. 5b	mean lick rate (Hz)	Trial type (CS+ vs CS-; Late session)	13 mice (8 vCA1 and 5 dCA1 mice)	two-sided Mann- Whitney U	U = 676, p < 0.001, effect-size (r) = 5.96
Fig. 5c	trial type decoding accuracy, Pre session	10 decoding iterations each	n-matched pseudopopulation of 150 cells from 8 vCA1 mice	two-sided One-way ANOVA	
				region	F = 35.2, p < 0.001, effect size (ETA ²) = .31
				odor	F = 1.21, p = 0.31, effect size (ETA^2) = .03
	Trial type deceding accuracy. Dre ve	10 deceding iterations for each	n matched peoudepopulation of 150		F = 1.4, p = 0.25, effect size (ETA ²) = .04
Fig. 5d	Late, odor period (vCA1)	session	cells from 8 vCA1 mice	Whitney U	0 = 19.5, p = 0.023, effect-size (r) = 0.52
Fig. 5d	Trial type decoding accuracy, Pre vs Late, odor period (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 150 cells from 5 dCA1 mice	two-sided Mann- Whitney U	U = 37.5, p = 0.36, effect-size (r) = 0.21
Fig. 5e	trial type decoding accuracy, Late session	10 decoding iterations each	n-matched pseudopopulation of 150 cells from 8 vCA1 mice	two-sided One-way ANOVA	
				region	F = 36.5, p < 0.001, effect size (ETA^2) = .34
				odor	F = 1.17, p = 0.33, effect size (ETA ²) = .03
				region*odor	F = 1.15, p = 0.22, effect size (ETA^2) = .04
Fig. 5f	CS+ vs CS- decoding accuracy, Pre vs Late, odor period (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 150 cells from 8 vCA1 mice	two-sided Mann- Whitney U	U = 1.0, p < 0.001, effect-size (r) = 0.83
Fig. 5f	CS+ vs CS- decoding accuracy, Pre vs Late, odor period (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 150 cells from 5 dCA1 mice	two-sided Mann- Whitney U	U = , p < 0.001, effect- size (r) = 0.85
Fig. 5h	outcome decoding, Pre vs Late, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 150 cells from 8 vCA1 mice	two-sided Mann- Whitney U	U = 11.5, p = 0.004, effect-size (r) = 0.65
Fig. 5h	outcome decoding, Pre vs Late, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 150 cells from 5 dCA1 mice	two-sided Mann- Whitney U	U = 48, p = 0.91, effect- size (r) = 0.03
Fig. 5h	outcome decoding, Pre vs Late, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 150 cells from 8 vCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 5h	outcome decoding, Pre vs Late, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 150 cells from 5 dCA1 mice	two-sided Mann- Whitney U	U = 9.5, p = 0.002, effect-size (r) = 0.68
	CS+/CS- vs CS1+/CS2+, odor period, Pre session (vCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni	U = 91, p = 0.004, effect-size (r) = 0.69
Fig. 5j	CS+/CS- vs CS3-/CS4-, odor period, Pre session (vCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni correction for n=2	U = 27, p = 0.18, effect- size (r) = 0.39
Fig. 5i	CS1+/CS2+ vs CS3-/CS4-, odor period, Pre session (vCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni correction for n=2	U = 11, p = 0.007, effect-size (r) = 0.66
Fig. 5i	CS+/CS- vs CS1+/CS2+, odor period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	two-sided Mann- Whitney U, bonferroni correction for n=2	U = 93, p = 0.002, effect-size (r) = 0.72

Figure	Variable	Unit of Comparison	n	Test	Results
	CS+/CS_ vs CS3-/CS4_ odor period	Euclidean distance between		two-sided Mann-	11 = 100 p < 0.001
	Late session (vCA1)	MDS values		Whitney U,	effect-size (r) = 0.85
Fig. 5j				correction for n=2	
	CS1+/CS2+ vs CS3-/CS4-, odor	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 100, p < 0.001,
	period, Late session (vCA1)	MDS values		Whitney U,	effect-size (r) = 0.85
				bonferroni	
Fig. 5j				correction for n=2	
	Pre session (dCA1)	MDS values	10 MDS runs	Whitney II	U = 98, p < 0.001, effect-size (r) = 0.81
				bonferroni	
Fig. 5j				correction for n=2	
	CS+/CS- vs CS3-/CS4-, odor period,	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 100, p < 0.001,
	Pre session (dCA1)	MDS values		bonferroni	effect-size(r) = 0.85
Fig. 5j				correction for n=2	
	CS1+/CS2+ vs CS3-/CS4-, odor	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 74, p = 0.15, effect-
	period, Pre session (dCA1)	MDS values		Whitney U,	size (r) = 0.41
Fig. 5i				correction for n=2	
	CS+/CS- vs CS1+/CS2+, odor period.	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 50, p = 1.0, effect-
	Late session (dCA1)	MDS values		Whitney U,	size (r) = 0.0
Fig. Fi				bonferroni	
Fig. 5j		Euglidean distance between		two olded Monn	11 = 25 $p = 0.12$ offset
	Late session (dCA1)	MDS values		Whitney U.	0 = 25, p = 0.13, effect-size (r) = 0.42
				bonferroni	
Fig. 5j				correction for n=2	
	CS1+/CS2+ vs CS3-/CS4-, odor	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 26, p = 0.15, effect-
				bonferroni	SIZE (I) = 0.4 I
Fig. 5j				correction for n=2	
	CS+/CS- vs CS1+/CS2+, trace period,	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 58, p = 1.0, effect-
	Pre session (VCA1)	MDS values		vvnitney U, bonferroni	size (r) = 0.13
Fig. 5j				correction for n=2	
	CS+/CS- vs CS3-/CS4-, trace period,	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 43, p = 1.0, effect-
	Pre session (vCA1)	MDS values		Whitney U,	size (r) = 0.12
Fia. 5i				correction for n=2	
	CS1+/CS2+ vs CS3-/CS4-, trace	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 41, p = 0.94, effect-
	period, Pre session (vCA1)	MDS values		Whitney U,	size (r) = 0.15
Fig. 5i				bonferroni	
rig. oj	CS+/CS- vs CS1+/CS2+ trace period	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 100 p < 0.001
	Late session (vCA1)	MDS values		Whitney U,	effect-size (r) = 0.85
Fig. Fi				bonferroni	
Fig. 5j	CSUCS va CS2/CS4 trace period	Euglidean distance between		two olded Monn	11 = 100 p < 0.001
	Late session (vCA1)	MDS values		Whitney U,	effect-size (r) = 0.85
				bonferroni	
Fig. 5j				correction for n=2	
	CS1+/CS2+ vs CS3-/CS4-, trace	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 34, p = 0.48, effect- size (r) = 0.27
				bonferroni	0.20 (1) 0.21
Fig. 5j				correction for n=2	
	CS+/CS- vs CS1+/CS2+, trace period,	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 41, p = 1.0, effect-
				bonferroni	5126 (1) = 0.15
Fig. 5j				correction for n=2	
	CS+/CS- vs CS3-/CS4-, trace period,	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 22, p = 0.08, effect-
	Pre session (dCA1)	INDS Values		vvnitney U, bonferroni	size (r) = 0.47
Fig. 5j				correction for n=2	
	CS1+/CS2+ vs CS3-/CS4-, trace	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 27, p = 0.18, effect-
	period, Pre session (dCA1)	MDS values		Whitney U,	size (r) = 0.39
Fig. 5j				correction for n=2	
	CS+/CS- vs CS1+/CS2+, trace period,	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 100, p < 0.001,
	Late session (dCA1)	MDS values		Whitney U,	effect-size (r) = 0.85
Fig. 5i				ponterroni	
· ·g. vj	CS+/CS- vs CS3-/CS4- trace period	Euclidean distance between	10 MDS runs	two-sided Mann-	U = 100, p < 0.001
	Late session (dCA1)	MDS values		Whitney U,	effect-size (r) = 0.85
Fig. 5:				bonferroni	
riy. oj	CS1+/CS2+ VC CS2 /CS4 +racc	Fuelidean distance between	10 MDS rups	two-sided Mean	= 21 p = 0.06 off off
	period, Late session (dCA1)	MDS values		Whitney U,	size (r) = 0.49
-				bonferroni	
Fig. 5j				correction for n=2	

Figure	Variable	Unit of Comparison	n	Test	Results
guite		Trial type (Rew vs Shock: Early	13 mice (10 γ CA1 and 3 dCA1 mice)	two-sided Mann-	11 = 133 n = 0.028
Fig. 6b		session)		Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.49
	mean lick rate (Hz)	Trial type (Rew vs CS-; Early	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	U = 13, p < 0.001,
Fig. 6b		session)		Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.71
	mean lick rate (Hz)	Trial type (Shock vs CS-: Early	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	U = 12.5. p <0.001.
Fig. 6b	()	session)		Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.72
	mean lick rate (Hz)	Trial type (Rew vs Shock; Late	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	U = 256, p = < 0.001,
Fig. 6b		session)		Whitney U, Bonferroni correction for n=2	effect-size (r) = 1.7
	mean lick rate (Hz)	Trial type (Rew vs CS-; Late	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	U = 0, p < 0.001, effect-
Fig. 6b		session)		Whitney U, Bonferroni correction for n=2	size (r) = 0.85
	mean lick rate (Hz)	Trial type (Shock vs CS-; Late	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	U = 0, p = 1, effect-size
Fig. 6b		session)		Whitney U, Bonferroni correction for n=2	(r) = 0.56
	CS+Rew Decoding Accuracy, Early vs	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Fisher's	p < 0.001, effect-size
	CS+Shock Decoding Accuracy, Early	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Fisher's	p < 0.001, effect-size
Fig. 6c	vs Late, odor period (vCA1)	10 deceding iterations for each	cells from 10 vCA1 mice	Exact	(odds ratio) = 0.24
Fig. 6c	odor period (vCA1)		cells from 10 vCA1 mice	Exact	(odds ratio) = 0.72
Fig. 6c	CS+Rew Decoding Accuracy, Early vs Late,trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	two-sided Fisher's Exact	p < 0.001, effect-size (odds ratio) = 0.26
Fig. 6c	CS+Shock Decoding Accuracy, Early vs Late, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	two-sided Fisher's Exact	p < 0.001, effect-size (odds ratio) = 0.40
Fig. 6c	CS- Decoding Accuracy, Early vs Late, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	two-sided Fisher's Exact	p = 0.24, effect-size (odds ratio) = 0.76
Fig. 6c	CS+Rew Decoding Accuracy, Early vs Late,odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Fisher's Exact	p = 0.003, effect-size (odds ratio) = 0.18
Fig. 6c	CS+Shock Decoding Accuracy, Early vs Late, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Fisher's Exact	p = 0.32, effect-size (odds ratio) = 0.63
Fig. 6c	CS- Decoding Accuracy, Early vs Late, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Fisher's Exact	p = 0.73, effect-size (odds ratio) = 0.88
Fig. 6c	CS+Rew Decoding Accuracy, Early vs Late,trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Fisher's Exact	p < 0.001, effect-size (odds ratio) = 0.17
Fig. 6c	CS+Shock Decoding Accuracy, Early vs Late, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Fisher's Exact	p = 0.003, effect-size (odds ratio) = 0.48
Fig. 6c	CS- Decoding Accuracy, Early vs Late, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Fisher's	p = 0.003, effect-size (odds ratio) = 0.52
1.9.00	mean lick rate (Hz)	Trial type (Rew vs Shock; Early	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	U = 82, p = 1, effect-size
Fig. 6e		Reversal session)		Whitney U, Bonferroni correction for n=2	(r) = 0.02
	mean lick rate (Hz)	Trial type (Rew vs CS-; Early	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	U = 21.5, p = 0.003,
- 0		Reversal session)		Whitney U, Bonferroni	effect-size (r) = 0.62
Fig. 6e	maan liek rate (Hz)	Trial type (Sheek ve CS - Early	12 miss (10 yCA1 and 2 dCA1 miss)	correction for n=2	11 = 10 p <0.001 offect
Fig. 6e		Reversal session)	TS MICE (10 VCAT and 3 dCAT MICE)	Whitney U, Bonferroni	size (r) = 0.74
Fig. be	mean lick rate (Hz)	Trial type (Rew vs Shock: Late	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	11 = 255 $p = < 0.001$
Fig. 6e		Reversal session)		Whitney U, Bonferroni correction for n=2	effect-size (r) = 1.7
	mean lick rate (Hz)	Trial type (Rew vs CS-; Late	13 mice (10 vCA1 and 3 dCA1 mice)	two-sided Mann-	U = 3, p < 0.001, effect-
Fig. 60		Reversal session)		Whitney U, Bonferroni	size (r) = 0.81
riy. be	mean lick rate (Hz)	Trial type (Shock vs CS-: Lato	13 mice $(10 \text{ yCA1} \text{ and } 3 \text{ dCA1} \text{ mice})$	two-sided Mann-	= 110 n = 1 effect-
Fig. 6e		Reversal session)		Whitney U, Bonferroni	size (r) = 0.26
riy. be	CS+Rew/baseline vs	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mapp	= 100 p < 0.001
Fig. 6f	CS-Rewideselline vs CS-Shock/baseline decoding accuracies, Late Reversal, odor period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni	effect-size (r) = 0.85
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Figure	Variable	Unit of Comparison	n	Test	Results
gui e		10 deceding iterations for each	n motobod population of 444	two olded Menn	11 = 100 p < 0.001
Fig. 6f	decoding accuracies, Late Reversal, odor period (vCA1)	To decoding iterations for each	cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.85
-	CS+Shock/baseline vs CS-/baseline	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 97. p < 0.001.
Fig. 6f	decoding accuracies, Late Reversal, odor period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.79
	CS+Rew/baseline vs	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 17.5. p = 0.03.
Fig. 6f	CS+Shock/baseline decoding accuracies, Late Reversal, odor period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.55
	CS+Rew/baseline vs CS-/baseline	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 27.5, p = 0.19,
Fig. 6f	decoding accuracies, Late Reversal, odor period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.38
	CS+Shock/baseline vs CS-/baseline	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 55.5, p = 1, effect-
Fig. 6f	decoding accuracies, Late Reversal, odor period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni correction for n=2	size (r) = 0.09
	CS+Rew/baseline vs	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 100 p < 0.001
Fig. 6f	CS+Shock/baseline decoding accuracies, Late Reversal, trace period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.85
	CS+Rew/baseline vs CS-/baseline	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 100, p < 0.001,
Fig. 6f	decoding accuracies, Late Reversal, trace period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.85
	CS+Shock/baseline vs CS-/baseline	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 22.5, p = 0.08,
Fig. 6f	decoding accuracies, Late Reversal, trace period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.46
	CS+Rew/baseline vs	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	II = 100 n < 0.001
Fig. 6f	CS+Shock/baseline decoding accuracies, Late Reversal, trace period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.85
	CS+Rew/baseline vs CS-/baseline	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 100. p < 0.001.
Fig. 6f	decoding accuracies, Late Reversal, trace period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.85
	CS+Shock/baseline vs CS-/baseline	10 decoding iterations for each	n-matched pseudopopulation of 444	two-sided Mann-	U = 23.5 p = 0.095
Fig. 6f	decoding accuracies, Late Reversal, trace period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni	effect-size (r) = 0.45
1 19. 01	Odor A/basolino vs. odor B/basolino	10 deceding iterations for each	n matched pseudopopulation of 281	two sided Mann	11 = 425 n = 1 offort
Fig. 6g	decoding accuracies across reversal training, odor period (vCA1)	To decoding iterations for each	cells from 10 vCA1 mice	Whitney U, Bonferroni	size (r) = 0.13
1 ig. og	Odor A /basolina va odor C /basolina	10 deceding iterations for each	n matched population of 291	two olded Monn	= 0 n < 0.001 offset
Fig. 6g	decoding accuracies across reversal training, odor period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	size (r) = 0.85
5 - 5	Odor B/baseline vs odor C/baseline	10 decoding iterations for each	n-matched pseudopopulation of 281	two-sided Mann-	U = 0 p < 0.001 effect-
Fig. 6g	decoding accuracies across reversal training, odor period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni	size (r) = 0.85
9. 09	Odor A/baselino va odor P/baselina	10 decoding iterations for each	n-matched resultance ulation of 201	two-sided Menn	11 = 36 p = 0.61 offect
Fig. 6g	decoding accuracies across reversal training, odor period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni correction for n=2	size (r) = 0.24
9. 99	Odor A/baseline vs odor C/baseline	10 decoding iterations for each	n-matched pseudopopulation of 291	two-sided Mann	II = 39.5 n = 9 offect
Fig. 6g	decoding accuracies across reversal training, odor period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni correction for n=2	size (r) = 0.18
	Odor B/baseline vs odor C/baseline	10 decoding iterations for each	n-matched pseudopopulation of 281	two-sided Mann-	U = 28, p = 21 effect-
Fig. 6g	decoding accuracies across reversal training, odor period (dCA1)		cells from 3 dCA1 mice	Whitney U, Bonferroni correction for n=2	size (r) = 0.37
-3. 33	CS+Rew/baseline vs	10 decoding iterations for each	n-matched pseudopopulation of 281	two-sided Mann-	= 100 n < 0.001
Fig. 6h	CS+Shock/baseline vs accuracies across reversal training, trace period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	effect-size (r) = 0.85
1.19.011		10 decoding iterations for each	n-matched pseudopopulation of 291	two-sided Mann	= 0 n < 0.001 offect
Fig. 6h	decoding accuracies across reversal training, trace period (vCA1)	ויש שבטטעווואן וובימווטווא וטו פמכח	cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	size (r) = 0.85
	CS+Shock/baseline vs CS-/baseline	10 decoding iterations for each	n-matched pseudopopulation of 281	two-sided Mann-	U = 55, p = 1, effect-size
Fig. 6h	decoding accuracies across reversal training, trace period (vCA1)		cells from 10 vCA1 mice	Whitney U, Bonferroni correction for n=2	(r) = 0.08

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. 6h	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies across reversal training, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 6h	CS+Rew/baseline vs CS-/baseline decoding accuracies across reversal training, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 0, p < 0.001, effect- size (r) = 0.85
Fig. 6h	CS+Shock/baseline vs CS-/baseline decoding accuracies across reversal training, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 49, p = 1, effect-size (r) = 0.17
Fig. 7c	propotion of reward trials with suprathreshold running	Early vs. Late sessions	12 mice (8 vCA1, 4 dCA1)	two-sided Mann- Whitney U	U = 36, p = 0.004, effect-size (r) = 0.2
Fig. 7c	propotion of CS- trials with suprathreshold running	Early vs. Late sessions	12 mice (8 vCA1, 4 dCA1)	two-sided Mann- Whitney U	U = 43.5, p = 0.01, effect-size (r) = 0.18
Fig. 7c	propotion of shock trials with suprathreshold running	Early vs. Late sessions	12 mice (8 vCA1, 4 dCA1)	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.32
Fig. 7d	mean lick rate (Hz)	Trial type (Rew vs Shock)	12 mice (8 vCA1, 4 dCA1)	two-sided Mann- Whitney U	U = 139.5, p < 0.001, effect-size (r) = 0.8
Fig. 7d	mean lick rate (Hz)	Trial type (Rew vs CS-)	12 mice (8 vCA1, 4 dCA1)	two-sided Mann- Whitney U	U = 138, p < 0.001, effect-size (r) = 0.78
Fig. 7d	mean lick rate (Hz)	Trial type (CS- vs Shock)	12 mice (8 vCA1, 4 dCA1)	two-sided Mann- Whitney U	U = 71.5, p = 1.0, effect- size (r) = 0.006
Fig. 7e	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies, Late, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 44.5, p = 1.0, effect- size (r) = 0.09
Fig. 7e	CS+Rew/baseline vs CS-/baseline decoding accuracies, Late, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 98, p < 0.001, effect-size (r) = 0.81
	CS+Shock/baseline vs CS-/baseline decoding accuracies, Late, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7e	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies, Late, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 20.5, p = 0.049, effect-size (r) = 0.5
Fig. 7e	CS+Rew/baseline vs CS-/baseline decoding accuracies, Late, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 36.5, p = 0.64, effect-size (r) = 0.23
Fig. 7e	CS+Shock/baseline vs CS-/baseline decoding accuracies, Late, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 65.5, p = 0.47, effect-size (r) = 0.26
Fig. 7e	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies, Late, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7e	CS+Rew/baseline vs CS-/baseline decoding accuracies, Late, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7e	CS+Shock/baseline vs CS-/baseline decoding accuracies, Late, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 60, p = 0.94, effect- size (r) = 0.17
Fig. 70	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies, Late, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni	U = 40, p = 0.92, effect- size (r) = 0.17
Fig. 7e	CS+Rew/baseline vs CS-/baseline decoding accuracies, Late, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 76, p = 0.1, effect- size (r) = 0.44
Fig. 7e	CS+Shock/baseline vs CS-/baseline decoding accuracies, Late, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 81.5, p = 0.035, effect-size (r) = 0.53
ED Fig. 2c	odor1/odor2 decoding accuracy, vCA1 vs dCA1 (0.5 sed time bins)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided Mann- Whitney U	colored-coded bar above graph shows time bins where p < 0.01
ED Fig. 2d	odor1/odor2 decoding accuracy, vCA1 vs dCA1 (2 sec time bins)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided Mann- Whitney U	colored-coded bar above graph shows time bins where p < 0.01

Figure	Variable	Unit of Comparison	n	Test	Results
ED Fig. 2e	decoding accuracy vs baseline	10 decoding iterations each	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided one-way ANOVA	
				region	F = 107, p < 0.001, effect size (ETA^2) = .70
				odor	F = .47, p = 0.5, effect size (ETA^2) = .003
				region*odor	F = 9.92, p = 0.003, effect size (ETA^2) = . 065
ED Fig. 2e	vCA1 vs dCA1 odor1/baseline decoding accuracies	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided Mann- Whitney U	U = 0, p = 0.00017, effect-size (r) = 0.85
ED Fig. 2e	vCA1 vs dCA1 odor2/baseline decoding accuracies	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	two-sided Mann- Whitney U	U = 12.0, p = 0.0046, effect-size (r) = 0.64
ED Fig. 3c	Early vs Late linear regression of calcium activity and lick rate	Early vs Late sessions	10 vCA1 mice	two-sided T-test	t = 1.86, p = 0.079, effect-size (Cohen's d) = 0.88
ED Fig. 3c	Early vs Late linear regression of calcium activity and lick rate	Early vs Late sessions	5 dCA1 mice	two-sided T-test	t = 1.51 p = 0.17, effect- size (Cohen's d) = 1.07
ED Fig. 3d	CS+ responsive cells during odor period, Early vs Late (vCA1)	total combined cells from 11 vCA1 mice	see figure for exact cell numbers	two-sided Fisher's Exact	p = 0.003, effect-size (odds ratio) = 2.02
ED Fig. 3d	CS- responsive cells during odor period, Early vs Late (vCA1)	total combined cells from 11 vCA1 mice	see figure for exact cell numbers	two-sided Fisher's Exact	p = 0.13, effect-size (odds ratio) = 0.6
ED Fig. 3d	CS+ responsive cells during trace period, Early vs Late (vCA1)	total combined cells from 11 vCA1 mice	see figure for exact cell numbers	two-sided Fisher's Exact	p < 0.001, effect-size (odds ratio) = 4.56
ED Fig. 3d	CS- responsive cells during trace period, Early vs Late (vCA1)	total combined cells from 11 vCA1 mice	see figure for exact cell numbers	two-sided Fisher's Exact	p = 0.055, effect-size (odds ratio) = 6.96
ED Fig. 3d	CS+ responsive cells during odor period, Early vs Late (dCA1)	total combined cells from 4 dCA1 mice	see figure for exact cell numbers	two-sided Fisher's Exact	p < 0.001, effect-size (odds ratio) = 2.7
ED Fig. 3d	CS- responsive cells during odor period, Early vs Late (dCA1)	total combined cells from 4 dCA1 mice	see figure for exact cell numbers	two-sided Fisher's Exact	p = 0.38, effect-size (odds ratio) = 0.79
ED Fig. 3d	CS+ responsive cells during trace period, Early vs Late (dCA1)	total combined cells from 4 dCA1 mice	see figure for exact cell numbers	two-sided Fisher's Exact	p < 0.001, effect-size (odds ratio) = 8.24
ED Fig. 3d	CS- responsive cells during trace period, Early vs Late (dCA1)	total combined cells from 4 dCA1 mice	see figure for exact cell numbers	two-sided Fisher's Exact	p = 0.004, effect-size (odds ratio) = 11.3
ED Fig. 4c	CS+/baseline (upper) or CS-/baseline (lower) decoding accuracies, Pre vs Late sessions	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 or 5 dCA1 mice	two-sided Mann- Whitney U	color-coded bars above graph show time bins where p < 0.01
ED Fig. 4d	Early vs Late, odor period (vCA1)	Euclidean distance between CS+ and CS- MDS values	10 MDS runs	two-sided Mann- Whitney U	U = 2, p < 0.001, effect- size (r) = 0.81
ED Fig. 4d	Early vs Late, trace period (vCA1)	Euclidean distance between CS+ and CS- MDS values	10 MDS runs	two-sided Mann- Whitney U	U = 3, p < 0.001, effect- size (r) = 0.79
ED Fig. 4d	Early vs Late, odor period (dCA1)	Euclidean distance between CS+ and CS- MDS values	10 MDS runs	two-sided Mann- Whitney U	U = 25, p = 0.064, effect-size (r) = 0.42
ED Fig. 4d	Early vs Late, trace period (dCA1)	Euclidean distance between CS+ and CS- MDS values	10 MDS runs	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
ED Fig. 4f	CS+/CS- decoding accuracy, odor period	pre vs post 'aha' point	11 vCA1 mice	two-sided Mann- Whitney U	U = 21 , p = .031, effect- size (r) = 0.49
ED Fig. 4f	CS+/CS- decoding accuracy, trace period	pre vs post 'aha' point	11 vCA1 mice	two-sided Mann- Whitney U	U = 0 , p < .001, effect- size (r) = 0.84
ED Fig. 4f	CS+/CS- decoding accuracy, odor period	pre vs post 'aha' point	4 dCA1 mice	two-sided Mann- Whitney U	U = 27, p = 0.089., effect-size (r) = 0.39
ED Fig. 4f	CS+/CS- decoding accuracy, trace period	pre vs post 'aha' point	4 dCA1 mice	two-sided Mann- Whitney U	U = 19 , p = .021., effect-size (r) = 0.52.
ED Fig. 6i	linear regression of decoder weights (with activity regressed out) across sessions	Early vs Late, odor period	11 vCA1 mice	linear least- squares regression	slope = 0.1, r^2 = 0.008, p = 0.19
ED Fig. 6i	linear regression of decoder weights (with activity regressed out) across sessions	Early vs Late, trace period	11 vCA1 mice	linear least- squares regression	slope = 0.19, r^2 = 0.02, p = 0.032
ED Fig. 6i	linear regression of decoder weights (with activity regressed out) across sessions	Late vs Reacquisition, odor period	10 vCA1 mice	linear least- squares regression	slope = 0.29, r^2 = 0.09, p < 0.001
ED Fig. 6i	linear regression of decoder weights (with activity regressed out) across sessions	Late vs Reacquisition, trace period	10 vCA1 mice	linear least- squares regression	slope = 0.29, r^2 = 0.08, p < 0.001
ED Fig. 6i	linear regression of decoder weights (with activity regressed out) across sessions	Early vs Late, odor period	4 dCA1 mice	linear least- squares regression	slope = 0.11, r^2 = 0.014, p = 0.038
ED Fia. 6i	linear regression of decoder weights (with activity regressed out) across sessions	Early vs Late, trace period	4 dCA1 mice	linear least- squares regression	slope = 0.1, r^2 = 0.004, p = 0.26
	linear regression of decoder weights	Late vs Reacquisition, odor	5 dCA1 mice	linear least-	slope = 0.21, r^2 =
ED Fig. 6i	(with activity regressed out) across sessions	period		squares regression	0.038, p < 0.001

Figure	Variable	Unit of Comparison	n	Test	Results
	linear regression of decoder weights		5 dCA1 mico	linear least	r(c) = 0.25 r(c) = 0.05
	(with activity regressed out) across	period	5 dCAT mice	squares regression	siope = 0.25, 12 = 0.05, n < 0.001
ED Fig. 6i	sessions	ponod		equalee regreeelen	
ED Fig. 7c	Late session linear regression of calcium activity and breathing rate	imaging sessions	8 vCA1, 4 dCA1 mice	two-sided T-test	t = 0.69, p = 0.51, effect- size (Cohen's d) = 0.54
ED Fig. 8b	mean lick rate (Hz)	Trial type (CS1+ vs CS2+; Post session)	13 mice (8 vCA1 and 5 dCA1 mice)	two-sided Mann- Whitney U	U = 88.5, p = 0.86, effect-size (r) = 0.05
ED Fig. 8b	mean lick rate (Hz)	Trial type (CS3- vs CS4-; Post session)	13 mice (8 vCA1 and 5 dCA1 mice)	two-sided Mann- Whitney U	U = 42.5, p = 0.07, effect-size (r) = 0.42
ED Fig. 8b	mean lick rate (Hz)	Trial type (CS+ vs CS-; Post session)	13 mice (8 vCA1 and 5 dCA1 mice)	two-sided Mann- Whitney U	U = 676, p < 0.001, effect-size (r) = 5.96
ED Fig. 8e	outcome decoding, odor period vs trace period (vCA1)	10 decoding iterations for each	150 cells from 8 vCA1 mice	two-sided Mann- Whitney U	U = 38, p =0.38, effect- size (r) = 0.2
ED Fig. 8e	outcome decoding, odor period vs trace period (dCA1)	10 decoding iterations for each	150 cells from 5 dCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
ED Fig. 8g	Across-session Early/Late vs Late/Reacq trial type decoding accuracies during dodr period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 100 cells from 8 vCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
ED Fig. 8g	Across-session Early/Late vs Late/Reacq trial type decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 100 cells from 5 dCA1 mice	two-sided Mann- Whitney U	U = 4, p < 0.001, effect- size (r) = 0.78
ED Fig. 8g	Across-session Early/Late vs Late/Reacq trial type decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 100 cells from 8 vCA1 mice	two-sided Mann- Whitney U	U = 7, p = 0.0012, effect-size (r) = 0.73
ED Fig. 8g	Across-session Early/Late vs Late/Reacq trial type decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 100 cells from 5 dCA1 mice	two-sided Mann- Whitney U	U = 10, p = 0.003, effect-size (r) = 0.68
ED Fia. 8h	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during dodr period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 100 cells from 8 vCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
	Across-session Early/Late vs	10 decoding iterations for each	n-matched pseudopopulation of 100	two-sided Mann-	U = 3, p < 0.001, effect-
ED Fig. 8h	accuracies during odor period (dCA1)		Cells from 5 dCA1 mice	vvnitney U	size (r) = 0.79
ED Fig. 8h	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 100 cells from 8 vCA1 mice	two-sided Mann- Whitney U	U = 6, p = 0.001, effect- size (r) = 0.74
ED Fig. 8h	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 100 cells from 5 dCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
ED Fig.9b	CS+Shock/CS- decoding accuracy, odor period, Early vs Late (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
ED Fig.9b	CS+Shock/CS- decoding accuracy, odor period, Early vs Late (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Mann- Whitney U	U = 49.5, p = 1, effect- size (r) = 0.008
ED Fig.9b	CS+Shock/CS- decoding accuracy, trace period, Early vs Late (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	two-sided Mann- Whitney U	U = 9, p = 0.002, effect- size (r) = 0.69
ED Fig.9b	CS+Shock/CS- decoding accuracy, trace period, Early vs Late (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Mann- Whitney U	U = 12, p = 0.005, effect-size (r) = 0.64
ED Fig.9c	CS+Rew/CS- decoding accuracy, odor period, Early vs Late (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
ED Fig.9c	CS+Rew/CS- decoding accuracy, odor period, Early vs Late (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.77
ED Fig.9c	CS+Rew/CS- decoding accuracy, trace period, Early vs Late (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	two-sided Mann- Whitney U	U = 11, p = 0.004, effect-size (r) = 0.66
ED Fig.9c	CS+Rew/CS- decoding accuracy, trace period, Early vs Late (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	two-sided Mann- Whitney U	U = 0, p < 0.001, effect- size (r) = 0.85
ED Fig. 9d,e	trial type decoding accuracy, odor period, Late session	10 decoding iterations each	n-matched pseudopopulation of 444 cells from 10 vCA1 and 3 dCA1 mice	two-sided one-way ANOVA	
				region	F = 47.7, p <0.001, effect size (ETA^2) = .24
				odor	F = 33.8, p <0.001, effect size (ETA^2) = .34
				region*odor	F = 14.6, p <0.001, effect size (ETA^2) = .15
ED Fig. 9d,e	trial type decoding accuracy, trace period, Late session	10 decoding iterations each	n-matched pseudopopulation of 444 cells from 10 vCA1 and 3 dCA1 mice	two-sided one-way ANOVA	
				region	F = 2.5, p = 0.12, effect size (ETA^2) = .02
				odor	F = 28.4, p < 0.001, effect size (ETA^2) = .52
				region*odor	F = .94, p = 0.4, effect size (ETA^2) = .03
ED Fig.9i	Odor identity decoding accuracy across reversal learning (Late/Late Reversal), vCA1 vs dCA1	10 decoding iterations for each region	n-matched pseudopopulation of 281 cells from 10 vCA1 and 3 dCA1 mice	two-sided Mann- Whitney U	U = 41, p = 0.52, effect- size (r) = 0.15

Figure	Variable	Unit of Comparison	n	Test	Results
ED Fig.9j	Trial type decoding accuracy across reversal learning, trace period, Rew/CS- accuracy vs Sh/CS- accuracy (vCA1)	10 decoding iterations each	n-matched pseudopopulation of 281 cells from 10 vCA1 mice	two-sided Mann- Whitney U	U = 100, p < 0.001, effect-size (r) = 0.85
ED Fig.9j	Trial type decoding accuracy across reversal learning, trace period, Rew/CS- accuracy vs Sh/CS- accuracy (dCA1)	10 decoding iterations each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	two-sided Mann- Whitney U	U = 100, p < 0.001, effect-size (r) = 0.85
ED Fig. 10c	trial type decoding accuracy, odor period	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 8 vCA1 and 4 dCA1 mice	two-sided one-way ANOVA	
				region	F = 1.6, p = 0.21, effect size (ETA^2) = .03
				odor	F = 0.95, p = 0.39, effect size (ETA^2) = .03
				region*odor	F = 1.44, p = 0.25, effect size (ETA^2) = .05
ED Fig. 10c	trial type decoding accuracy, trace period	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 8 vCA1 and 4 dCA1 mice	two-sided one-way ANOVA	
				region	F = 5.16, p = 0.027, effect size (ETA^2) = . 048
				odor	F = 15.3, p < 0.001, effect size (ETA^2) = .29
				region*odor	F = 9.4, p < 0.001, effect size (ETA^2) = .17
ED Fig. 10d	comparison of Rew vs CS- and Sh vs CS- decoding accuracies during odor period (vCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 10, p = 0.005, effect-size (r) = 0.68
ED Fig. 10d	comparison of Rew vs Sh and Sh vs CS- decoding accuracies during odor period (vCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 33.5, p = 0.34, effect-size (r) = 0.28
ED Fig. 10d	comparison of Rew vs CS- and Rew vs Sh decoding accuracies during odor period (vCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 90, p = 0.003, effect-size (r) = 0.68
ED Fig. 10d	comparison of Rew vs CS- and Sh vs CS- decoding accuracies during trace period (vCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
ED Fig. 10d	comparison of Rew vs Sh and Sh vs CS- decoding accuracies during trace period (vCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 0, p < 0.001., effect- size (r) = 0.85
ED Fig. 10d	comparison of Rew vs CS- and Rew vs Sh decoding accuracies during trace period (vCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 8 vCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 39.5, p = 0.56, effect-size (r) = 0.18
ED Fig. 10d	comparison of Rew vs CS- and Sh vs CS- decoding accuracies during odor period (dCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 27.5, p = 0.19, effect-size (r) = 0.38
ED Fig. 10d	comparison of Rew vs Sh and Sh vs CS- decoding accuracies during odor period (dCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 29, p = 0.23, effect- size (r) = 0.35
ED Fig. 10d	comparison of Rew vs CS- and Rew vs Sh decoding accuracies during odor period (dCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 83.5, p = 0.024, effect-size (r) = 0.57
ED Fig. 10d	comparison of Rew vs CS- and Sh vs CS- decoding accuracies during trace period (dCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 74.5, p = 0.14, effect-size (r) = 0.41
ED Fig. 10d	comparison of Rew vs Sh and Sh vs CS- decoding accuracies during trace period (dCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 2, p < 0.001, effect- size (r) = 0.81
ED Fig. 10d	comparison of Rew vs CS- and Rew vs Sh decoding accuracies during trace period (dCA1; suprathreshold running trials only)	10 decoding iterations each	n-matched pseudopopulation of 340 cells from 4 dCA1 mice	two-sided Mann- Whitney U, Bonferroni correction for n=2	U = 78.5, p = 0.068, effect-size (r) = 0.48
ED Fig. 10e	Late session linear regression of calcium activity and running velocity (4-7.5 sec post odor onset)	imaging sessions	11 vCA1, 5 dCA1	two-sided T-test	t = 6.68, p < 0.001, effect-size (Cohen's d) = 3.38
ED Fig. 10f	Late session speed decoding accuracy, vCA1 vs dCA1	for each trial type, decoding accuracy for each 1 sec time bin spanning a 5 sec ITI period	15 each region (3 trial types x 5 time bins)	two-sided Mann- Whitney U	U = 75.5, p = 0.13, effect-size (r) = 0.43

Figure	Variable	Unit of Comparison	n	Test	Results
ED Fig. 10f	Late session speed decoding accuracy vs chance (50%), vCA1	for each trial type, decoding accuracy for each 1 sec time bin spanning a 5 sec ITI period	15	two-sided Wilcoxon signed-rank test	W = 16, p = 0.012, effect-size (r) = 0.57
ED Fig. 10f	Late session speed decoding accuracy vs chance (50%), dCA1	for each trial type, decoding accuracy for each 1 sec time bin spanning a 5 sec ITI period	15	two-sided Wilcoxon signed-rank test	W = 2, p < 0.001, effect- size (r) = 0.81
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N/A	total cells registered across sessions	dCA1 2odor Early-Late	337		
N/A	total cells registered across sessions	dCA1 2odor Late-Reacquisition	377		
N/A	total cells registered across sessions	vCA1 2odor Early-Late	241		
N/A	total cells registered across sessions	vCA1 2odor Late-Reacquisition	253		
N/A	total cells registered across sessions	dCA1 4odor Pre-Late	503		
N/A	total cells registered across sessions	dCA1 4odor Late-Post	503		
N/A	total cells registered across sessions	vCA1 4odor Pre-Late	104		
N/A	total cells registered across sessions	vCA1 4odor Late-Post	104	1	
N/A	total cells registered across sessions	dCA1 3odor Late-Reversal Late	281	1	
N/A	total cells registered across sessions	vCA1 3odor Late-Reversal Late	392]	