

## Supplementary table 1

	abs corr>0.6 Max jump dis<0.4	abs corr>0.7 Max jump dis<0.4	abs corr>0.7 Max jump dis<0.3	No. of candidate events
e1s1	0.4829	0.3319	0.3959	9818
e2s1	0.5359	0.2843	0.5439	9696
e3s1	0.3785	0.1330	0.5539	10022
sal e1e1	0.0002	0.0002	0.0002	3277
sal e1s2	0.0152	0.0074	0.0368	4981
sal e2e2	0.0002	0.0002	0.0002	3631
sal e3e3	0.0002	0.0002	0.0002	4440
sal e1s3	0.0090	0.0056	0.0312	15604
sal e2s3	0.0164	0.0428	0.0196	16652
sal e3s3	0.0370	0.0222	0.0148	16637
cpp e1e1	0.0002	0.0002	0.0002	3516
cpp e1s2	0.0005	0.0202	0.0208	5544
cpp e2e2	0.3911	0.4923	0.2414	3543
cpp e3e3	0.6997	1	1	3851
cpp e1s3	0.0016	0.0012	0.0020	16945
cpp e2s3	0.1010	0.4849	0.2941	17609
cpp e3s3	0.4231	0.4577	0.4075	16517
Poisson	0.4727	0.2026	0.1916	9818
Time swap	0.9436	0.7962	0.9510	9818

## Supplementary table 2

Rats and Conditions		Session	Sleep1			Run1	Sleep2	Run2	Run3	Sleep3		
			e1s1	e2s1	e3s1	e1e1	e1s2	e2e2	e3e3	e1s3	e2s3	e3s3
Rat D	sal	D1202	1167	1104	1322	332	836	468	567	2354	2600	2673
	cpp	D1203				177	764	474	576	1342	1356	1194
Rat E	cpp	E0210	858	870	922	260	551	346	386	3262	3224	3143
	sal	E0211				173	696	268	365	2331	2329	2389
Rat F	sal	F0715	1013	1072	977	640	549	566	770	1891	1803	1758
	cpp	F0716				447	948	157	523	2784	3031	2670
	sal	F0718	1374	1309	1364	583	783	441	407	2611	2436	2419
	cpp	F0719	1290	1267	1318	852	719	578	530	2561	2890	3142
	cpp	F0722	1953	1950	1987	620	906	357	643	2514	2631	2712
Rat G	sal	G0831				508	657	679	500	1114	2491	2548
	sal	G0903	1186	1209	1183	476	601	545	1088	2468	2308	2440
	cpp	G0904	977	915	949	675	732	932	384	2206	2060	1075
	sal	G0906				565	859	664	743	2835	2685	2410
	cpp	G0910				485	924	699	809	2276	2417	2581

**Supplementary Table 1. P-values for trajectory events and the number of candidate events for all runs and conditions.** P-values under three pairs of detection thresholds (green star denoted in previous figures) are shown. Runs and events categories are as described in the legend of Supplementary Figure 5. Total numbers of candidate events for each category are also included in the last column of the table.

**Supplementary Table 2. Number of candidate events for each rat and each session under different epochs.**