**Patchy Striatonigral Neurons Modulate Locomotor Vigor in Response to Environmental Valence**

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**Supplementary Statistics Table**

# **Statistical Summary**

|  |  |  |  |  |  |  |
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| **Figure** | **Test description** | **Test used**  | **Test statistics** | **N** | **N defined as** | **Mean ± SEM** |
| 1C | DS %MOR1 (Ctrl vs PA) | 2-tailed Mann-Whitney  | p<0.0001 | n=22 Ctrl; n=30 PA | hemisection. (6-10/region. 3 mice/group) | Ctrl 12.03±0.9643; PA 5.154±0.5749  |
|  | VS %MOR1 (Ctrl vs PA) | 2-tailed Mann-Whitney  | p=0.4359 | n=22 Ctrl; n=30 PA |  | Ctrl 21.11±1.357; PA 17.29±1.112  |
| 1E | % time in dark (Ctrl vs PA) | 2-tailed Mann-Whitney  | p=0.3144 | n=11 Ctrl; n=10 PA | mouse | Ctrl 66.07±3.114; PA 61.6±3.85  |
| 1F | avg. spd cm/s (lighting x group) | 2-way RM ANOVA | F (1, 19) = 0.06497, p=0.8015 | n=21 (11 Ctrl, 10 PA) | mouse |  |
|  | avg. spd cm/s (group: Ctrl, PA) |  | F (1, 19) = 5.850, p=0.0258 |  |  |  |
|  | avg. spd cm/s (lighting: L, D) |  | F (1, 19) = 22.37, p=0.0001 |  |  |  |
|  | avg. spd cm/s (subject) |  | F (19, 19) = 2.849, p=0.0138 |  |  |  |
|  | post hoc (Ctrl L-vs-D) | Wilcoxon signed rank | p=0.001 | n=11 Ctrl-L; n=11 Ctrl-D | mouse | Ctrl-L 6.01±0.3889; Ctrl-D 3.682±0.3192  |
|  | post hoc (PA L-vs-D) | Wilcoxon signed rank | p=0.0371 | n=10 SA-L; n=10 PA-D | mouse | PA-L 8.266±1.322; PA-D 5.673±0.4979  |
|  | post hoc (Ctrl-L vs PA-L) | 2-tailed Mann-Whitney  | p=0.1971 | n=11 Ctrl; n=10 PA | mouse | see above |
|  | post hoc (Ctrl-D vs PA-D) | 2-tailed Mann-Whitney  | p=0.0015 | n=11 Ctrl; n=10 PA | mouse | see above |
| 1G | max spd cm/s (Ctrl vs PA) | 2-tailed Mann-Whitney  | p=0.0434 | n=11 Ctrl; n=10 PA | mouse | Ctrl 30.36±0.7778; PA 33.3±1.075  |
| 1H | %time ≤2cm/s (Ctrl L-vs-D) | paired ttest | p=0.001 | n=11 Ctrl; n=10 PA | mouse | Ctrl-L 34.72±3; Ctrl-D 52.41±3.441 |
|  | %time ≤2cm/s (PA L-vs-D) | paired ttest | p=0.1955 |  |  | PA-L 29.44±5.285; PA-D 36.54±2.604 |
|  | %time ≤2cm/s (Ctrl vs PA in D) | unpaired ttest | p=0.0018 |  |  |  |
|  | %time ≤2cm/s (Ctrl vs PA in L) | unpaired ttest | p=0.3847 |  |  |  |
| 1I-J | approach (cm/s) impact of time | GLME of spd uing Matlab | 95% C.I. = [2.3907, 3.1368]  | n=630 observations | time points |  |
|  | approach (cm/s) impact of PA | fitglme'; fixed effects: | 95% C.I. = [0.73218, 3.9241]  |  |  |  |
|  | approach (cm/s) impact of BIL | intercept, time, group, BIL; | 95% C.I. = [2.3911, 1.7464] | (11 Ctrl and 10 PA mice at |  |  |
|  | retreat (cm/s) impact of time | random effect: mouse | 95% C.I. = [-1.6015, -0.85885]  |  at 15 into-D and 15 into-L |  |  |
|  | retreat (cm/s) impact of PA |  | 95% C.I. = [2.2344, 2.8761]  |  time points) |  |  |
|  | retreat (cm/s) impact of BIL |  | 95% C.I. = [0.89109, 3.593] |  |  |  |
|  | PA approach (cm/s) impact of BIL | GLME of spd uing Matlab | 95% C.I. = [3.347, 2.3376] | n=300 observations | time points |  |
|  | PA retreat (cm/s) impact of BIL | fitglme'; fixed effects: | 95% C.I. = [3.2809, 4.2788] | (10 mice @15 pnts app/ret) |  |  |
|  | Ctrl approach (cm/s) impact of BIL | intercept, time, BIL; | 95% C.I. = [1.7612, 0.9698] | n=330 observations | time points |  |
|  | Ctrl retreat (cm/s) impact of BIL | random effect: mouse | 95% C.I. = [1.0784, 1.8056] | (11 mice @15 pnts app/ret) |  |  |
| 1L | avg. spd cm/s (group: Ctrl, PA) | Mixed-effects analysis | F (1, 12) = 0.1630, p=0.6935  | n=14 (8 Ctrl, 6 PA) | mouse | PA-LL 6.009±0.817; PA-DD 7.026±2.116 |
|  | avg. spd cm/s (lighting: LL, DD) |  | F (1, 8) = 0.01655, p=0.9008 |  |  | Ctrl-LL 6.404±1.914; Ctrl-DD 5.464±1.179  |
|  | avg. spd cm/s (group x lighting) |  | F (1, 8) = 0.7541, p=0.4105 |  |  |  |
| 1M | max spd cm/s (group: Ctrl, PA) | Mixed-effects analysis | F (1, 11) = 0.05682, p=0.816 | n=13 (7 Ctrl, 6 PA) | mouse | Ctrl-LL 28.86±2.963; Ctrl-DD 25.83±2.428 |
|  | max spd cm/s (lighting: LL, DD) |  | F (1, 9) = 0.5451, p=0.4791 |  |  | PA-LL 28.2±2.396; PA-DD 26.83±3.842 |
|  | max spd cm/s (group x lighting) |  | F (1, 9) = 0.3096, p=0.5915 |  |  |  |
| 1N | %time ≤2cm/s (Ctrl LL-vs-DD) | Wilcoxon signed rank | p=0.8438 | n=7 Ctrl-LL; n=6 Ctrl-DD; | mouse | Ctrl-LL 38.35±7.474; Ctrl-DD 37.09±4.185 |
|  | %time ≤2cm/s (PA LL-vs-DD) | Wilcoxon signed rank | p=0.625 | n=5 PA-LL; n=6 PA-DD |  | PA-LL 34.54±2.146; PA-DD 39.22±6.015 |
|  | %time ≤2cm/s (Ctrl vs PA in DD) | 2-tailed Mann-Whitney | p=0.3939 |  |  |  |
|  | %time ≤2cm/s (Ctrl vs PA in LL) | 2-tailed Mann-Whitney | p=0.7551 |  |  |  |
| 1O-P | approach spd (cm/s) impact of time | GLME of spd uing Matlab | 95% C.I. = [2.4259, 3.2878] | n=360 observations | time points |  |
|  | approach spd (cm/s) impact of PA | fitglme'; fixed effects: | 95% C.I. = [-2.6119, 4.2595] | (7 LL, 6 DD Ctrl; 5 LL, 6 DD PA |  |  |
|  | approach spd (cm/s) impact of BIA | intercept, time, grp, BIA; | 95% C.I. = [1.0937, -0.3197] |  at 15 into-DD, 15 into-LL |  |  |
|  | retreat spd (cm/s) impact of time | random effect: mouse | 95% C.I. = [-1.9249, -1.0011] |  time points) |  |  |
|  | retreat spd (cm/s) impact of PA |  | 95% C.I. = [-3.708, 3.6125] |  |  |  |
|  | retreat spd (cm/s) impact of BIA |  | 95% C.I. = [-0.6257, 0.20744] |  |  |  |
| 2E | average ∆F/F in L vs D (Light-neurons) | paired ttest | p<0.0001 | n=760  | neuron | L 0.02657±0.0007633; D 0.1213±0.0004885  |
|  | average ∆F/F in L vs D (Dark-neurons) | paired ttest | p<0.0001 | n=143  | neuron | L 0.009896±0.001262; D 0.01948±0.00189 |
|  | average ∆F/F in L vs D (Other-neurons) | paired ttest | p=0.016 | n=29  | neuron | L 0.01057±0.000623; D 0.01021±0.0006165 |
| 2I | % light-prefering neurons by mouse |  |  | n=9 | mouse | 20.95±2.716 |
|  | % light&speed neurons by mouse |  |  | n=9 | mouse | 28.81±3.088 |
|  | % speed neurons by mouse |  |  | n=9 | mouse | 19.1±2.132 |
|  | % dark&speed neurons by mouse |  |  | n=9 | mouse | 4.655±1.099 |
|  | % dark-prefering neurons by mouse |  |  | n=9 | mouse | 2.412±0.718 |
| 2J | % VL+neurons by mouse |  |  | n=9 | mouse | 7.81±2.248 |
|  | % VL- neurons by mouse |  |  | n=9 | mouse | 11.20±3.348 |
|  | % VQ+ neurons by mouse |  |  | n=9 | mouse | 9.59±1.703 |
|  | % VQ- neurons by mouse |  |  | n=9 | mouse | 23.95±2.262 |
|  | % other types of neurons by mouse |  |  | n=9 | mouse | 47.44±3.599 |
| 2k | zone/speed encoding relation to speed encoding | Chi Square | X2(3, n=532) =78.63, p<0.0001 | n=532 | neuron |  |
| 2M | zone/speed relation to decel. Encoding | Chi Square | X2(1, n=1565) =24.33, p<0.0001 | n=1565 | neuron |  |
|  | ∆F/F approach impact of BIL | fitglme'; fixed effects: | 95% C.I. = [0.78166, 0.39086] |  |  |  |
|  | ∆F/F retreat impact of time | intercept, time, BIL; | 95% C.I. = [-0.82892, -0.36778] | (10 mice at 15 into-D and 15 |  |  |
|  | ∆F/F retreat impact of BIL | random effect: mouse | 95% C.I. = [0.35765, 0.75611] |  into-L time points) |  |  |
| 3A | zone/spd/zone encoding relation to transition | Chi Square | X2(4, n=1567) =137.3, p<0.0001 | n=1567 | neuron |  |
| 3B | DP relation to transition activation | Chi Square | X2(1, n=1565) =24.33, p<0.0001 | n=1565 | neuron |  |
| 4D | xCorr in zone transition, sepw |  |  |  |  |  |
|  | GPe speed corr into L |  | 95% C.I. of mean= [-0.09034, -0.02783] | n=9 | mouse |  |
|  | GPe speed corr into D |  | 95% C.I. of mean = [-0.1225, 0.02213] | n=9 | mouse |  |
|  | GPe accel. corr into L |  | 95% C.I. of mean= [-0.06978, 0.01473] | n=9 | mouse |  |
|  | GPe accel. corr into D |  | 95% C.I. of mean = [-0.09861, 0.05434] | n=9 | mouse |  |
|  | GPi speed corr into L |  | 95% C.I. of mean= [0.07538, 0.2694] | n=9 | mouse |  |
|  | GPi speed corr into D |  | 95% C.I. of mean = [-0.06794, 0.1414] | n=9 | mouse |  |
|  | GPi accel. corr into L |  | 95% C.I. of mean= [-0.04661, 0.01468] | n=9 | mouse |  |
|  | GPi accel. corr into D |  | 95% C.I. of mean = [-0.1172, 0.06086] | n=9 | mouse |  |
|  | SNr speed corr into L |  | 95% C.I. of mean= [0.05948, 0.2624] | n=8 | mouse |  |
|  | SNr speed corr into D |  | 95% C.I. of mean = [0.04388, 0.2848] | n=8 | mouse |  |
|  | SNr accel. corr into L |  | 95% C.I. of mean= [-0.2433, -0.05349] | n=8 | mouse |  |
|  | SNr accel. corr into D |  | 95% C.I. of mean = [-0.1916, -0.04448] | n=8 | mouse |  |
| 4M | Inter event interval between zones, SNr | paired ttest | p=0.0001 | n=8 | moose |  |
| 4O | xCorr in zone transition, calb |  |  |  |  |  |
|  | SNr speed corr into L |  | 95% C.I. of mean= [-0.02322, 0.08374] | n=8 | mouse |  |
|  | SNr speed corr into D |  | 95% C.I. of mean = [-0.1154, 0.09804] | n=8 | mouse |  |
|  | SNr accel. corr into L |  | 95% C.I. of mean= [-0.04114, 0.1098] | n=8 | mouse |  |
|  | SNr accel. corr into D |  | 95% C.I. of mean = [-0.05105, 0.06158] | n=8 | mouse |  |
| 4R | Inter event interval between zones, SNr, Calb | paired ttest | p=0.0039 | n=7 | mouse |  |
| 5C | DS mCherry (subregion x MOR1) | 2-way RM ANOVA | F (2, 12) = 1.932, p=0.1874 | n=3 Ctrl; n=5 Gq |  subregional average per mouse from 4-6 sections |  |
|  | DS mCherry (subregion) |  | F (1.516, 9.095)=0.6642, p=0.4977 | n=3 subregions |  |  |
|  | DS mCherry (group: Ctrl, Gq) |  | F (1, 6) = 0.01962, p=0.8932 |  |  |  |
|  | DS mCherry (subject) |  | F (6, 12) = 4.874, p=0.0096 |  |  |  |
|  | DS MOR1 (subregion x MOR1) | 2-way RM ANOVA | F (2, 12) = 1.928, p=0.1879 | n=3 Ctrl; n=5 Gq |  |  |
|  | DS MOR1 (subregion) |  | F (1.570, 9.419)=6.124, p=0.0243 | n=3 subregions |  |  |
|  | DS MOR1 (group: Ctrl, Gq) |  | F (1, 6) = 0.9410, p=0.3695 |  |  |  |
|  | DS MOR1 (subject) |  | F (6, 12) = 0.7792, p=0.6018 |  |  |  |
| 5D | % time in dark (Ctrl vs Gq) | 2-tailed Mann-Whitney | p=0.9161 | n=17 Ctrl; n=20 Gq | mouse | Ctrl 72.52%±2.719; Gq 65.55%±5.556  |
| 5E | avg. spd cm/s (group x lighting) | within subjects | F (1, 35) = 2.147, p=0.1518 | n=17 Ctrl; 20 Gq | mouse |  |
|  | avg. spd cm/s (group: Ctrl, Gq) | 2-way RM ANOVA | F (1, 35) = 6.048, p=0.0190 |  |  |  |
|  | avg. spd cm/s (lighting: L, D) |  | F (1, 35) = 47.34, p<0.0001 |  |  |  |
|  | avg. spd cm/s (subject) |  | F (35, 35) = 3.229, p=0.0004 |  |  |  |
|  | post hoc (Ctrl L-vs-D) | Wilcoxon signed rank  | p=0.0001 | n=17 Ctrl-L; n=17 Ctrl-D | mouse | Ctrl-L 6.152±0.2654; Ctrl-D 3.684±0.4485  |
|  | post hoc (Gq L-vs-D) | Wilcoxon signed rank  | p=0.0037 | n=20 Gq-L; n=20 Gq-D | mouse | Gq-L 4.412±0.5573; Gq-D 2.811±0.348  |
|  | post hoc (Ctrl-L vs Gq-L) | 2-tailed Mann-Whitney | p=0.0044 | n=17 Ctrl; n=20 Gq | mouse | see above |
|  | post hoc (Ctrl-D vs Gq-D) | 2-tailed Mann-Whitney | p=0.0417 | n=17 Ctrl; n=20 Gq | mouse | see above |
| 5F | maximum spd cm/s (Ctrl vs Gq) | 2-tailed Mann-Whitney | p=0.01 | n=17 Ctrl; n=20 Gq | mouse | Ctrl 22.18±0.8585; Gq 17.7±1.183 |
| 5G | %time ≤2cm/s (Ctrl L-vs-D) | paired ttest | p<0.0001 | n=17 Ctrl-L; n=17 Ctrl-D; | mouse | Ctrl-L 32.18±2.123; Ctrl-D 50.18±3.561 |
|  | %time ≤2cm/s (Gq L-vs-D) | paired ttest | p=0.0056 | n=20 Gq-L; n=20 Gq-D |  | Gq-L 30.43±3.421; Gq-D 53.16±4.111 |
|  | %time ≤2cm/s (Ctrl vs Gq in D) | Mann-Whitney | p=0.0059 |  |  |  |
|  | %time ≤2cm/s (Ctrl vs Gq in L) | Mann-Whitney | p=0.0168 |  |  |  |
| 5H-I | approach (cm/s) impact of time | GLME of spd uing Matlab | 95% C.I. = [1.9925, 2.554]  | n=1560 observations | time points |  |
|  & | approach (cm/s) impact of Gq | fitglme'; fixed effects: | 95% C.I. = [-0.89389, 1.0309] |  |  |  |
| Fig5-supplement figure 4 E,I | approach (cm/s) impact of Gi |  | 95% C.I. = [-1.473, 1.0196] |  |  |  |
|  | approach (cm/s) impact of BIL | intercept, time, group, BIL; | 95% C.I. = [1.0773, 0.59214]  | (17 Ctrl, 20 Gq, 15 Gi mice |  |  |
|  | retreat (cm/s) impact of time | random effect: mouse | 95% C.I. = [-1.9511, -1.4538]  |  at 15 into-D and 15 into-L |  |  |
|  | retreat (cm/s) impact of Gq |  | 95% C.I. = [-1.507, 0.56654] |  time points) |  |  |
|  | retreat (cm/s) impact of Gi |  | 95% C.I. = [-1.3062, 0.92041] |  |  |  |
|  | retreat (cm/s) impact of BIL |  | 95% C.I. = [1.0562, 1.486]  |  |  |  |
|  | Gq approach (cm/s) impact of BIL | GLME of spd uing Matlab | 95% C.I. = [-0.13168, -1.1211] | n=600 observations | time points |  |
|  | Gq retreat (cm/s) impact of BIL | fitglme'; fixed effects: | 95% C.I. = [0.53604, 1.3761] | (20 mice @15 pnts app/ret) |  |  |
|  | Gi approach (cm/s) impact of BIL | intercept, time, BIL; | 95% C.I. = [2.2463, 1.5553] | n=450 observations | time points |  |
|  | Gi retreat (cm/s) impact of BIL | random effect: mouse | 95% C.I. = [1.3261, 1.9938] | (15 mice @15 pnts app/ret) |  |  |
|  | Ctrl approach (cm/s) impact of BIL |  | 95% C.I. = [1.9076, 1.3185]  | n=510 observations | time points |  |
|  | Ctrl retreat (cm/s) impact of BIL |  | 95% C.I. = [0.9823, 1.615] | (17 mice @15 pnts app/ret) |  |  |
| 6C | % time in dark (Ctrl vs ChR) | 2-tailed Mann-Whitney  | p=0.3941 | n=16 Ctrl; n=14 ChR | mouse | Ctrl 67.08±2.201; ChR 67.08±2.30  |
| 6D | avg. spd cm/s (lighting x group) | 2-way RM ANOVA | F (1, 26) = 1.687, p=0.2054 | n=30 (14 Ctrl, 16 ChR) | mouse |  |
|  | avg. spd cm/s (group: Ctrl, ChR) |  | F (1, 26) = 0.2461, p=0.6240 |  |  |  |
|  | avg. spd cm/s (lighting: L, D) |  | F (1, 30) = 33.19, p<0.0001 |  |  |  |
|  | post hoc (Ctrl L-vs-D) | 2-tailed paired t-test | p<0.0001 | n=14 Ctrl-L; n=14 Ctrl-D | mouse | Ctrl-L 6.76±0.1801; Ctrl-D 4.76±0.2500  |
|  | post hoc (ChR L-vs-D) | 2-tailed paired t-test | p=0.0011 | n=16 ChR-L; n=16 ChR-D | mouse | ChR-L 6.56±0.3170; ChR-D 5.195±0.2974  |
|  | post hoc (Ctrl-L vs ChR-L) | 2-tailed Mann-Whitney  | p=0.5979 | n=14 Ctrl-L; n=16 ChR-L | mouse | see above |
|  | post hoc (Ctrl-D vs ChR-D) | 2-tailed Mann-Whitney  | p=0.2803 | n=14 Ctrl-D n=16 ChR-D | mouse | see above |
| 6E | max spd cm/s (Ctrl vs ChR) | 2-tailed Mann-Whitney  | p=0.4225 | n=14 Ctrl; n=16 ChR | mouse | Ctrl 23.308±0.692; ChR 24.625±1.341  |
| 6F | %time ≤2cm/s (Ctrl L-vs-D) | paired ttest | p=0.0002 | n=13 Ctrl; n=16 ChR | mouse | Ctrl-L 34.09±1.379; Ctrl-D 46.33±2.223 |
|  | %time ≤2cm/s (ChR L-vs-D) | paired ttest | p=0.0005 |  |  | ChR-L 34.64±2.008; ChR-D 43.85±2.084 |
|  | %time ≤2cm/s (Ctrl vs ChR in D) | unpaired ttest | p=0.4243 |  |  |  |
|  | %time ≤2cm/s (Ctrl vs ChR in L) | unpaired ttest | p=0.8305 |  |  |  |
| 6M | % time in dark (Ctrl vs ChR) | 2-tailed Mann-Whitney  | p=0.30629 | n=13 Ctrl; n=13 ChR | mouse | Ctrl 69.89±1.082; ChR 76.51±3.22  |
| 6N | avg. spd cm/s (lighting x group) | 2-way RM ANOVA | F (1, 24) = 0.0843, p=0.7740 | n=26 (13 Ctrl, 13 ChR) | mouse |  |
|  | avg. spd cm/s (group: Ctrl, ChR) |  | F (1, 24) = 0.3329, p=0.5694 |  |  |  |
|  | avg. spd cm/s (lighting: L, D) |  | F (1, 24) = 15.05, p=0.0007 |  |  |  |
|  | post hoc (Ctrl L-vs-D) | 2-tailed paired t-test | p<0.0001 | n=13 Ctrl-L; n=13 Ctrl-D | mouse | Ctrl-L 7.55±0.5792; Ctrl-D 5.328±0.5653  |
|  | post hoc (ChR L-vs-D) | 2-tailed paired t-test | p=0.0012 | n=13 ChR-L; n=13 ChR-D | mouse | ChR-L 8.102±0.6756; ChR-D 5.510±0.6864  |
|  | post hoc (Ctrl-L vs ChR-L) | 2-tailed Mann-Whitney  | p=0.5403 | n=13 Ctrl-L; n=13 ChR-L | mouse | see above |
|  | post hoc (Ctrl-D vs ChR-D) | 2-tailed Mann-Whitney  | p=0.6139 | n=13 Ctrl-D n=13 ChR-D | mouse | see above |
| 6O | max spd cm/s (Ctrl vs ChR) | 2-tailed Mann-Whitney  | p=0.1323 | n=13 Ctrl; n=13 ChR | mouse | Ctrl 24.154±0.986; ChR 27.385±1.824  |
| 6P | %time ≤2cm/s (Ctrl L-vs-D) | paired ttest | p<0.0001 | n=13 Ctrl; n=13 ChR | mouse | Ctrl-L 30.29±2.633; Ctrl-D 44.28±3.198 |
|  | %time ≤2cm/s (ChR L-vs-D) | paired ttest | p=0.2460 |  |  | ChR-L 26.74±2.831; ChR-D 32.68±5.219 |
|  | %time ≤2cm/s (Ctrl vs ChR in D) | unpaired ttest | p=0.0702 |  |  |  |
|  | %time ≤2cm/s (Ctrl vs ChR in L) | unpaired ttest | p=0.3684 |  |  |  |
| Fig2-figure supplement 2D | % time in dark (minnieScope mice) | summary statistics |  | n=10 | mouse | 70.63%±4.613 |
| Fig2-figure supplement 2E | average spd cm/s (minnieScope mice) | Wilcoxon signed rank  | p=0.0098 | n=10 | mouse | L 5.46±0.4362; D 3.429±0.4308 |
| Fig2-figure supplement 2F | max spd cm/s (minnieScope mice) | summary statistics |  | n=10 | mouse | 15.9±0.9826  |
| Fig2-figure supplement 2G | %time ≤2cm/s (L-vs-D) | Wilcoxon signed rank  | p=0.0137 | n=10 | mouse | L 26.05±4.706; D 49.22±5.575 |
| Fig2-figure supplement 2H-I | approach (cm/s) impact of time | GLME of spd uing Matlab | 95% C.I. = [0.0871, 0.6849]  | n=300 observations | time points |  |
|  | approach (cm/s) impact of BIL | fitglme'; fixed effects: | 95% C.I. = [0.2506, -0.26603]  | (10 mice with minniescope  |  |  |
|  | retreat (cm/s) impact of time | intercept, time, BIL; | 95% C.I. = [-1.9373, -1.2134]  |  at 15 into-D and 15 into-L |  |  |
|  | retreat (cm/s) impact of BIL | random effect: mouse | 95% C.I. = [1.576, 0.95053]  |  time points) |  |  |
| Fig2-figure supplement 2K | zone encoding relation to speed encoding | Chi Square | X2(2, n=1565)=38.38 ,p<0.0001 | n=1565 | neuron |  |
| Fig4-figure supplement 3F | Inter event interval between zones, GPe | paired ttest | p=0.0018 | n=8 | mouse | L 6.482±0.5956; D 3.359±0.2066 |
| Fig4-figure supplement 3K | Inter event interval between zones, Gpi | paired ttest | p=0.0035 | n=9 | mouse | L 7.969±0.9356; D 3.809±0.3087 |
| Fig4-figure supplement 3L | Inter event interval between zones, Str, GRIN | paired ttest | p=0.0373 | n=8 | mouse | L 22.08±4.903; D 12.21±1.786 |
| Fig5-figure supplement 4A | % time in dark (Ctrl vs Gi) | 2-tailed Mann-Whitney | p=0.8232 | n=17 Ctrl; n=15 Gi | mouse | Ctrl 72.52%±2.719; Gi 72.73%±2.719  |
| Fig5-figure supplement 4B | avg. spd cm/s (group x lighting) | within subjects  | F (1, 30) = 0.5551, p=0.4620 | n= (17 Ctrl, 15 Gi) | mouse |  |
|  | avg. spd cm/s (group: Ctrl, Gi) | 2-way RM ANOVA | F (1, 30) = 0.03006, p=0.8635 |  |  |  |
|  | avg. spd cm/s (lighting: L, D) |  | F (1, 30) = 134.3, p<0.0001 |  |  |  |
|  | avg. spd cm/s (subject) |  | F (30, 30) = 7.414, p<0.0001 |  |  |  |
|  | post hoc (Ctrl L-vs-D) | Wilcoxon signed rank  | p=0.0001 | n=17 Ctrl-L; n=17 Ctrl-D | mouse | Ctrl-L 6.152±0.2654; Ctrl-D 3.684±0.4485  |
|  | post hoc (Gi L-vs-D) | Wilcoxon signed rank  | p<0.0001 | n=15 Gi-L; n=15 Gi-D | mouse | Gi-L 6.429±0.5924; Gi-D 3.622±0.5385  |
| Fig5-figure supplement 4C | maximum spd cm/s (Ctrl vs Gi) | 2-tailed Mann-Whitney | p=0.715 | n=17 Ctrl; n=15 Gi | mouse | Ctrl 22.18±0.8585; Gq 21.6±1.245 |
| Fig5-figure supplement 4D | %time ≤2cm/s (Ctrl L-vs-D) | paired ttest | p<0.0001 | n=17 Ctrl-L; n=17 Ctrl-D; | mouse | Ctrl L 32.18±2.123; Ctrl D 50.18±3.561 |
|  | %time ≤2cm/s (Gi L-vs-D) | paired ttest | p<0.0001 | n=15 Gi-L; n=15 Gi-D |  | Gi L 30.43±3.421; Gi D 53.16±4.111 |
|  | %time ≤2cm/s (Ctrl vs Gi in D) | unpaired ttest | p=0.6601 |  |  |  |
|  | %time ≤2cm/s (Ctrl vs Gi in L) | unpaired ttest | p=0.5817 |  |  |  |
| Fig5-figure supplement 4F | avg. spd cm/s (group x lighting) | 2-way RM ANOVA | F (1, 27) = 0.06781, p=0.7965 | n=29 (16 Ctrl, 13 Gi) | mouse | Ctrl-LL 4.08±0.2428; Ctrl-DD 4.398±0.2145  |
|  | avg. spd cm/s (group: Ctrl, Gi) |  | F (1, 27) = 2.994, p=0.095 |  |  | Gi-LL 5.62±1.019; Gi-DD 6.037±0.9514 |
|  | avg. spd cm/s (lighting: LL, DD) |  | F (1, 27) = 3.651, p=0.0667 |  |  |  |
|  | avg. spd cm/s (subject) |  | F (27, 27) = 22.81, p<0.0001 |  |  |  |
| Fig5-figure supplement 4G | max spd cm/s (group x lighting) | 2-way RM ANOVA | F (1, 27) = 0.009815, p=0.9218 | n=29(16 Ctrl, 13 Gi) | mouse | Ctrl-LL 17.13±1.08; Ctrl-DD 17.25±1.112 |
|  | max spd cm/s (group: Ctrl, Gi) |  | F (1, 27) = 1.402, p=0.2467 |  |  | Gi-LL 19.92±1.806; Gi-DD 20.38±1.838  |
|  | max spd cm/s (lighting: LL, DD) |  | F (1, 27) = 0.05506, p=0.8163 |  |  |  |
|  | max spd cm/s (subject) |  | F (27, 27) = 11.05, p<0.0001 |  |  |  |
| Fig5-figure supplement 4J | avg. spd cm/s (group: Ctrl, Gq) | 2-way RM ANOVA | F (1, 33) = 1.343, p=0.2549 | n=35(16 Ctrl, 19 Gq) | mouse | Ctrl-LL 4.08±0.2428; Ctrl-DD 4.398±0.2145  |
|  | avg. spd cm/s (lighting: LL, DD) |  | F (1, 33) = 2.676, p=0.1114 |  |  | Gq-LL 3.574±0.2999; Gq-DD 3.417±0.2953 |
|  | avg. spd cm/s (group x lighting) |  | F (1, 33) = 0.1536, p=0.6976 |  |  |  |
|  | avg. spd cm/s (subject) |  | F (33, 33) = 4.919, p<0.0001 |  |  |  |
| Fig5-figure supplement 4K | max spd cm/s (group: Ctrl, Gq) | 2-way RM ANOVA | F (1, 33) = 0.0007523, p=0.9783 | n=35(16 Ctrl, 19 Gq) | mouse | Ctrl-LL 17.13±1.08; Ctrl-DD 17.25±1.112 |
|  | max spd cm/s (lighting: LL, DD) |  | F (1, 33) = 2.683, p=0.1109 |  |  | Gq-LL 13.95±1.598; Gq-DD 15.47±1.294  |
|  | max spd cm/s (group x lighting) |  | F (1, 33) = 0.01158, p=0.9150 |  |  |  |
|  | max spd cm/s (subject) |  | F (33, 33) = 4.179, p<0.0001 |  |  |  |