|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***2θ*** | | | | | | | | |
| **Rat** | |  |  |  | **Monkey** | | | |
| **DMS** | 3.0×10-6 |  |  |  | **CD** | **VS** | **DLPFC** | **Areas** |
| **DLS** | 1 | 1.3×10-5 |  |  | 0.098 | 3.8×10-4 | 1 | **CD** |
| **VS** | 0.014 | 0.003 | 2.1×10-6 |  |  | 0.010 | 7.7×10-5 | **VS** |
| **OFC** | 0.018 | 0.005 | 1 | 3.2×10-72 |  |  | 0.001 | **DLPFC** |
| **mPFC** | 0.382 | 0.078 | 0.912 | 1 | 8.8×10-31 |  |  |  |
| **ACC** | 0.403 | 0.083 | 0.942 | 1 | 1 | 7.5×10-27 |  |  |
| **M2** | 0.130 | 1 | 6.7×10-7 | 1.6×10-13 | 1.0×10-8 | 1.6×10-8 | 0.003 |  |
| **CA1** | 1 | 1 | 0.020 | 0.013 | 0.530 | 0.565 | 0.007 | 9.0×10-9 |
| **Areas** | **DMS** | **DLS** | **VS** | **OFC** | **mPFC** | **ACC** | **M2** | **CA1** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***4θ*** | | | | | | | | |
| **Rat** | |  |  |  | **Monkey** | | | |
| **DMS** | 0.455 |  |  |  | **CD** | **VS** | **DLPFC** | **Areas** |
| **DLS** | 1 | 0.410 |  |  | 0.098 | 1 | 0.614 | **CD** |
| **VS** | 0.356 | 0.782 | 0.027 |  |  | 0.109 | 0.952 | **VS** |
| **OFC** | 0.148 | 0.984 | 1 | 2.5×10-5 |  |  | 0.03 | **DLPFC** |
| **mPFC** | 0.036 | 0.319 | 1 | 1 | 1.2×10-6 |  |  |  |
| **ACC** | 0.413 | 1 | 1 | 1 | 1 | 1.3×10-4 |  |  |
| **M2** | 1 | 1 | 0.613 | 0.224 | 0.051 | 0.732 | 0.029 |  |
| **CA1** | 1 | 1 | 1 | 0.654 | 0.156 | 1 | 1 | 0.332 |
| **Areas** | **DMS** | **DLS** | **VS** | **OFC** | **mPFC** | **ACC** | **M2** | **CA1** |

**Supplementary file 1. Statistical test results for 2θ and 4θ plots. Top**, statistical test results for 2θ plots. Orange shading, Y-component of the mean vector was tested for significant deviation from 0 (Wilcoxon rank-sum test, red indicates *p-*values < 0.05). No shading, Y-component of the mean vector was compared across regions using one-way ANOVA (rat, F(7,2587) = 12.64, *p* = 4.9×10-16; monkey, F(2,247) = 10.75, *p* = 3.4×10-5) followed by Bonferroni post-hoc tests. Significant differences (*p*-values < 0.05) between regions are indicated in red. **Bottom**, statistical test results for 4θ plots. Orange shading, X-component of the mean vector was tested for significant deviation from 0 (Wilcoxon rank-sum test, red indicates *p-*values < 0.05). No shading, X-component of the mean vector was compared across regions using one-way ANOVA (rat, F(7,2587) = 3.79, *p* = 4.3×10-4; monkey, F(2,247) = 0.95, *p* = 0.387) followed by Bonferroni post-hoc tests. Significant differences (*p*-values < 0.05) between regions are indicated in red.