**Supplemental Tables**

**Table S1.** Summary of volumetric data used for modularity analyses, modified with permission from Kamhi et al. [2017]. For each species, subcaste, and age group, the mean ± sd (mm3) of each brain region are presented.

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| --- | --- | --- | --- |
| **Brain region** | **Species** | **Newly eclosed (mm3)** | **Mature (mm3)** |
| **OL** | *F. subsericea* | 3.15±1.04x10-3 | 6.11±1.24x10-3 |
| *O. smaragdina* major | 5.00±1.55x10-3 | 7.10±0.84x10-3 |
| *O. smaragdina* minor | 2.83±1.08x10-3 | 4.42±0.99x10-3 |
| **AL** | *F. subsericea* | 2.10±1.02x10-3 | 5.24±1.87x10-3 |
| *O. smaragdina* major | 3.77±1.96x10-3 | 6.55±1.06x10-3 |
| *O. smaragdina* minor | 2.53±1.02x10-3 | 4.78±0.90x10-3 |
| **MC** | *F. subsericea* | 3.76±1.08 x10-3 | 9.52±2.72x10-3 |
| *O. smaragdina* major | 7.91±3.36x10-3 | 17.01±2.79x10-3 |
| *O. smaragdina* minor | 4.90±1.74x10-3 | 14.30±4.31x10-3 |
| **ML** | *F. subsericea* | 1.85±0.55x10-3 | 5.11±0.97 x10-3 |
| *O. smaragdina* major | 3.78±1.56x10-3 | 7.70±1.06x10-3 |
| *O. smaragdina* minor | 2.83±0.74x10-3 | 6.78±1.46x10-3 |
| **Total MB** | *F. subsericea* | 5.61±1.56x10-3 | 2.50±1.83x10-2 |
| *O. smaragdina* major | 11.69±4.85x10-3 | 2.77±1.87x10-2 |
| *O. smaragdina* minor | 7.73±2.42x10-3 | 2.71±2.41x10-2 |
| **SEZ** | *F. subsericea* | 2.66±0.74x10-3 | 6.73±0.15x10-3 |
| *O. smaragdina* major | 4.05±1.73x10-3 | 6.51±0.12x10-3 |
| *O. smaragdina* minor | 2.96±1.36x10-3 | 5.50±0.14x10-3 |
| **CX** | *F. subsericea* | 0.72±0.28x10-4 | 2.36±0.87x10-4 |
| *O. smaragdina* major | 2.32±1.30x10-4 | 3.08±0.82x10-4 |
| *O. smaragdina* minor | 1.75±0.55x10-4 | 2.69±0.85x10-4 |
| **Total brain** | *F. subsericea* | 2.26±0.68 x10-2 | 5.42±1.26 x10-2 |
| *O. smaragdina* major | 4.19±1.68x10-2 | 7.20±0.87 x10-2 |
| *O. smaragdina* minor | 2.84±0.85x10-2 | 5.83±1.27 x10-2 |

**Table S2.** Correlation analysis of brain region metabolic activities. Fisher transformation-based average values and standard deviations (n = 28 pairwise correlations) are given for all species/subcaste combinations. Proportions of significantly positive Pearson (p < 0.05) and first-order partial correlations (p < 0.10) are also given for *O. smaragdina* (n = 20). The inferred pattern of integration or modularity is indicated in the last column. SD, standard deviation; N/A, significance testing not conducted due to small sample sizes (n = 10 individuals); \*, pattern inferred from correlation distribution parameters only.

|  |  |  |  |
| --- | --- | --- | --- |
| Experimental group | Pearson correlations | Partial correlations | Pattern |
| Fisher mean ± SD | Positive (p < 0.05) | Fisher mean ± SD | Positive (p < 0.10) |
| *Formica subsericea* | 0.63 ± 0.28 | N/A | 0.16 ± 0.30 | N/A | Modularity\* |
| *Oecophylla smaragdina* | 0.31 ± 0.28 | 21% | 0.13 ± 0.19 | 7% | Clustering |
| *O. smaragdina* major | 0.42 ± 0.36 | N/A | 0.15 ± 0.26 | N/A | Modularity\* |
| *O. smaragdina* minor | 0.20 ± 0.34 | N/A | 0.12 ± 0.26 | N/A | Clustering\* |

**References**

Kamhi JF, Sandridge-Gresko A, Walker C, Robson SKA, Traniello JFA (2017): Worker brain development and colony organization in ants: does division of labor influence neuroplasticity? Dev Neurobiol 77(9):1072-1085.