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Supplementary Material: Synchronization patterns in modular neuronal networks: a case study of C. elegans

1 LEVEL OF SYNCHRONIZATION

Figure S1. Synchronization parameter scans of the Multilayer-Louvain network. Absence of wireless coupling ($g_{wl} = 0$) for different electrical and chemical couplings: (A) - (H) the level of synchronization for all communities $\gamma_1$ - $\gamma_6$, (I) - (K) the global level of synchronization of the whole network $\gamma$, the chimera-like index $\chi_\gamma$ and the metastability index $\lambda_\gamma$. The system parameters are the same as in figure 6 (A), (B), (C).
Figure S2. Synchronization parameter scans of the Multilayer-Louvain network. Presence of wireless coupling \( g_{wl} = 0.20 \) for different electrical and chemical couplings: (A) - (H) the level of synchronization for all communities \( \gamma_1 - \gamma_6 \), (I) - (K) the global level of synchronization of the whole network \( \gamma \), the chimera-like index \( \chi_\gamma \) and the metastability index \( \lambda_\gamma \). The system parameters are the same as in figure 6 (D), (E), (F)
Figure S3. Synchronization parameter scans of the dynamical correlation-based network. Absence of wireless coupling ($g_{w1} = 0$) for different electrical and chemical couplings: (A) - (H) the level of synchronization for all communities $\gamma_1 - \gamma_6$, (I) - (K) the global level of synchronization of the whole network $\gamma$, the chimera-like index $\chi_\gamma$ and the metastability index $\lambda_\gamma$. The system parameters are the same as in figure 9 (A), (B), (C)
Figure S4. Synchronization parameter scans of the dynamical correlation-based network. Presence of wireless coupling ($g_{wl} = 0.20$) for different electrical and chemical couplings: (A) - (H) the level of synchronization for all communities $\gamma_1 - \gamma_6$, (I) - (K) the global level of synchronization of the whole network $\gamma$, the chimera-like index $\chi_\gamma$ and the metastability index $\lambda_\gamma$. The system parameters are the same as in figure 9 (D), (E), (F).
# 2 NEURON NAMES AND THEIR CHARACTERISTICS

Table S1: Neuron names and their characteristics. EN: Electrical Neuron. CS: Chemical Source. CT: Chemical Target. WS: Wireless Source. WT: Wireless Target. PMLC: Partition “Multilayer-Louvain” Community. PDCBC: Partition “dynamical correlation-based” Community.

| Neuron | Function | EN | CS | CT | WS | WT | PMLC | PDCBC |
|--------|----------|----|----|----|----|----|------|-------|
| 0      | ADAL     | 1  | 1  | 1  | 0  | 0  | 6    | 1     |
| 1      | ADAR     | 1  | 1  | 1  | 0  | 0  | 1    | 1     |
| 2      | ADEL     | 1  | 1  | 1  | 1  | 1  | 2    | 2     |
| 3      |ADER     | 1  | 1  | 1  | 1  | 1  | 2    | 3     |
| 4      | ADFL     | 1  | 1  | 1  | 1  | 0  | 1    | 2     |
| 5      | ADFR     | 1  | 1  | 1  | 1  | 1  | 0    | 1     |
| 6      | ADLL     | 1  | 1  | 0  | 1  | 1  | 3    | 1     |
| 7      | ADLR     | 1  | 1  | 0  | 1  | 1  | 3    | 4     |
| 8      | AFDL     | 1  | 1  | 0  | 1  | 1  | 3    | 3     |
| 9      | AFDR     | 1  | 1  | 0  | 1  | 1  | 3    | 3     |
| 10     | AIAL     | 1  | 1  | 0  | 1  | 1  | 3    | 2     |
| 11     | AIAR     | 1  | 1  | 0  | 1  | 1  | 3    | 2     |
| 12     | AIBL     | 1  | 1  | 0  | 1  | 1  | 3    | 3     |
| 13     | AIBR     | 1  | 1  | 0  | 1  | 1  | 3    | 3     |
| 14     | AIML     | 1  | 1  | 0  | 1  | 1  | 8    | 1     |
| 15     | AIMR     | 0  | 1  | 1  | 0  | 1  | 3    | 5     |
| 16     | AINL     | 1  | 1  | 0  | 0  | 0  | 3    | 2     |
| 17     | AINR     | 1  | 1  | 0  | 0  | 0  | 3    | 2     |
| 18     | AIYL     | 1  | 1  | 0  | 1  | 1  | 3    | 3     |
| 19     | AIYR     | 1  | 1  | 0  | 1  | 1  | 3    | 3     |
| 20     | AIYL     | 1  | 1  | 0  | 1  | 1  | 3    | 3     |
| 21     | AIYR     | 1  | 1  | 0  | 1  | 1  | 3    | 3     |
| 22     | ALA      | 1  | 1  | 0  | 0  | 1  | 3    | 4     |
| 23     | ALML     | 1  | 1  | 0  | 1  | 1  | 3    | 4     |
| 24     | ALMR     | 1  | 1  | 0  | 1  | 1  | 2    | 1     |
| 25     | ALNL     | 1  | 1  | 0  | 1  | 1  | 5    | 3     |
| 26     | ALNR     | 0  | 1  | 1  | 0  | 1  | 2    | 5     |
| 27     | AQR      | 1  | 1  | 0  | 0  | 0  | 5    | 3     |
| 28     | AS01     | 1  | 1  | 0  | 1  | 1  | 7    | 6     |
| 29     | AS02     | 1  | 1  | 0  | 1  | 1  | 7    | 6     |
| 30     | AS03     | 1  | 1  | 0  | 1  | 1  | 4    | 6     |
| 31     | AS04     | 1  | 1  | 0  | 1  | 1  | 4    | 7     |
| 32     | AS05     | 1  | 1  | 0  | 1  | 1  | 4    | 6     |
| 33     | AS06     | 1  | 1  | 0  | 1  | 1  | 4    | 6     |
| 34     | AS07     | 1  | 0  | 1  | 0  | 1  | 2    | 6     |

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| Neuron | Function     | EN | CS | CT | WS | WT | PMLC | PDCBC |
|--------|--------------|----|----|----|----|----|------|-------|
| 35     | AS08         | 1  | 0  | 1  | 0  | 1  | 2    | 6     |
| 36     | AS09         | 1  | 1  | 0  | 1  | 2  | 6    |       |
| 37     | AS10         | 1  | 0  | 1  | 0  | 1  | 2    | 6     |
| 38     | AS11         | 1  | 1  | 0  | 1  | 2  | 7    |       |
| 39     | ASEL         | 0  | 1  | 1  | 0  | 1  | 2    | 8     |
| 40     | ASER         | 0  | 1  | 1  | 0  | 1  | 2    | 8     |
| 41     | ASGL         | 1  | 1  | 0  | 1  | 2  | 6    |       |
| 42     | ASGR         | 1  | 1  | 0  | 1  | 2  | 6    |       |
| 43     | ASHL         | 1  | 1  | 0  | 1  | 2  | 6    |       |
| 44     | ASHR         | 1  | 1  | 0  | 1  | 2  | 6    |       |
| 45     | ASIL         | 1  | 0  | 0  | 1  | 2  | 6    |       |
| 46     | ASIR         | 1  | 0  | 0  | 1  | 2  | 6    |       |
| 47     | ASIL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 48     | ASJR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 49     | ASKL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 50     | ASKR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 51     | AUAL         | 1  | 1  | 0  | 1  | 2  | 6    |       |
| 52     | AUAR         | 1  | 1  | 0  | 1  | 2  | 6    |       |
| 53     | AVAL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 54     | AVAR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 55     | AVBL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 56     | AVBR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 57     | AVDL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 58     | AVDR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 59     | AVEL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 60     | AVER         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 61     | AVFL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 62     | AVFR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 63     | AVG          | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 64     | AVHL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 65     | AVHR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 66     | AVJL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 67     | AVJR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 68     | AVKL         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 69     | AVKR         | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 70     | AVL          | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 71     | AVM          | 1  | 1  | 0  | 0  | 1  | 2    | 6     |

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| Neuron | Function   | EN | CS | CT | WS | WT | PMLC | PDCBC |
|--------|------------|----|----|----|----|----|------|-------|
| 72     | AWAL       | Sensory | 1  | 1  | 1  | 0  | 0   | 3     |
| 73     | AWAR       | Sensory | 1  | 1  | 1  | 0  | 0   | 3     |
| 74     | AWBL       | Sensory | 1  | 1  | 1  | 0  | 1   | 1     |
| 75     | AWBR       | Sensory | 1  | 1  | 1  | 0  | 1   | 1     |
| 76     | AWCL       | Sensory | 0  | 1  | 1  | 0  | 0   | 3     |
| 77     | AWCR       | Sensory | 0  | 1  | 1  | 0  | 1   | 3     |
| 78     | BAGL       | Sensory | 1  | 1  | 1  | 0  | 1   | 1     |
| 79     | BAGR       | Sensory | 1  | 1  | 1  | 0  | 1   | 1     |
| 80     | BDUL       | Interneuron | 0  | 1  | 1  | 0  | 0   | 2     |
| 81     | BDUR       | Interneuron | 0  | 1  | 1  | 0  | 1   | 2     |
| 82     | CEPDL      | Sensory | 1  | 1  | 1  | 0  | 1   | 3     |
| 83     | CEPDR      | Sensory | 1  | 1  | 1  | 0  | 1   | 3     |
| 84     | CEPVL      | Sensory | 1  | 1  | 1  | 0  | 1   | 3     |
| 85     | CEPVR      | Sensory | 1  | 1  | 1  | 0  | 1   | 3     |
| 86     | DA01       | Motor | 1  | 1  | 1  | 0  | 1   | 7     |
| 87     | DA02       | Motor | 1  | 1  | 1  | 0  | 1   | 7     |
| 88     | DA03       | Motor | 1  | 1  | 1  | 0  | 1   | 4     |
| 89     | DA04       | Motor | 1  | 1  | 1  | 0  | 0   | 4     |
| 90     | DA05       | Motor | 1  | 1  | 1  | 0  | 0   | 4     |
| 91     | DA06       | Motor | 1  | 1  | 1  | 0  | 0   | 2     |
| 92     | DA07       | Motor | 1  | 0  | 1  | 0  | 0   | 2     |
| 93     | DA08       | Motor | 1  | 0  | 1  | 0  | 0   | 2     |
| 94     | DA09       | Motor | 1  | 1  | 1  | 0  | 0   | 2     |
| 95     | DB01       | Motor | 1  | 1  | 1  | 0  | 0   | 7     |
| 96     | DB02       | Motor | 1  | 1  | 1  | 0  | 0   | 4     |
| 97     | DB03       | Motor | 1  | 1  | 1  | 0  | 0   | 4     |
| 98     | DB04       | Motor | 1  | 1  | 1  | 0  | 0   | 4     |
| 99     | DB05       | Motor | 1  | 0  | 1  | 0  | 0   | 2     |
| 100    | DB06       | Motor | 1  | 0  | 1  | 0  | 0   | 2     |
| 101    | DB07       | Motor | 1  | 1  | 1  | 0  | 0   | 2     |
| 102    | DD01       | Motor | 1  | 1  | 1  | 0  | 0   | 7     |
| 103    | DD02       | Motor | 1  | 1  | 1  | 0  | 0   | 4     |
| 104    | DD03       | Motor | 1  | 0  | 1  | 0  | 0   | 4     |
| 105    | DD04       | Motor | 1  | 0  | 1  | 0  | 0   | 4     |
| 106    | DD05       | Motor | 1  | 1  | 1  | 0  | 0   | 6     |
| 107    | DD06       | Motor | 0  | 0  | 1  | 0  | 0   | 2     |
| 108    | DVA        | Interneuron | 1  | 1  | 1  | 0  | 0   | 5     |
Table S1: Neuron names and their characteristics. EN: Electrical Neuron. CS: Chemical Source. CT: Chemical Target. WS: Wireless Source. WT: Wireless Target. PMLC: Partition “Multilayer-Louvain” Community. PDCBC: Partition “dynamical correlation-based” Community.

| Neuron | Function   | EN | CS | CT | WS | WT | PMLC | PDCBC |
|--------|------------|----|----|----|----|----|------|-------|
| 109    | DVB        | 1  | 1  | 0  | 0  | 0  | 2    | 6     |
| 110    | DVC        | 1  | 1  | 1  | 0  | 1  | 5    | 3     |
| 111    | FLPL       | 1  | 1  | 1  | 0  | 1  | 2    | 3     |
| 112    | FLPR       | 1  | 1  | 1  | 0  | 1  | 2    | 3     |
| 113    | HSNL       | 1  | 1  | 1  | 1  | 1  | 3    | 2     |
| 114    | HSNR       | 1  | 1  | 1  | 1  | 1  | 3    | 2     |
| 115    | IL1DL      | 1  | 1  | 1  | 0  | 1  | 1    | 1     |
| 116    | IL1DR      | 1  | 1  | 1  | 0  | 1  | 1    | 1     |
| 117    | IL1L       | 1  | 1  | 1  | 0  | 1  | 1    | 4     |
| 118    | IL1R       | 1  | 1  | 1  | 0  | 1  | 1    | 4     |
| 119    | IL1VL      | 1  | 1  | 1  | 0  | 1  | 1    | 4     |
| 120    | IL1VR      | 1  | 1  | 1  | 0  | 1  | 1    | 4     |
| 121    | IL2DL      | 0  | 1  | 0  | 0  | 1  | 1    | 5     |
| 122    | IL2DR      | 0  | 1  | 0  | 0  | 1  | 1    | 5     |
| 123    | IL2L       | 1  | 1  | 1  | 0  | 1  | 1    | 4     |
| 124    | IL2R       | 1  | 1  | 1  | 0  | 1  | 1    | 4     |
| 125    | IL2VL      | 0  | 1  | 1  | 0  | 1  | 1    | 5     |
| 126    | IL2VR      | 0  | 1  | 1  | 0  | 1  | 1    | 5     |
| 127    | LUAL       | 1  | 1  | 1  | 0  | 1  | 2    | 6     |
| 128    | LUAR       | 1  | 1  | 1  | 0  | 1  | 2    | 7     |
| 129    | OLLL       | 1  | 1  | 1  | 0  | 1  | 1    | 1     |
| 130    | OLLR       | 1  | 1  | 1  | 0  | 1  | 1    | 1     |
| 131    | OLQDL      | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 132    | OLQDR      | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 133    | OLQVL      | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 134    | OLQVR      | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 135    | PDA        | 1  | 1  | 1  | 0  | 1  | 2    | 7     |
| 136    | PDB        | 1  | 1  | 1  | 0  | 0  | 2    | 7     |
| 137    | PDEL       | 1  | 1  | 1  | 1  | 1  | 5    | 3     |
| 138    | PDER       | 1  | 1  | 1  | 1  | 1  | 5    | 3     |
| 139    | PHAL       | 1  | 1  | 1  | 0  | 1  | 8    | 3     |
| 140    | PHAR       | 1  | 1  | 1  | 0  | 1  | 8    | 3     |
| 141    | PHBL       | 1  | 1  | 1  | 0  | 1  | 2    | 1     |
| 142    | PHBR       | 1  | 1  | 1  | 0  | 1  | 2    | 1     |
| 143    | PHCL       | 1  | 1  | 1  | 0  | 1  | 2    | 6     |
| 144    | PHCR       | 1  | 1  | 0  | 0  | 1  | 2    | 6     |
| 145    | PLML       | 1  | 1  | 0  | 0  | 1  | 2    | 6     |

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Table S1: Neuron names and their characteristics. EN: Electrical Neuron. CS: Chemical Source. CT: Chemical Target. WS: Wireless Source. WT: Wireless Target. PMLC: Partition “Multilayer-Louvain” Community. PDCBC: Partition “dynamical correlation-based” Community.

| Neuron | Function | EN | CS | CT | WS | WT | PMLC | PDCBC |
|--------|----------|----|----|----|----|----|------|-------|
| 146    | PLMR     | Sensory | 1  | 1  | 1  | 0  | 1    | 5     |
| 147    | PLNL     | Interneuron | 0  | 1  | 1  | 0  | 1    | 3     |
| 148    | PLNR     | Interneuron | 0  | 1  | 0  | 0  | 1    | 3     |
| 149    | PQR      | Sensory | 1  | 1  | 1  | 0  | 1    | 2     |
| 150    | PVCL     | Sensory | 1  | 1  | 1  | 0  | 1    | 2     |
| 151    | PVCR     | Sensory | 1  | 1  | 1  | 0  | 1    | 2     |
| 152    | PVDL     | Interneuron | 0  | 1  | 1  | 0  | 1    | 2     |
| 153    | PVDR     | Interneuron | 0  | 1  | 0  | 0  | 1    | 2     |
| 154    | PVM      | Sensory | 1  | 1  | 1  | 0  | 0    | 5     |
| 155    | PVNL     | Interneuron | 1  | 1  | 1  | 0  | 0    | 2     |
| 156    | PVNR     | Interneuron | 1  | 1  | 1  | 0  | 0    | 2     |
| 157    | PVPL     | Interneuron | 1  | 1  | 1  | 0  | 0    | 5     |
| 158    | PVPR     | Interneuron | 1  | 1  | 1  | 0  | 0    | 5     |
| 159    | PVQL     | Interneuron | 1  | 1  | 1  | 0  | 0    | 3     |
| 160    | PVQR     | Interneuron | 1  | 1  | 1  | 0  | 0    | 3     |
| 161    | PVV      | Interneuron | 1  | 1  | 1  | 0  | 0    | 5     |
| 162    | PVTL     | Interneuron | 1  | 1  | 1  | 0  | 0    | 5     |
| 163    | PVWL     | Interneuron | 1  | 1  | 1  | 0  | 0    | 2     |
| 164    | PVWRL    | Interneuron | 1  | 1  | 1  | 0  | 0    | 2     |
| 165    | RIAL     | Interneuron | 0  | 1  | 1  | 0  | 1    | 1     |
| 166    | RIAR     | Interneuron | 0  | 1  | 1  | 0  | 1    | 1     |
| 167    | RIBL     | Interneuron | 1  | 1  | 1  | 0  | 1    | 1     |
| 168    | RIBR     | Interneuron | 1  | 1  | 1  | 0  | 1    | 1     |
| 169    | RICL     | Interneuron | 1  | 1  | 1  | 1  | 1    | 1     |
| 170    | RICR     | Interneuron | 1  | 1  | 1  | 1  | 1    | 1     |
| 171    | RID      | Interneuron | 1  | 1  | 1  | 0  | 1    | 6     |
| 172    | RIFL     | Interneuron | 1  | 1  | 1  | 0  | 0    | 6     |
| 173    | RIFR     | Interneuron | 1  | 1  | 1  | 0  | 0    | 6     |
| 174    | RIGL     | Interneuron | 1  | 1  | 1  | 0  | 0    | 6     |
| 175    | RIGR     | Interneuron | 1  | 1  | 1  | 0  | 0    | 6     |
| 176    | RIH      | Interneuron | 1  | 1  | 1  | 0  | 0    | 1     |
| 177    | RIML     | Motor | 1  | 1  | 1  | 1  | 1    | 3     |
| 178    | RIMR     | Motor | 1  | 1  | 1  | 1  | 1    | 3     |
| 179    | RIPL     | Interneuron | 1  | 1  | 1  | 0  | 0    | 1     |
| 180    | RIPR     | Interneuron | 1  | 1  | 1  | 0  | 0    | 1     |
| 181    | RIR      | Interneuron | 1  | 1  | 1  | 0  | 0    | 1     |
| 182    | RIS      | Interneuron | 1  | 1  | 1  | 0  | 1    | 1     |

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Table S1: Neuron names and their characteristics. EN: Electrical Neuron. CS: Chemical Source. CT: Chemical Target. WS: Wireless Source. WT: Wireless Target. PMLC: Partition “Multilayer-Louvain” Community. PDCBC: Partition “dynamical correlation-based” Community.

| Neuron  | Function | EN | CS | CT | WS | WT | PMLC | PDCBC |
|---------|----------|----|----|----|----|----|------|-------|
| 183     | RIVL     | 1  | 1  | 1  | 0  | 0  | 1    | 7     |
| 184     | RIVR     | 1  | 1  | 1  | 0  | 0  | 1    | 7     |
| 185     | RMDDL    | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 186     | RMDDR    | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 187     | RMDL     | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 188     | RMDR     | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 189     | RMDVL    | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 190     | RMDVR    | 1  | 1  | 1  | 0  | 1  | 1    | 3     |
| 191     | RMED     | 1  | 1  | 1  | 0  | 1  | 1    | 1     |
| 192     | RMEL     | 1  | 0  | 1  | 0  | 1  | 1    | 1     |
| 193     | RMER     | 1  | 0  | 1  | 0  | 1  | 1    | 1     |
| 194     | RMEV     | 1  | 1  | 1  | 0  | 1  | 1    | 1     |
| 195     | RMFL     | 1  | 1  | 1  | 0  | 1  | 5    | 3     |
| 196     | RMFR     | 0  | 1  | 1  | 0  | 1  | 5    | 4     |
| 197     | RMGL     | 1  | 1  | 1  | 0  | 0  | 1    | 4     |
| 198     | RMGR     | 1  | 1  | 1  | 0  | 0  | 1    | 4     |
| 199     | RMHL     | 1  | 1  | 1  | 0  | 1  | 1    | 4     |
| 200     | RMHR     | 1  | 1  | 1  | 0  | 1  | 1    | 4     |
| 201     | SAADL    | 1  | 1  | 1  | 0  | 0  | 3    | 3     |
| 202     | SAADR    | 1  | 1  | 1  | 0  | 0  | 3    | 3     |
| 203     | SAAVL    | 1  | 1  | 1  | 0  | 0  | 3    | 3     |
| 204     | SAAVR    | 1  | 1  | 1  | 0  | 0  | 2    | 3     |
| 205     | SABD     | 1  | 1  | 1  | 0  | 1  | 7    | 6     |
| 206     | SABVL    | 1  | 0  | 1  | 0  | 1  | 2    | 6     |
| 207     | SABVR    | 1  | 0  | 1  | 0  | 1  | 7    | 6     |
| 208     | SDQL     | 1  | 1  | 1  | 0  | 1  | 2    | 3     |
| 209     | SDQR     | 1  | 1  | 0  | 0  | 1  | 6    | 6     |
| 210     | SIADL    | 1  | 0  | 1  | 0  | 1  | 1    | 3     |
| 211     | SIADR    | 1  | 0  | 1  | 0  | 1  | 1    | 3     |
| 212     | SIAVL    | 1  | 0  | 1  | 0  | 1  | 1    | 7     |
| 213     | SIAVR    | 1  | 0  | 1  | 0  | 1  | 1    | 7     |
| 214     | SIBDL    | 1  | 0  | 1  | 0  | 1  | 1    | 7     |
| 215     | SIBDR    | 1  | 0  | 1  | 0  | 1  | 1    | 3     |
| 216     | SIBVL    | 1  | 0  | 1  | 0  | 1  | 1    | 3     |
| 217     | SIBVR    | 1  | 0  | 1  | 0  | 1  | 1    | 3     |
| 218     | SMBDL    | 1  | 1  | 1  | 0  | 0  | 5    | 3     |
| 219     | SMBDR    | 1  | 1  | 1  | 0  | 0  | 5    | 3     |

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Table S1: Neuron names and their characteristics. EN: Electrical Neuron. CS: Chemical Source. CT: Chemical Target. WS: Wireless Source. WT: Wireless Target. PMLC: Partition “Multilayer-Louvain” Community. PDCBC: Partition “dynamical correlation-based” Community.

| Neuron  | Function | EN | CS | CT | WS | WT | PMLC | PDCBC |
|---------|----------|----|----|----|----|----|------|-------|
| 220     | SMBVL    | Motor | 1  | 1  | 1  | 0  | 0    | 3     | 3     |
| 221     | SMBVR    | Motor | 1  | 1  | 1  | 0  | 0    | 3     | 3     |
| 222     | SMDDL    | Motor | 1  | 1  | 1  | 0  | 1    | 1     | 3     |
| 223     | SMDDR    | Motor | 1  | 1  | 1  | 0  | 1    | 1     | 3     |
| 224     | SMDVL    | Motor | 1  | 1  | 1  | 0  | 1    | 3     | 3     |
| 225     | SMDVR    | Motor | 1  | 1  | 1  | 0  | 1    | 3     | 3     |
| 226     | URADL    | Motor | 0  | 1  | 1  | 0  | 0    | 1     | 8     |
| 227     | URADR    | Motor | 0  | 1  | 1  | 0  | 0    | 1     | 5     |
| 228     | URAVL    | Motor | 0  | 1  | 1  | 0  | 0    | 1     | 5     |
| 229     | URAVR    | Motor | 0  | 1  | 1  | 0  | 0    | 1     | 5     |
| 230     | URBL     | Sensory | 1  | 1  | 1  | 0  | 0    | 1     | 3     |
| 231     | URBR     | Sensory | 1  | 1  | 1  | 0  | 0    | 1     | 3     |
| 232     | URXL     | Sensory | 1  | 1  | 1  | 0  | 0    | 1     | 4     |
| 233     | URXR     | Sensory | 1  | 1  | 1  | 0  | 0    | 1     | 5     |
| 234     | URYDL    | Sensory | 1  | 1  | 1  | 0  | 1    | 1     | 6     |
| 235     | URYDR    | Sensory | 1  | 1  | 1  | 0  | 1    | 1     | 6     |
| 236     | URYVL    | Sensory | 1  | 1  | 1  | 0  | 1    | 1     | 6     |
| 237     | URYVR    | Sensory | 1  | 1  | 1  | 0  | 1    | 1     | 6     |
| 238     | VA01     | Motor | 1  | 1  | 1  | 0  | 1    | 7     | 6     |
| 239     | VA02     | Motor | 1  | 1  | 1  | 0  | 1    | 7     | 6     |
| 240     | VA03     | Motor | 1  | 1  | 1  | 0  | 1    | 7     | 6     |
| 241     | VA04     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 242     | VA05     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 243     | VA06     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 244     | VA07     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 245     | VA08     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 246     | VA09     | Motor | 1  | 1  | 1  | 0  | 1    | 6     | 6     |
| 247     | VA10     | Motor | 1  | 0  | 1  | 0  | 1    | 2     | 6     |
| 248     | VA11     | Motor | 1  | 1  | 1  | 0  | 1    | 2     | 6     |
| 249     | VA12     | Motor | 1  | 1  | 1  | 0  | 1    | 2     | 6     |
| 250     | VB01     | Motor | 1  | 1  | 1  | 0  | 1    | 7     | 6     |
| 251     | VB02     | Motor | 1  | 1  | 1  | 0  | 1    | 7     | 6     |
| 252     | VB03     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 253     | VB04     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 254     | VB05     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 255     | VB06     | Motor | 1  | 1  | 1  | 0  | 1    | 4     | 6     |
| 256     | VB07     | Motor | 1  | 1  | 1  | 0  | 1    | 6     | 6     |

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| Neuron | Function | EN | CS | CT | WS | WT | PMLC | PDCBC |
|--------|----------|----|----|----|----|----|------|-------|
| 257    | VB08     | 1  | 1  | 1  | 0  | 1  | 6    | 6     |
| 258    | VB09     | 1  | 1  | 1  | 0  | 1  | 6    | 6     |
| 259    | VB10     | 1  | 1  | 1  | 0  | 1  | 2    | 6     |
| 260    | VB11     | 1  | 1  | 1  | 0  | 1  | 2    | 6     |
| 261    | VC01     | 1  | 1  | 1  | 0  | 0  | 4    | 1     |
| 262    | VC02     | 1  | 1  | 1  | 0  | 0  | 4    | 4     |
| 263    | VC03     | 1  | 1  | 1  | 0  | 0  | 4    | 4     |
| 264    | VC04     | 1  | 1  | 1  | 0  | 0  | 4    | 4     |
| 265    | VC05     | 1  | 1  | 1  | 0  | 0  | 4    | 4     |
| 266    | VC06     | 1  | 1  | 1  | 0  | 1  | 7    | 3     |
| 267    | VC07     | 1  | 1  | 1  | 0  | 1  | 7    | 3     |
| 268    | VC08     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 269    | VC09     | 1  | 1  | 0  | 0  | 1  | 4    | 3     |
| 270    | VC10     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 271    | VC11     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 272    | VC12     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 273    | VC13     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 274    | VC14     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 275    | VC15     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 276    | VC16     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 277    | VC17     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |
| 278    | VC18     | 1  | 1  | 1  | 0  | 1  | 4    | 3     |