**Supplementary File 1: UNC-42(+) neurons and their function**

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| --- | --- | --- | --- | --- |
| UNC-42(+) neuron classes (# of neurons) | UNC-42(+) cells as described by Baran et al., 1999 \* | neuron type | Neurotransmitter identity (Reference) | Described function in locomotion(Reference) |
| ASH (2) | yes | sensory  | glutamate (*1*) | sensory inputs induce reversal behavior (*2-10*) |
| AIB (2) | no \*\* | interneuron | glutamate (*1*) | backward locomotion (*11*) |
| AVA (2) | yes | command interneuron  | ACh (*12*) | backward locomotion, reversal (*13*) |
| AVB (2) | no | command interneuron | ACh (*12*) | forward locomotion (*13*) |
| AVD (2) | yes | command interneuron | ACh (*12*) | backward locomotion (*13*) |
| AVE (2) | yes | command interneuron | ACh (*12*) | backward locomotion (*13*) |
| AVH (2) | yes | interneuron | peptidergic |  |
| AVJ (2) (very dim) | yes |  | ? |  |
| AVK (2) | yes | interneuron | peptidergic |  |  |
| RIV (2) | yes | interneuron | ACh (*12*) | omega turn (*14*) |
| RMF (2) | no | ring interneuron | ACh (*12*) |  |
| SAA (4) | yes | sublateral interneuron | ACh (*12*) |  |
| RMD (6)  | yes | ring motor neuron | ACh (*12*) | long reversal (*14*) |
| RMH (2) | no | ring motor neuron | ACh (*12*) |  |
| SMD (4) | no \*\*\* | sublateral motor neuron | ACh (*12*) | long reversal, omega turn (*14*) |
| SIA (4) (very dim) | no  | sublateral interneuron | ACh (*12*) |  |
| SIB (4) | yes | sublateral motor neuron | ACh (*12*) | long reversal (*14*) |
|  | SMB, AIN, PVT, transient DD, VA11, AS11, VD12, unidentified neurons |  |  |  |

\* We ascribe these differences to misidentification (particularly SMB, AIN) and/or promoter transgene artifacts (PVT) and/or missing regulatory elements in the reporter gene used.

\*\* subsequently found to be expressed in AIB (*11*)

\*\*\* subsequently found to be expressed in SMD (*12*)

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