**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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