

## **sto-3 is expressed in R4BL/R and R8BL/R, male-specific ray neurons in *C. elegans***

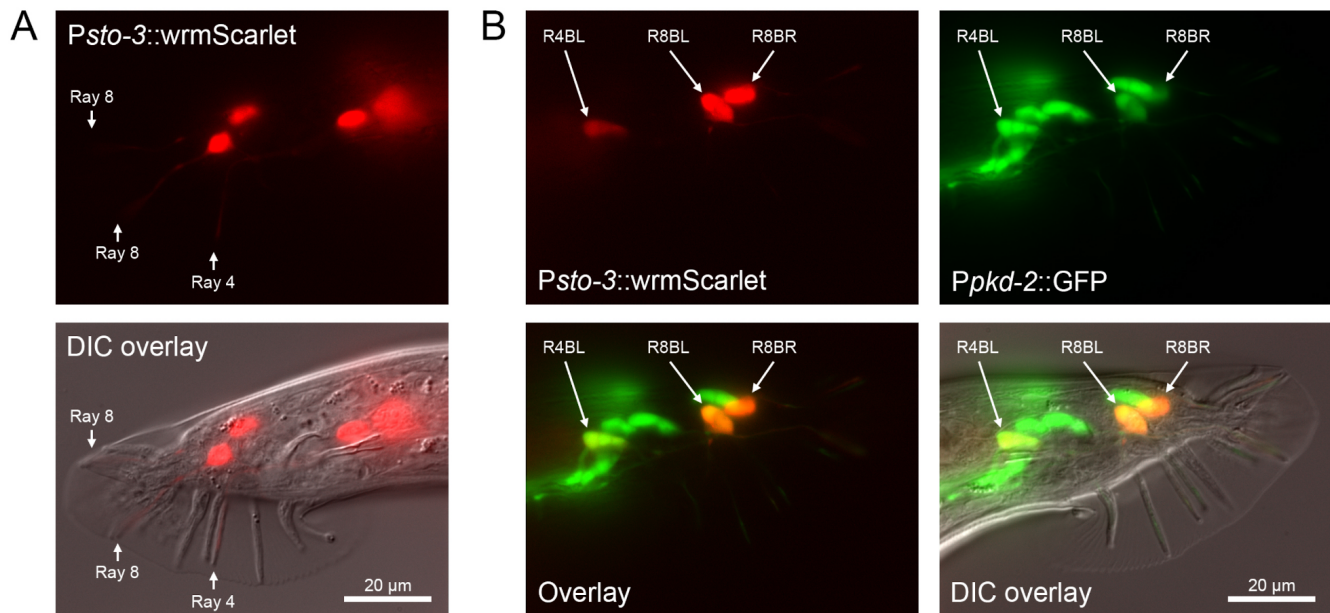
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**Figure 1:** *Psto3::wrmScarlet* reporter is expressed in R4BL/R and R8BL/R ray neurons.

### **Description**

In *C. elegans* hermaphrodites, *sto-3* promoter has been previously shown to drive gene expression in RIBL/R neurons and in three unidentified non-neuronal cells in the tail (Turek et al., 2016). (A) We have found that in *C. elegans* males, in addition to RIBL/R, two pairs of bilaterally-symmetrical tail neurons show strong *Psto3::wrmScarlet* expression (*wrmScarlet* is a codon-optimized version of *mScarlet* (El Mouridi et al., 2017)). These neurons send their processes to rays 4 and 8 of the male tail. In the figure, right lateral aspect is shown; arrows indicate rays containing processes expressing *Psto3::wrmScarlet*. (B) All rays in the male tail are innervated by A and B type neurons (Sulston et al., 1980). To identify which neuron type expresses the *sto-3* reporter, we have crossed *Psto3::wrmScarlet* transgenic males with a *Ppkd-2::GFP* reporter strain MT11318, which expresses GFP in the B-type neurons of rays 1-5, 7-9 and not in the A-type neurons (Barr and Sternberg, 1999). In the F1 cross-progeny males, which also carried the *ceh-30(n3714)* mutation in the background, *Psto3::wrmScarlet* expression is colocalized with *Ppkd-2::GFP* for both pairs of ray neurons expressing *Psto3::wrmScarlet*. This indicates that *sto-3* is expressed in the R4BL/R and R8BL/R ray neurons. Left lateral aspect; arrows point at the cell bodies of *Psto3::wrmScarlet*-expressing neurons.

### **Reagents**

*z[Ex898[Psto3::wrmScarlet + lin-15(+)]*; *lin-15(n765ts)* X. *Psto3::wrmScarlet* transcriptional fusion. The plasmid was made by cloning 971 bp promoter region of *sto-3* into a *wrmScarlet-unc-54* 3'UTR vector with a pUC19 vector backbone.

Strains: QW1876.

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## References

Barr MM, Sternberg PW. A polycystic kidney-disease gene homologue required for male mating behaviour in *C. elegans*. *Nature*. 1999 Sep;401(6751):386. PMID: 10517638.

El Mouridi S, Lecroisey C, Tardy P, Mercier M, Leclercq-Blondel A, Zariohi N, Boulin T. Reliable CRISPR/Cas9 genome engineering in *Caenorhabditis elegans* using a single efficient sgRNA and an easily recognizable phenotype. *G3: Genes, Genomes, Genetics*. 2017 May 1;7(5):1429-37. PMID: 28280211.

Sulston JE, Albertson DG, Thomson JN. The *Caenorhabditis elegans* male: postembryonic development of nongonadal structures. *Developmental biology*. 1980 Aug 1;78(2):542-76. PMID: 7409314.

Turek M, Besseling J, Spies JP, Knig S, Bringmann H. Sleep-active neuron specification and sleep induction require FLP-11 neuropeptides to systemically induce sleep. *Elife*. 2016 Mar 7; 5:e12499. PMID: 26949257.

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