

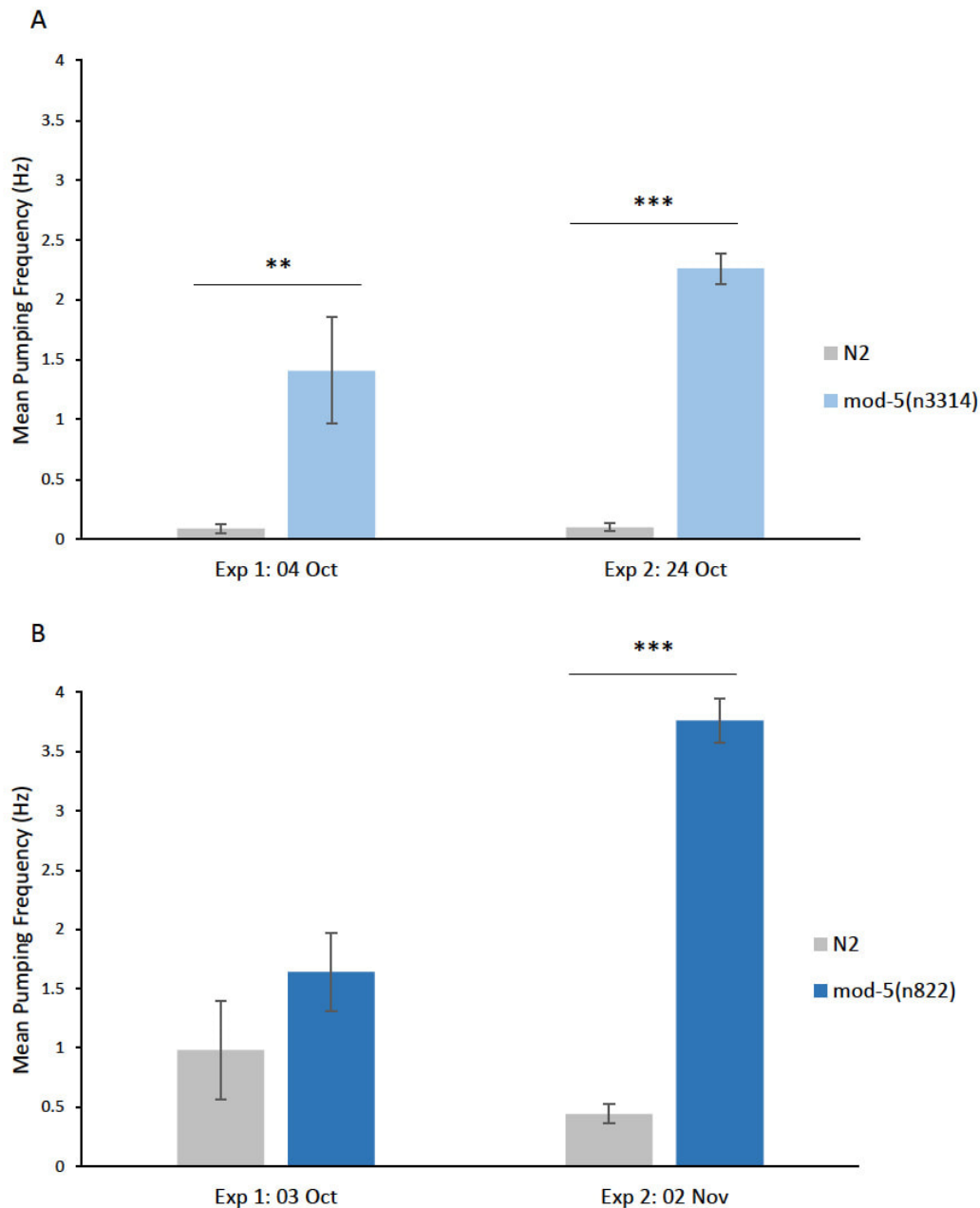


Basal pharyngeal pumping elevated in *C. elegans mod-5* mutants

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Description

In *C. elegans*, the reuptake of [serotonin \(5-HT\)](#) is facilitated by [mod-5](#), which encodes a [5-HT](#) transporter that is orthologous to a human [5-HT](#) transporter (SLC6A4). [mod-5](#) has been shown to effect both feeding and locomotion in *C. elegans* (Ranganathan et al., 2001; Jafarau et al. 2011). We obtained and analyzed EPG data using a microfluidic device ([NemaMetrix](#)) for [mod-5](#) null mutant strains, [mod-5\(n3314\)](#) (A, Exp 1 n=15; Exp 2 n=32) and [mod-5\(n822\)](#), (B, Exp 1 n=17; Exp 2 n=27) and [N2](#) control worms (A, n=16 and 31; B, n=18 and 27 for Exp 1 and 2, respectively) in M9 saline buffer (2-



minute recording duration). Mutations to the *C. elegans* serotonin reuptake transporter, *mod-5*, lead to an accumulation of serotonin at the synaptic cleft, which results in a significant increase in baseline pharyngeal pumping frequency in three out of four experiments (A, *N2*= 0.10 ± 0.04 and 0.09 ± 0.03 Hz ; *mod-5(n3314)*= 1.41 ± 0.44 and 2.26 ± 0.13 Hz; B, *N2*= 0.98 ± 0.42 and 0.44 ± 0.08 ; *mod-5(n822)*= 1.64 ± 0.33 and 3.76 ± 0.19 Hz; ** $p < 0.005$, *** $p < 0.0001$, 2-tailed students t-test).

Reagents

Strains: MT8944: *mod-5(n822)* I; MT9772: *mod-5(n3314)* I
Control Strain: *N2*

References

Ranganathan, R., Sawin, ER, Trent, C., Horvitz, HR (2001) Mutation in the *Caenorhabditis elegans* serotonin reuptake transporter *mod-5* reveal serotonin-dependent and independent activities of fluoxetine. *J Neurosci* 21(16): 5871-5884. PMID: 11487610.

Jafarau, D, Xie, Y, Kullyev, A, Liang, B, Sze, JY (2011) Regulation of extrasynaptic 5-HT SERT function in 5-HT absorbing neurons underscores adaptation behavior in *C. elegans*. *J Neurosci* 31(24): 8948-8957. PMID: 21677178.

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