



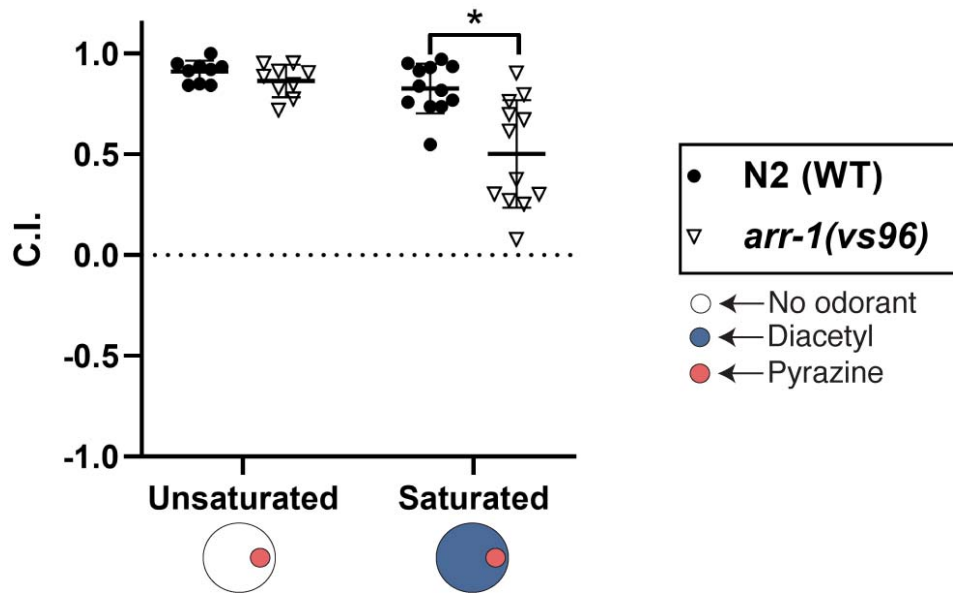
**Supplementary Information for**  
**Arrestin-mediated Desensitization Enables Intra-neuronal Olfactory**  
**Discrimination in *C. elegans***

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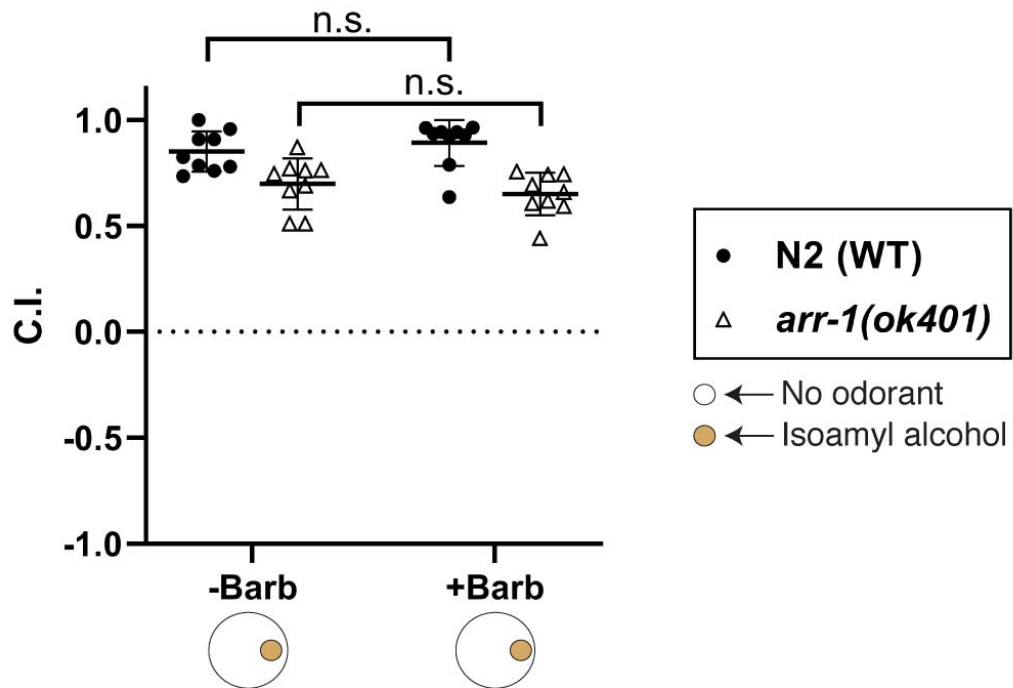
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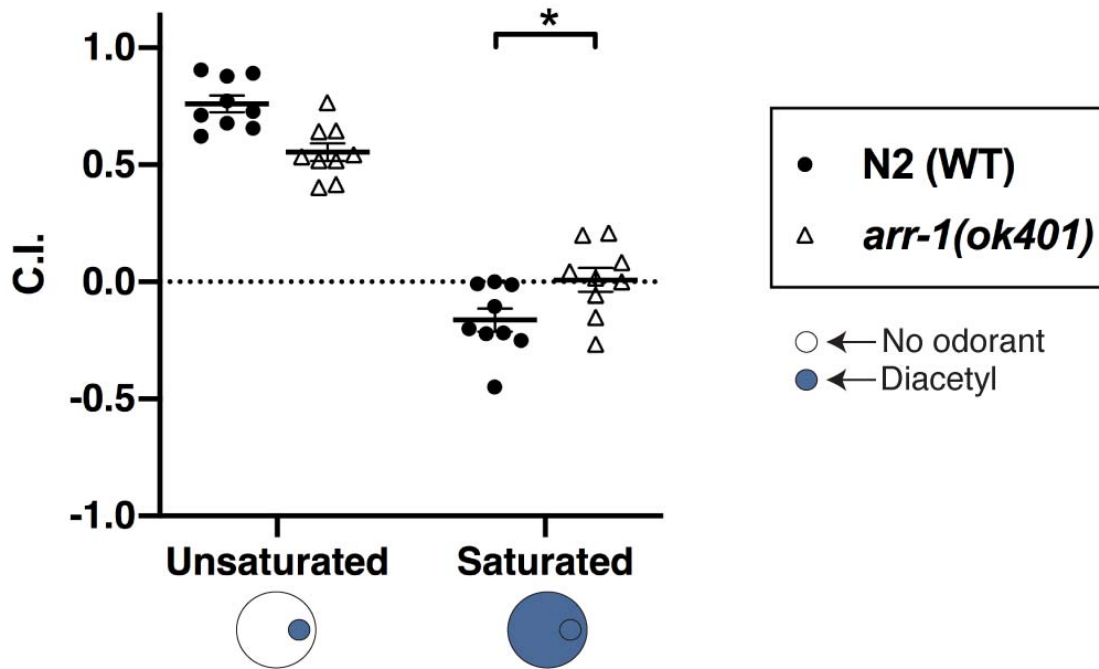
Figures S1 to S4



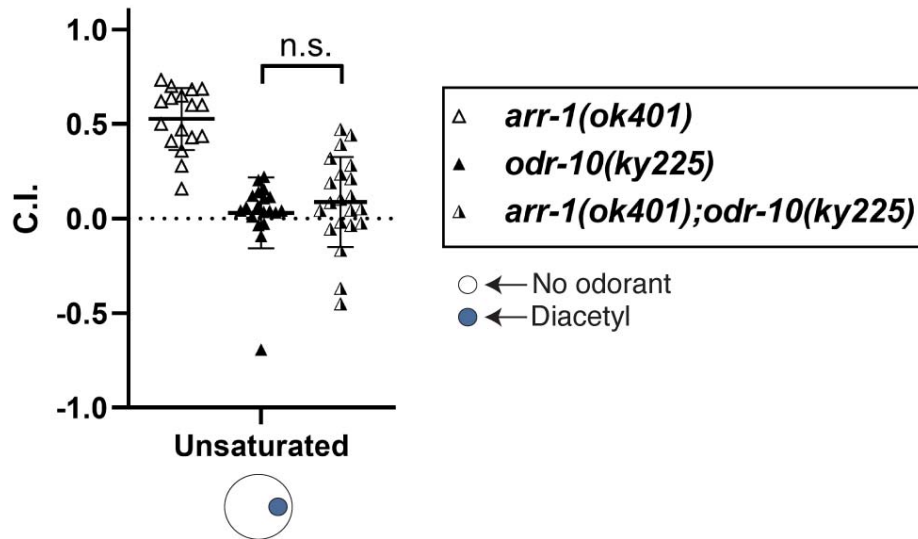
**Fig. S1. *arr-1(vs96)* exhibits an AWA olfactory discrimination deficit similar to *arr-1(ok401)*.** Chemotaxis of wild type N2 animals and *arr-1(vs96)* animals to a point of the AWA-sensed odorant pyrazine on unsaturated plates and plates containing a saturating concentration of the AWA-sensed odorant diacetyl. A two-way ANOVA revealed a significant interaction between strain and saturation condition ( $F=7.294$ ,  $p<0.05$ ), and a t-test indicated a significant difference between N2 and *arr-1(vs96)* in the diacetyl saturated condition ( $t=3.80$ ,  $p<0.01$ ).



**Fig. S2. Barbadin has no effect on unsaturated isoamyl alcohol chemotaxis.** Chemotaxis of N2 and *arr-1(ok401)* animals to a point of isoamyl alcohol on plates with and without Barbadin. A two-way ANOVA revealed no effect of drug presence ( $F=0.012$ ,  $p > 0.05$ ), and t-tests revealed no significant effect of Barbadin in either the N2 ( $t=0.847$ ,  $p > 0.05$ ) or *arr-1(ok401)* ( $t=0.928$ ,  $p > 0.05$ ) genotypes.



**Fig. S3. *arr-1(ok401)* mutant animals exhibit enhanced chemotaxis to a point of diacetyl in a saturating context of diacetyl relative to wild type.** Chemotaxis of wild type N2 animals and *arr-1(ok401)* animals to a point of diacetyl on both unsaturated plates and plates containing a saturating concentration of diacetyl. A two-way ANOVA revealed a significant interaction between strain and saturation condition ( $F=18.33$ ,  $p<0.01$ ), and a t-test indicated a significant difference between N2 and *arr-1(ok401)* in the benzaldehyde saturated condition ( $t=2.41$ ,  $p<0.05$ ).



**Fig. S4. *arr-1(ok401);odr-10(ky225)* double mutant animals and *odr-10(ky225)* single mutant animals display similar diacetyl chemotaxis.** Chemotaxis of *arr-1(ok401)*, *odr-10(ky225)*, and *arr-1(ok401); odr-10(ky225)* animals to a point of diacetyl on unsaturated plates. A t-test between *odr-10(ky225)* and an *arr-1(ok401);odr-10(ky225)* double mutant revealed no significant difference ( $t=-0.87$ ,  $p>0.05$ ).