

Supporting Information

Abu et al. 10.1073/pnas.1719827115

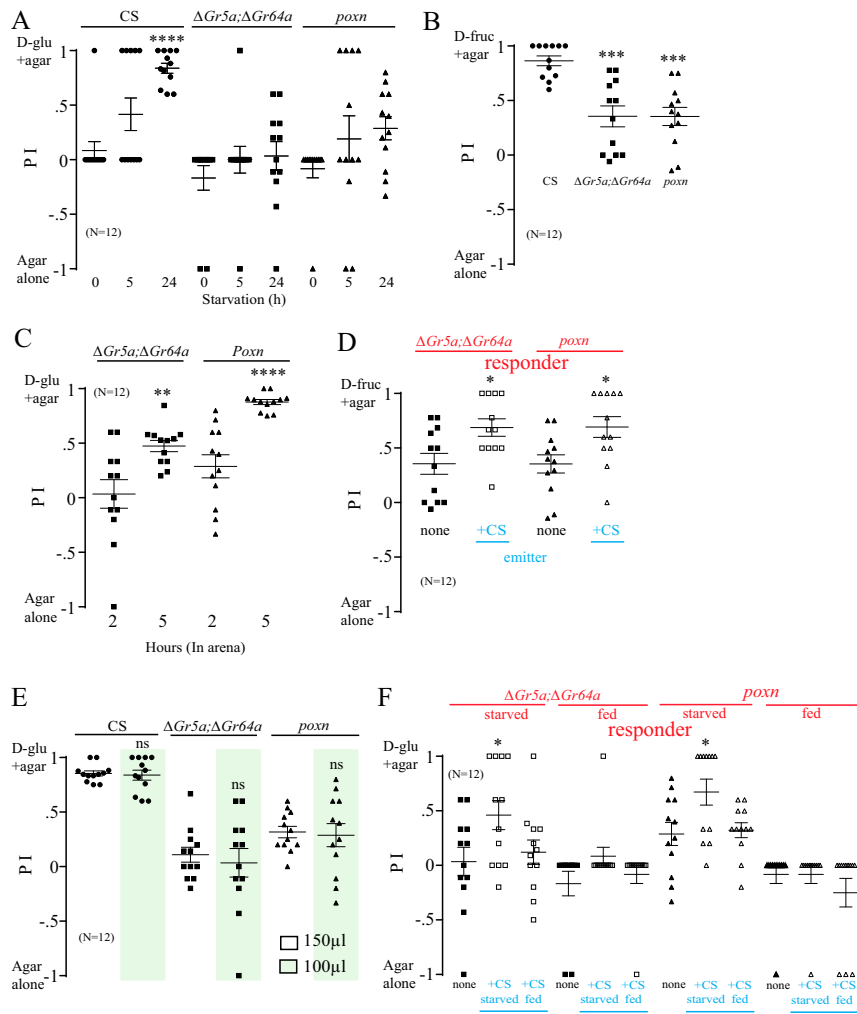


Fig. S1. (A) Preference of 24-h starved $\Delta Gr5a;\Delta Gr64a$ mutants, *poxn* ^{$\Delta M22-B5$} (*poxn*) mutants, or WT flies in the two-choice assay after 0, 5, and 24 h of starvation. Asterisks indicate significant differences from 0 h of starvation (one-way ANOVA, followed by a Bonferroni test; $n = 12$). (B) Preference of 24-h starved $\Delta Gr5a;\Delta Gr64a$ and *poxn* mutants or WT flies in a two-choice assay: D-fructose (D-fruc)+agar versus agar alone. Asterisks indicate significant differences from WT flies (one-way ANOVA, followed by a Bonferroni test; $n = 12$). (C) Preference of 24-h starved $\Delta Gr5a;\Delta Gr64a$ or *poxn* mutants in the two-choice assay after 2 h and 5 h. Asterisks indicate significant differences from those after 2 h (nonparametric Student's *t* test, followed by a Mann-Whitney *U* test; $n = 12$). (D) Preference of 20 starved $\Delta Gr5a;\Delta Gr64a$ or *poxn* responders when mixed with 10 starved WT emitters between D-fruc+agar and agar alone. Asterisks indicate significant differences from the control group, where no WT flies were mixed (nonparametric Student's *t* test, followed by a Mann-Whitney *U* test; $n = 12$). (E) Preference of 24-h starved $\Delta Gr5a;\Delta Gr64a$ mutants, *poxn* mutants, or WT flies in the two-choice assay in either 100- μ L or 150- μ L food drops. ns, nonsignificant differences from the control group (nonparametric Student's *t* test, followed by a Mann-Whitney *U* test; $n = 12$). (F) Preference of $\Delta Gr5a;\Delta Gr64a$ or *poxn* ^{$\Delta M22-B5$} responders, either fed or starved for 24 h, mixed with WT emitters (starved for either 0 h or 24 h) in the two-choice assay. Asterisks indicate significant differences from the control group, where no WT flies were mixed (one-way ANOVA, followed by a Bonferroni test; $n = 12$). * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; **** $P < 0.0001$. Error bars indicate SEM. D-glu, D-glucose.

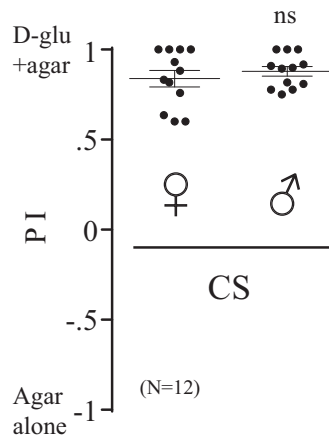


Fig. S6. Preference of male or female WT flies in the two-choice assay. D-glu, D-glucose. ns, nonsignificant difference (nonparametric Student's *t* test, followed by a Mann–Whitney *U* test; *n* = 12). Error bars indicate SEM.

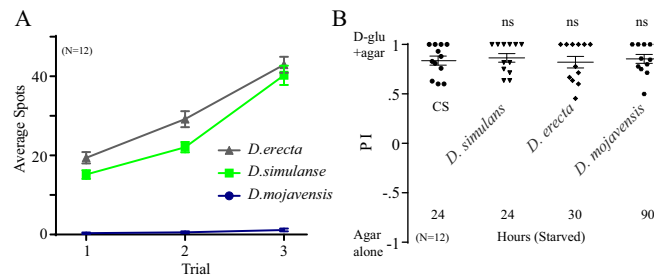
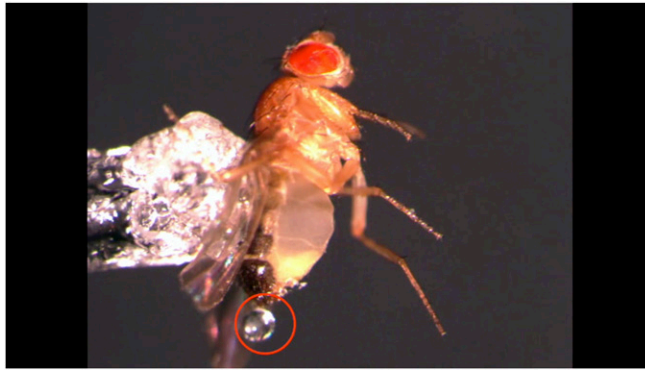


Fig. S7. (A) Average number of spots produced by 30 starved male *Drosophila simulans*, *Drosophila erecta*, and *Drosophila mojavensis* flies in a two-choice arena containing D-glucose (D-glu)+agar or agar alone for 2 h [trial 1 (T1)]. Trials 2 and 3 refer to second and third additional 2-h exposures to new sets of 30 starved WT flies. (B) Preference of *Drosophila melanogaster* WT CS or other species (*D. simulans*, *D. erecta*, and *D. mojavensis*) in the two-choice assay with respect to corresponding starvation periods. ns, nonsignificant differences from WT (one-way ANOVA, followed by a Bonferroni test; *n* = 12). Error bars indicate SEM.



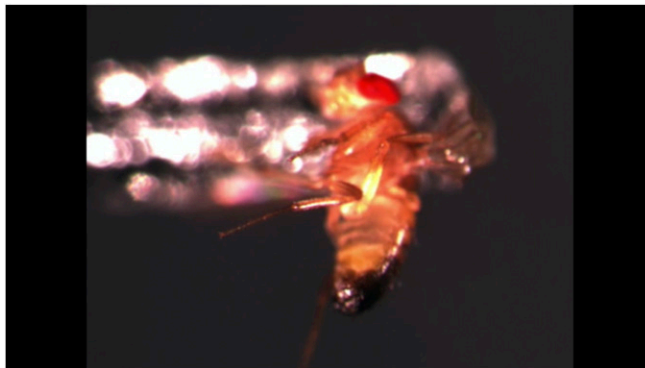
Movie S1. Starved female fly releasing CIF after ingesting D-glucose.

[Movie S1](#)



Movie S2. Starved male fly releasing CIF after ingesting D-fructose.

[Movie S2](#)



Movie S3. Starved male fly not releasing CIF after ingesting sucralose.

[Movie S3](#)



Movie S4. Starved male fly not releasing CIF after ingesting L-glucose.

[Movie S4](#)



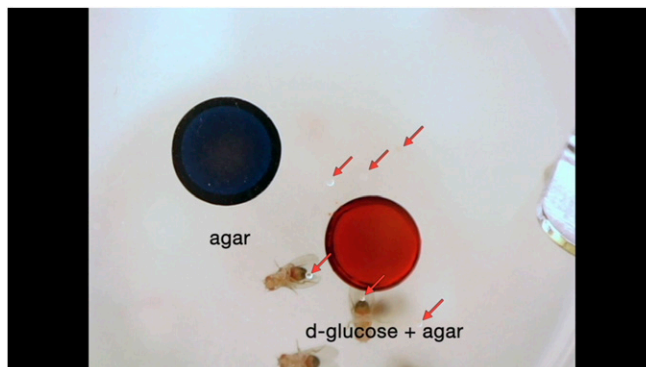
Movie S5. Starved male fly not releasing CIF after ingesting L-fructose.

[Movie S5](#)



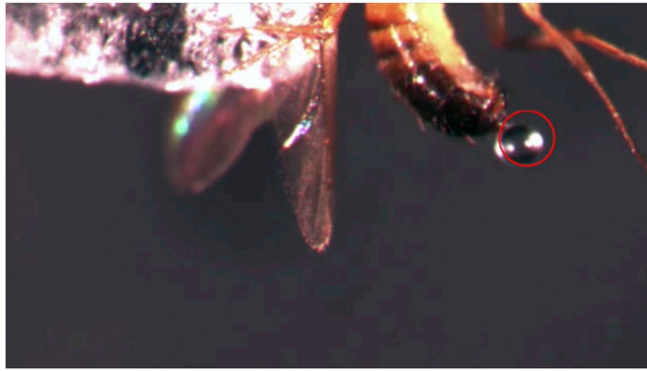
Movie S6. Starved male fly releasing CIF after ingesting mannose.

[Movie S6](#)



Movie S7. Starved male flies releasing CIF in two-choice arena with agar containing D-glucose versus plain agar, recorded from the bottom of the arena.

[Movie S7](#)



Movie S8. Starved male fly releasing CIF after ingesting mannose+sucralose.

[Movie S8](#)



Movie S9. Starved male fly releasing CIF after ingesting D-glucose.

[Movie S9](#)