Supplementary Figure 1: Odor-evoked changes in wingbeat frequency and amplitude are strain-dependent.

A) Wild flies respond to mango odor (undiluted) with a large increase in WBF. Top: each trace is the trial-averaged response of an individual fly (typically 4-6 trials). Bottom: mean ± SEM, averaged across flies (n=12 wild flies). Experiments were performed in the fixed-tether apparatus.

(B) In $w^{1118}$ flies, the same stimulus elicits a smaller change in WBF than in the wild flies (n=8 $w^{1118}$ flies, $p<0.05$, t-test).

(C-D) Like their parental strain ($w^{1118}$), the Or83b$^+/+$ flies show a significantly smaller WBF response than wild flies ($p<0.01$, t-test). Here, the odor is mango, 0.1 dilution. Note that Or83b$^+/+$ flies carry a w$^+$ minigene, meaning that the WBF response defect in the $w^{1118}$ flies is probably not due to the mutation in the white gene, but rather reflects some other aspect of this genetic background.

(E) In wild flies, mango odor (undiluted) evokes a robust increase in WBA.

(F) In $w^{1118}$ flies, the odor-evoked change in WBA is not significantly different from wild flies.

(G-H) The Or83b$^+/+$ flies show a WBA response which is similar to that of the wild flies.

The strain-dependent difference in the odor-evoked wingbeat frequency illustrated here suggests that $w^{1118}$ flies (and stocks derived from $w^{1118}$, like Or83b$^+/+$) might not be able to reach the same maximum WBF that wild flies can achieve. If in the absence of odors a typical $w^{1118}$ fly is flying closer to its maximum WBF than a typical wild fly, then its response to odor may be more tightly constrained by that ceiling. In Supplementary Figure 2 we investigate this idea.