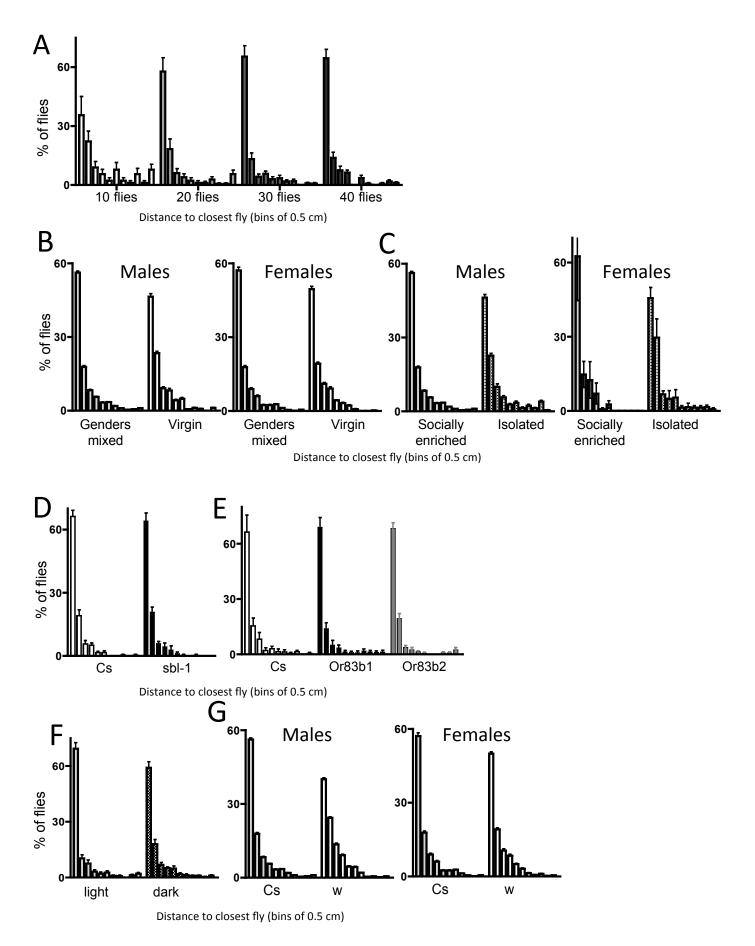
Social space

Anne F Simon

Supplementary Figure 1: Histograms of Social Distance in which the X axis represents the distances separating two neighboring flies, in increments (or bins) of 0.5 cm, and the Y axis represents the percentage of flies in each bin ± SEM. A-C) Social space is relatively independent of group size and correlated to social interactions. (A) Impact of group size. Graph represents the comparison of Social distance histograms at densities of 10 to 40 flies per test chamber. Over a density range of 20 to 40 flies per chamber, the repartition of the flies represented by the histograms was not statistically different, but the proportion of flies two-body length apart or less (first bin, see text) was lower at a density of 10 flies, do have larger social distance, and less of them are found in the first bin (n=8 trials, number of male flies indicated, Kolmogorov-Smirnov Comparison indicates that the data-sets are different - p<0.0001). (B-C) Social space is affected by social experience. B) Virgin flies show less social interaction. Graph represents the comparison of histograms for the social distance of flies 3-4 days old (aged with the same gender), or mated (housed gender mixed) flies; males housed with males (virgin), n=10 trials of  $\sim$ 40 flies, Males housed with females (gender mixed), n=21 trials of 40 flies; females, virgin, n=11 trials of ~40, house gender mixed, n=14 trials of 40 flies (Kolmogorov-Smirnov Comparison indicates that the two data-sets of gender-mixed versus virgin are different - p < 0.001 for males and p < 0.013 for females). C) Isolated flies show less social interaction. Graph represents the comparison of histograms of social distance of flies  $\sim 10$  days old, collected from bottles at ~3 days old, and aged for 7 days either alone, or socially enriched in groups of 40 flies of same gender. Males n=5-6 trials of ~40 flies, Females, n=5 trials of ~40, for both males and females comparisons, Kolmogorov-Smirnov Comparison indicates that the data-sets of isolated versus socially enriched are different - p<0.0001 for males, p<0.019 for females. (D-E) Social distance is not modified in odor perception mutants. D) para<sup>slb-1</sup>, compared to genetic

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background Canton-s males, n=6 trials of ~40 flies. E)  $Or83b^{1}$  and  $Or83b^{2}$  compared to genetic background Canton-s males, n=6 trials of ~40 flies. Kolmogorov-Smirnov Comparison indicates that the data sets are not different. F) Flies show a lesser degree of social interaction in darkness, under a red light. Graph represents the comparison of social distance in light and dark conditions (Canton-s males, n=15 trials of ~40 flies, Kolmogorov-Smirnov Comparison indicates that the data-sets are different - p<0.001). G) Outcrossed mutants *white*, disrupting the eye pigments localization, show less social aggregation ( $w^{1118}Cs_{10}$ , outcrossed 10 times, indicated as w), compared to their genetic control Canton-s (Cs). In males, n=21 trials for Cs, and n=18 for w, and in females, n=16 trials for Cs, and n=12 trials for w. Kolmogorov-Smirnov Comparison indicates that the data sets of the two genotypes are different (p<0.0001 for males, p<0.05 for females).



Supplementary Figure 1