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Supplemental Data

Graded Expression of Semaphorin-1a Cell-Autonomously Directs Dendritic Targeting of Olfactory Projection Neurons

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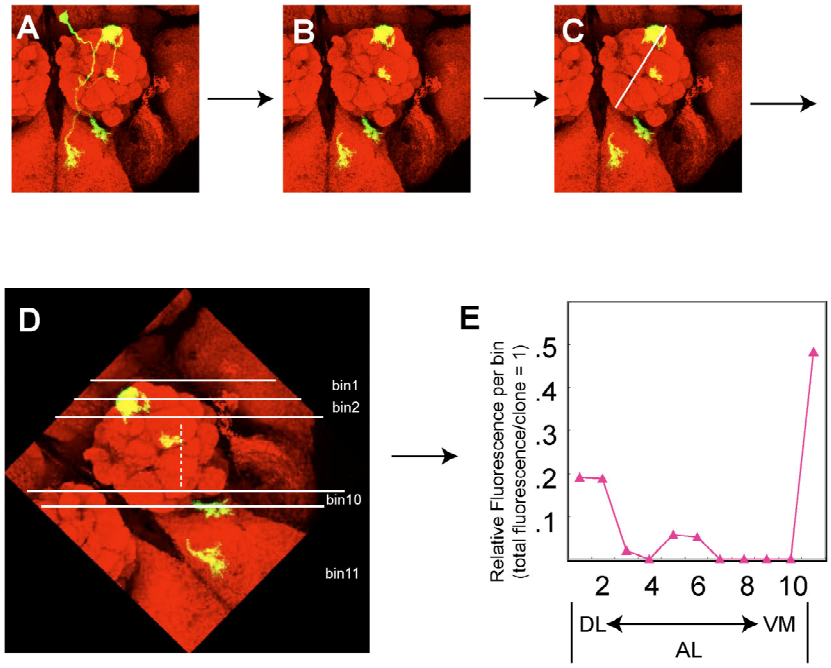

Komiyama et al., Supplemental Figure S1

Figure S1. Quantification of PN Dendritic Targeting along the Dorsolateral (DL) to Ventromedial (VM) Axis

A two dimensional projection is derived from a confocal stack (A), and dendritic termini are manually selected (B). The DL-VM axis is drawn based on nc82 staining in red (C). The picture is rotated along the axis and binned so that bins 1 (most DL) to 10 (most VM) cover most of the antennal lobe, and bin 11 includes the area ventromedial to the antennal lobe (D). The relative amount of fluorescence in each bin

is calculated (E). Thus, each clone gives a distribution with a mean position. The average distribution is represented as a graph and the mean of mean positions for each genetic manipulation from all brains of the same condition is calculated (Figures 3, 4, 6). A custom-made program in MATLAB (Mathworks) was used for this quantification.

To assess the effect on global targeting, statistical analyses were performed on the means of dendritic distributions. In wild type the means usually correspond to the peaks of dendritic density. This is not always the case in mutant (Figure 3F-G), as *sema1a*$^{-/-}$ PNs tend to send a large fraction of the dendrites to the correct position and in addition mistarget a portion of dendrites to form ectopic clusters (see examples in Figure 3). A more accurate and sensitive assessment of the mistargeting error is to compare the means rather than the peaks, as quantifying the peak position overlooks the distribution in ectopic clusters if the amount of ectopic dendrites does not exceed the amount of dendrites targeting to the correct position. Note also that in mutant analysis, the dendritic position does not correspond to the glomerular position; each glomerulus is innervated by 3-4 PNs on average, only one of which is mutant for *sema1a* in these single-cell clonal analyses.