**Supplementary File 1.** Genotypes of flies in each experiment.

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| **Figure** | | **Genotype** |
| ***Figure 1*** | | |
| A | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y)* | |
| B | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y);;; plexB–/plexB–* | |
| C | Control*: Pebbled-GAL4, UAS-mtdTomato/+ (or Y)*  *plexB–/–: Pebbled-GAL4, UAS-mtdTomato/+ (or Y);;; plexB–/plexB–* | |
| E | *UAS-mCD8-GFP/+;; PlexB-GAL4/+* | |
| F | *eyFLP, UAS-FRT-Stop-FRT-mCD8-GFP/+ (or Y);;; PlexB-GAL4/+* | |
| G | *Peb-GAL4: Pebbled-GAL4, UAS-mtdTomato/+ (or Y)*  *PlexB-GAL4∩eyFLP: eyFLP, UAS-FRT-Stop-FRT-mCD8-GFP/+ (or Y);;; PlexB-GAL4/+* | |
| I | *PlexB-Tag* | |
| J | *eyFLP/+ (or Y);;; PlexB-Tag* | |
| K | *PlexB-Tag* | |
| L | *eyFLP/+ (or Y);;; PlexB-Tag* | |
| M | ORN axons*: Pebbled-GAL4, UAS-mtdTomato/+ (or Y)*  PlexB-V5 in ORN axons*: eyFLP/+ (or Y);;; PlexB-Tag* | |
| ***Figure 1-figure supplement 1*** | | |
| A | *PlexB-Tag* | |
| B | *+/+: Pebbled-GAL4, UAS-mtdTomato/+ (or Y)*  *PlexB-Tag/+: Pebbled-GAL4, UAS-tdTomato/+ (or Y);;; PlexB-Tag/+*  *+/plexB–: Pebbled-GAL4, UAS-tdTomato/+ (or Y);;; +/plexB–*  *PlexB-Tag/plexB–: Pebbled-GAL4, UAS-tdTomato/+ (or Y);;; PlexB-Tag/plexB–* | |
| C | *+/+: Pebbled-GAL4, UAS-mtdTomato/+ (or Y)*  *Tag/+: Pebbled-GAL4, UAS-tdTomato/+ (or Y);;; PlexB-Tag/+*  *+/–: Pebbled-GAL4, UAS-tdTomato/+ (or Y);;; +/plexB–*  *Tag/–: Pebbled-GAL4, UAS-tdTomato/+ (or Y);;; PlexB-Tag/plexB–* | |
| D | *UAS-RedStinger(NLS-DsRed)/+; PlexB-GAL4/+* | |
| ***Figure 2*** | | |
| A | *Pebbled-GAL4, UAS-mCD8-GFP/+ (or Y)* | |
| B | *Pebbled-GAL4, UAS-mCD8-GFP/+ (or Y); UAS-PlexB/+* | |
| C | *plexB–/–: Pebbled-GAL4, UAS-mtdTomato/+ (or Y);;; plexB–/plexB–*  Control*: Pebbled-GAL4, UAS-mCD8-GFP/+ (or Y)*  PlexB OE 25°C*:* *Pebbled-GAL4, UAS-mCD8-GFP/+ (or Y); UAS-PlexB/+* (25°C)  PlexB OE 29°C*:* *Pebbled-GAL4, UAS-mCD8-GFP/+ (or Y); UAS-PlexB/+* (29°C) | |
| D | *Or67d-QF, QUAS-mCD8-GFP/+; UAS-PlexB-RNAi/+* | |
| E | *Or67d-QF, QUAS-mCD8-GFP/Pebbled-GAL4; UAS-PlexB-RNAi/+* | |
| F | Control*: Or67d-QF, QUAS-mCD8-GFP/+; UAS-PlexB-RNAi/+*  PlexB-RNAi*: Or67d-QF, QUAS-mCD8-GFP/Pebbled-GAL4; UAS-PlexB-RNAi/+* | |
| ***Figure 3*** | | |
| A | *Pebbled-GAL4, UAS-mCD8-GFP/+ (or Y)* | |
| B | *Pebbled-GAL4, UAS-mCD8-GFP/+ (or Y)* | |
| C | *eyFLP, UAS-FRT-Stop-FRT-mCD8-GFP/+ (or Y);;; PlexB-GAL4/+* | |
| D | *eyFLP/+ (or Y);;; PlexB-Tag* | |
| E | *eyFLP/+ (or Y);;; PlexB-Tag* | |
| ***Figure 3-figure supplement 1*** | | |
| A | *UAS-RedStinger(NLS-DsRed)/+; PlexB-GAL4/+* | |
| B | *eyFLP/+ (or Y);;; PlexB-Tag* | |
| C | *eyFLP/+ (or Y);;; PlexB-Tag* | |
| ***Figure 4*** | | |
| A | *Pebbled-GAL4, UAS-dcr2/+ (or Y); Or92a-rCD2/+* | |
| B | *Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB* | |
| C | *Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB* | |
| D | *Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB* | |
| E | *Pebbled-GAL4, UAS-dcr2/+ (or Y); Or92a-rCD2/UAS-PlexB-RNAi* | |
| F | *Pebbled-GAL4, UAS-dcr2/+ (or Y); Or92a-rCD2/UAS-PlexB-RNAi* | |
| G | *Pebbled-GAL4, UAS-dcr2/+ (or Y); Or92a-rCD2/UAS-PlexB-RNAi* | |
| ***Figure 4-figure supplement 1*** | | |
| A | *AM29-GAL4, UAS-mCD8-GFP/+* | |
| B | *AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB* | |
| C | *AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB* | |
| D | *AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB* | |
| E | *AM29-GAL4, UAS-mCD8-GFP/+;; plexB–/plexB–* | |
| F | *AM29-GAL4, UAS-mCD8-GFP/+;; plexB–/plexB–* | |
| G | *AM29-GAL4, UAS-mCD8-GFP/+;; plexB–/plexB–* | |
| ***Figure 5*** | | |
| A | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y)* | |
| B | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y); sema2b–/+* | |
| C | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y); UAS-PlexB/+* | |
| D | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y); sema2b–/UAS-PlexB* | |
| E | *+/+: Pebbled-GAL4, UAS-mtdTomato/+ (or Y)*  *Sema2b–/+: Pebbled-GAL4, UAS-mtdTomato/+ (or Y); sema2b–/+*  PlexB OE\_*+/+: Pebbled-GAL4, UAS-mtdTomato/+ (or Y); UAS-PlexB/+*  PlexB OE\_ *Sema2b–/+: Pebbled-GAL4, UAS-mtdTomato/+ (or Y); sema2b–/UAS-PlexB* | |
| F | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y)* | |
| G | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y); UAS-PlexB-RNAi/+* | |
| H | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y); sema2b–/sema2b–* | |
| I | *Pebbled-GAL4, UAS-mtdTomato/+ (or Y); UAS-PlexB-RNAi, sema2b–/sema2b–* | |
| J | Control*: Pebbled-GAL4, UAS-mtdTomato/+ (or Y)*  PlexB-RNAi*: Pebbled-GAL4, UAS-mtdTomato/+ (or Y); UAS-PlexB-RNAi/+*  *Sema2b\_*Control*: Pebbled-GAL4, UAS-mtdTomato/+ (or Y); sema2b–/sema2b–*  *Sema2b–/–\_*PlexB-RNAi*: Pebbled-GAL4, UAS-mtdTomato/+ (or Y); UAS-PlexB-RNAi, sema2b–/sema2b–* | |
| K | PlexB OE*: Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB*  *2b–/+,* PlexB OE*: Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB, sema2b–* | |
| L | PlexB OE*: Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB*  *2b–/+,* PlexB OE*: Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB, sema2b–* | |
| M | PlexB OE*: Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB*  *2b–/+,* PlexB OE*: Pebbled-GAL4/+ (or Y); Or92a-rCD2/UAS-PlexB, sema2b–* | |
| ***Figure 5-figure supplement 1*** | | |
| A | *Pebbled-GAL4, UAS-mCD8-GFP/+ (or Y)* | |
| B | PlexB OE*: AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB*  *2b–/+,* PlexB OE*: AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB, sema2b–* | |
| C | PlexB OE*: AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB*  *2b–/+,* PlexB OE*: AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB, sema2b–* | |
| D | PlexB OE*: AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB*  *2b–/+,* PlexB OE*: AM29-GAL4, UAS-mCD8-GFP/UAS-PlexB, sema2b–* | |