Table S1. Candidates for molecules involved in axon guidance in the *Drosophila* adult abdomen

Gene	Expression patterns and phenotype
Fasciclin 1 (*Fas1*)	Homophilic cell adhesion molecule expressed in the fly embryonic central and peripheral nervous system (Elkins et al., 1990; McAllister et al., 1992). No expression was found by immunostaining using anti-Fas1 antibody.
Fasciclin 2 (*Fas2*)	A cell adhesion molecule involved in axon pathway finding and in bundling in both vertebrates and invertebrates (Grenningloh et al., 1991; Kristiansen and Hortsch, 2008). Expression was found in the extracellular membrane of mechanosensory neurons, and in abdominal peripheral nerves (Fig. S5A). *Fas2*^{eb112} mutant epidermal clones are normal except for some axonal misrouting and an abnormal spacing of bristles (Fig. S6) reminiscent of the phenotype of *Egfr*$^{-}$ (Diaz-Benjumea and Garcia-Bellido, 1990).
Fasciclin 3 (*Fas3*)	In fly embryos, Fas3 is found in intercellular junctions and lateral cell membranes (Snow et al., 1989). *Fas3* is expressed in axons (Patel et al., 1987) and acts in axon pathfinding and synaptic target recognition (Chiba et al., 1995; Kose et al., 1997; Rose and Chiba, 1999). Antibody recognises the extracellular membranes of all A and P epidermal cells, in particular intercellular junctions more strongly (Fig. S5B). *Fas3*$^{-}$ clones were normal.
slit (*sli*)	It is expressed in a subset of P cells (see main text and Fig. 5).
Sema-1a	It acts in neuronal guidance both in vertebrates and invertebrates (Ayoob et al., 2006; Bagnard et al., 1998; Chen et al., 1998). An enhancer-trap line showed no expression. No defects were observed on neurons when *Sema-1a*^{k13702} epidermal clones were made.
Sema-2a	It acts in the axon guidance of invertebrates (Ayoob et al., 2006; Roy et al., 2000). No expression was found by immunostaining using anti-Sema-2a antibody.
Down syndrome cell adhesion molecule (*Dscam*)	It can act in axonal and dendritic wiring (Matthews et al., 2007; Shi et al., 2007; Zhan et al., 2004). An enhancer-trap line showed expression in the socket cell of each bristle (Fig. S5D). When *Dscam* is expressed with the *sca.Gal4* driver, all anterior dendrites formed a U-shape. However, the U-shape in 45% of the dendrites was abnormally long and turned away from the midline (instead of towards it, as in the wild type); segment 3 of five pupae were quantified (Fig. S7).
shotgun (*shg*)	The fly E-cadherin orthologue, it modulates cell adhesion in epithelia (Dumstrei et al., 2002; Tepass et al., 1996) but *shg*$^{-}$ epidermal clones induced no defects in neurons.
18 wheeler (*18w*)	It may act in cell-cell interactions (Chiang and Beachy, 1994) and is expressed in the embryonic CNS (Eldon et al., 1994). An enhancer-trap line showed expression in epidermal cells of A compartments (Fig. S5C).

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