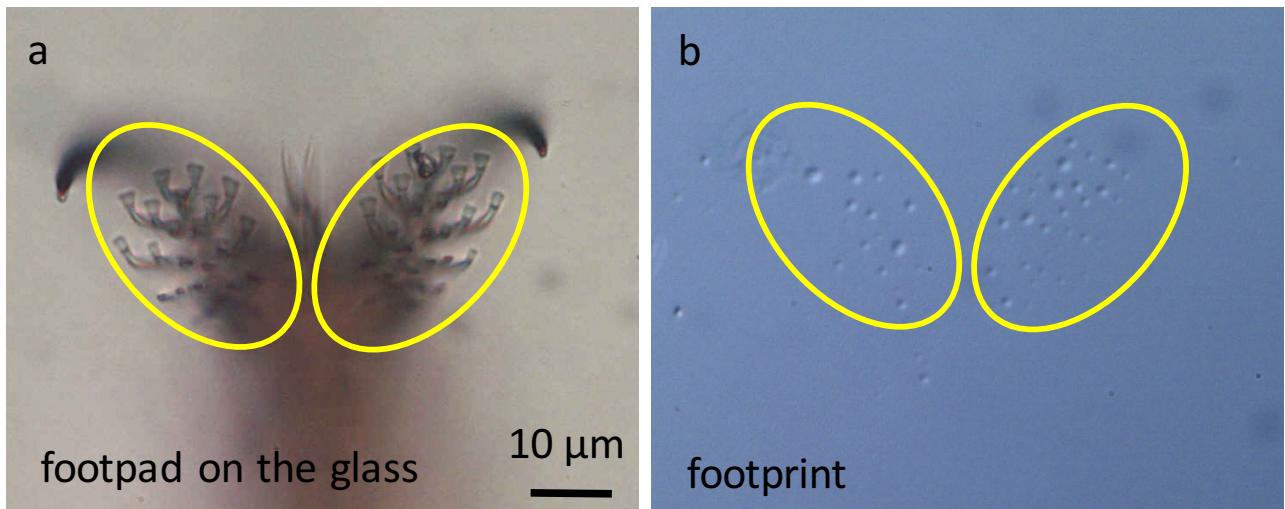
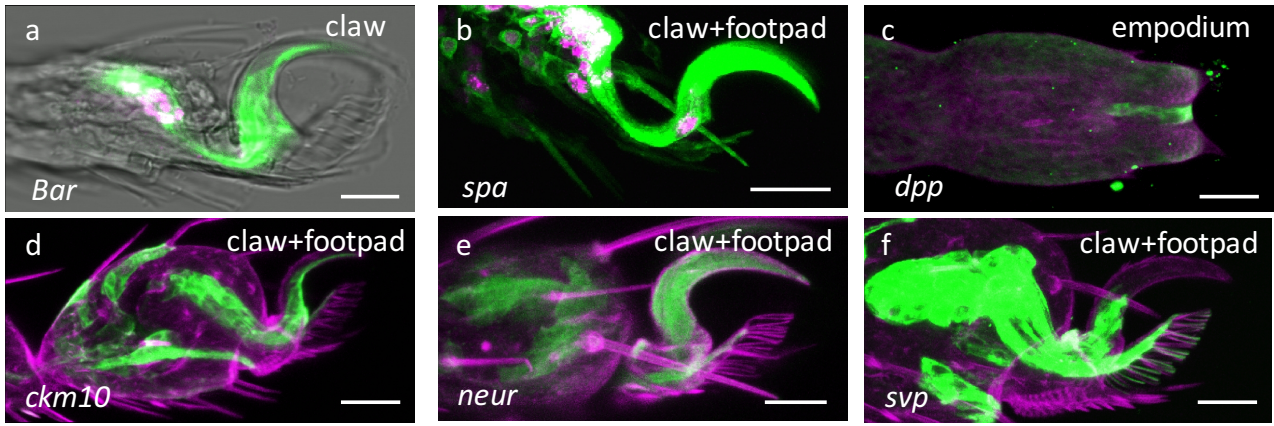


Supplementary Figures



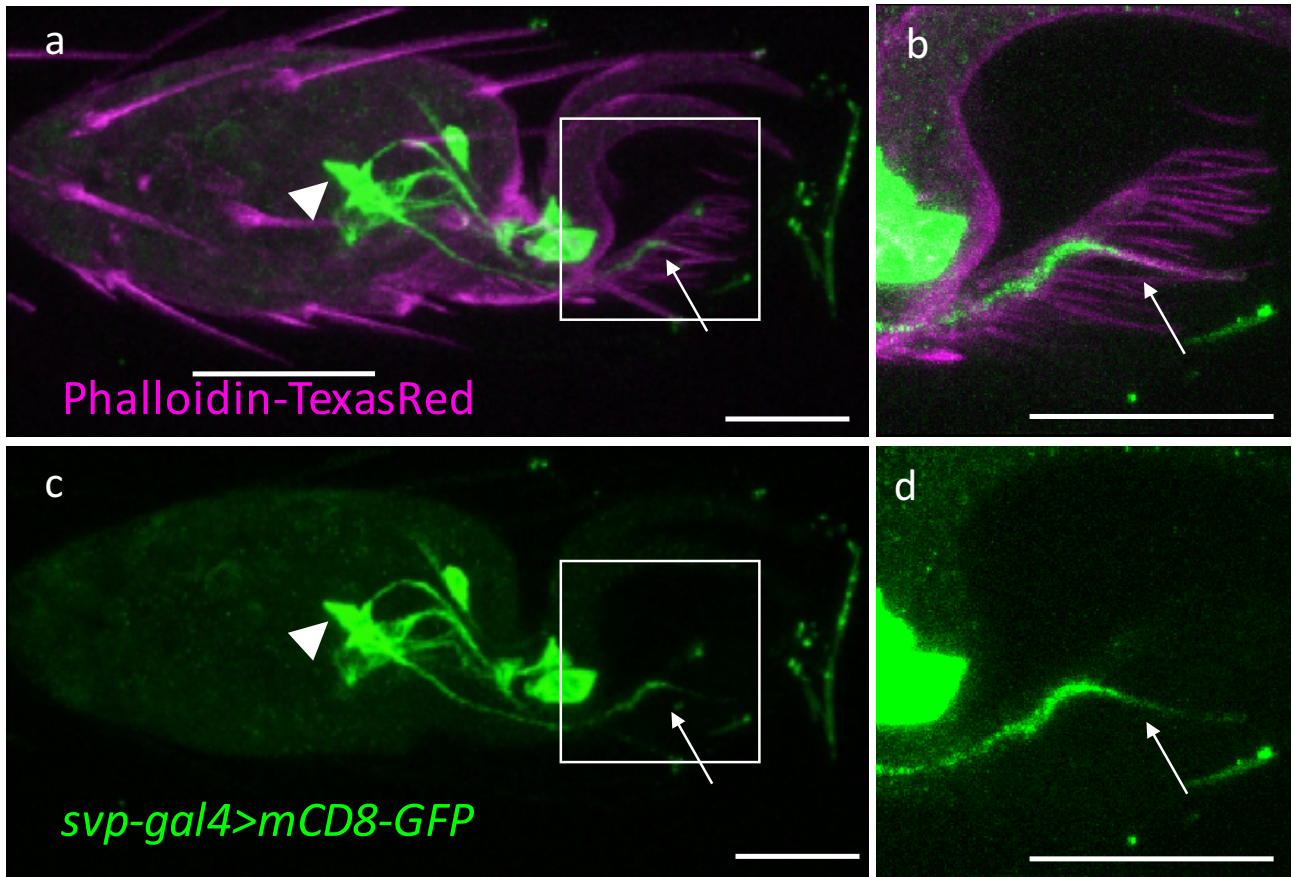
Supplementary Figure 1 Footpad of a walking fly and its footprint

(a) Photograph of a wild-type *Canton-Special* (CS) fly walking along the surface of a glass coverslip. Many hair tips are attached to the glass surface. (b) The residual footprint of the fly observed with a Nomarski microscope (Olympus, AX70). Liquid droplets are seen on the glass in a similar pattern to that of the hair on the footpad. Scale: 10 μm.



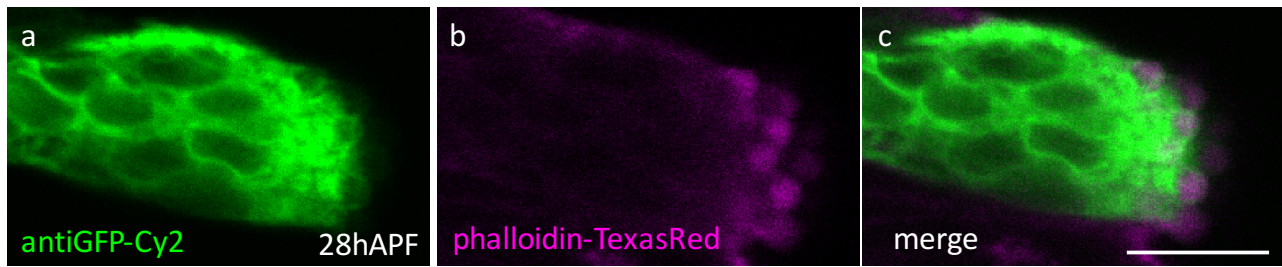
Supplementary Figure 2 Screening for suitable GAL4 lines for labeling footpad cells with GFP

(a) *Bar>mCD8::GFP, nucDsRed*. Most of the claw cells are labeled with GFP. (b) *spa>mCD8::GFP, nucDsRed*. Most of the claw cells and some of the footpad cells are labeled GFP. (c) *dpp>mCD8::GFP*. Empodium cells are labeled with GFP. (d) *ckm10>mCD8::GFP*. Most of the ventral claw cells and some of the footpad cells are labeled with GFP. (e) *neur>mCD8::GFP*. Most claw cells and some footpad cells are labeled with GFP. (f) *svp>mCD8::GFP*. Some of the ventral claw cells and most of the footpad cells are labeled with GFP. Pretarsal cells are outlined by fluorescent phalloidin staining (magenta) (c-f). Scale: 20 μm .



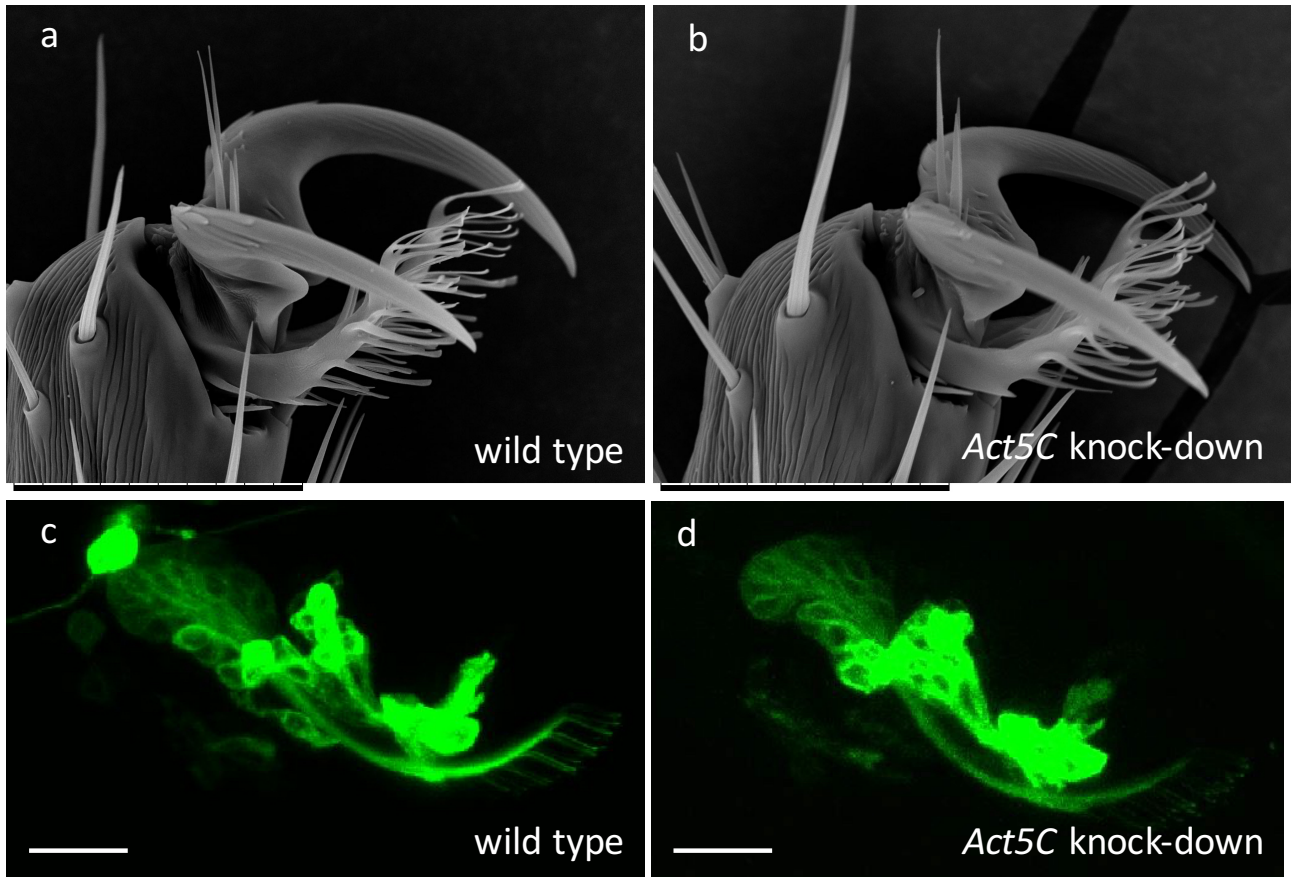
Supplementary Figure 3 MARCM labeling of cells forming a hair in *Drosophila*

(a-d) Tarsal and pretarsal regions labeled with fluorescent phalloidin (magenta) in a pupa of *y hs-flp; FRTG13, UAS-mCD8::GFP/ FRTG13, TubP-Gal80;svp-Gal4/+* at 42 h APF. A limited number of *svp*-expressing cells were labeled with GFP (green) by the MARCM method. A single cell (arrowhead in a, c) extends a cellular process, forming the shaft of a single hair (arrow in b, d). The boxed regions in (a) and (c) are enlarged in (b) and (d), respectively, highlighting the tips of processes in hair cells. Scale: 20 μ m.



Supplementary Figure 4 Accumulation of cytoskeletal actin at the tips of footpad's hairs

(a-c) TexasRed-conjugated phalloidin staining of the pretarsus at 28 h APF in an *FRTG13*, *UAS-mCD8::GFP;svp-Gal4/TM6b* fly. (a) mCD8::GFP (green). (b) TexasRed staining (magenta). (c) Merged image. Scale: 20 μ m.



Supplementary Figure 5 Morphology of footpad and its formation process in wild-type and *Act5C* knockdown flies

(a, b) Adult footpad in wild-type (CS) and *Act5C* knockdown fly (*svp>Act5C RNAi, elav-Gal80*), respectively. Scale: 30 μ m. (c, d) Footpad-forming cells labeled with mCD8-GFP at 42 h APF in wild-type (*svp>mCD8::GFP*) and *Act5C* knockdown fly (*svp>mCD8::GFP, Act5C RNAi, elav-Gal80*), respectively. The retraction of hair cells occurred both in wild-type and *Act5C* knockdown flies. Scale: 20 μ m.

Supplementary Table

Supplementary Table 1 Detailed genotypes and the abbreviations of all strains used in the study

Fig. 1			
a, b, c	CS	+	+
d-g'	<i>svp>Act5C::GFP, nucDsRed</i>	<i>UAS-Act5C::GFP/+; svp-GAL4/ UAS-nucDsRed</i>	
Fig. 2			
a, b	CS	+	+
c-c'''	<i>svp>mCD8::GFP</i>	<i>FRTG13, UAS-mCD8::GFP; svp-GAL4/TM6b</i>	
d,e,f	<i>svp>Act5C RNAi, TubP-GAL80^{TS}</i>	<i>UAS-Act5C RNAi/ TubP-GAL80^{TS}; svp-GAL4/+</i>	
	<i>svp>Act5C RNAi, elav-Gal80</i>	<i>UAS-Act5C RNAi/ +; svp-Gal4/elav-Gal80</i>	
	CS	+	+
Fig. 3			
a, b	CS	+	+
	<i>+/+; svp-GAL4/+</i>	<i>+/+; svp-GAL4/+</i>	
	<i>UAS-Act5C RNAi/+; elav-GAL80/+</i>	<i>UAS-Act5C RNAi/ +; elav-GAL80/+</i>	
	<i>svp>Act5C RNAi, elav-Gal80</i>	<i>UAS-Act5C RNAi/ +; svp-Gal4/elav-Gal80</i>	
Supplementary Fig. 1			
	CS	+	+
Supplementary Fig. 2			
a	<i>Bar>mCD8::GFP, nucDsRed</i>	<i>v^{36f}, BN-GAL4/Y; UAS-mCD8::GFP/+;</i> <i>UAS-nucDsRed /ry⁵⁰⁶</i>	
b	<i>spa>mCD8::GFP, nucDsRed</i>	<i>spa-GAL4/Y; UAS-mCD8::GFP/+;</i> <i>UAS-nucDsRed/+</i>	
c	<i>dpp>mCD8::GFP</i>	<i>w; UAS-mCD8::GFP/+; blk-GAL4,</i> <i>UAS-GFPnls/+</i>	
d	<i>ckm10>mCD8::GFP</i>	<i>v^{36f}, BN-GAL4/Y; UAS-mCD8::GFP/+; +/ry⁵⁰⁶</i>	
e	<i>neur>mCD8::GFP</i>	<i>UAS-mCD8::GFP/+; Gal4-A101 Kg^V/+</i>	
f	<i>svp>mCD8::GFP</i>	<i>UAS-mCD8::GFP/+; svp^{NP5606}-Gal4/+</i>	
Supplementary Fig. 3			
		<i>FRTG13, UAS-mCD8::GFP/</i> <i>FRTG13, TubP-Gal80; svp-Gal4/+</i>	
Supplementary Fig. 4			
	<i>svp>mCD8::GFP</i>	<i>FRTG13, UAS-mCD8::GFP; svp-Gal4/TM6b</i>	
Supplementary Fig. 5			
a	CS	+	+
b	<i>svp>Act5C RNAi, elav-Gal80</i>	<i>UAS-Act5C RNAi/ +; svp-Gal4/elav-Gal80</i>	
c	<i>svp>mCD8::GFP</i>	<i>FRTG13, UAS-mCD8::GFP; svp-GAL4/TM6b</i>	
d	<i>svp>mCD8::GFP, Act5C RNAi,</i> <i>elav-Gal80</i>	<i>FRTG13, UAS-mCD8::GFP/UAS-Act5C RNAi;</i> <i>svp-Gal4/elav-Gal80</i>	
Supplementary Movie 1			
	<i>svp>mCD8::GFP, nucDsRed</i>	<i>FRTG13, UAS-mCD8::GFP;</i> <i>svp-Gal4/UAS-nucDsRed</i>	
Supplementary Movie 2			
		<i>FRTG13, UAS-mCD8::GFP/</i> <i>FRTG13, TubP-Gal80; svp-Gal4/+</i>	
Supplementary Movie 3			
	<i>svp>mCD8::GFP, Act5C RNAi,</i> <i>elav-Gal80</i>	<i>FRTG13, UAS-mCD8::GFP/UAS-Act5C RNAi;</i> <i>svp-Gal4/elav-Gal80</i>	
Supplementary Movie 4			
	CS	+	+
Supplementary Movie 5			
	<i>svp>Act5C RNAi, elav-Gal80</i>	<i>UAS-Act5C RNAi/ +; svp-Gal4/elav-Gal80</i>	