Table S1

DN-Rab11 wing phenotypes

ptc-Gal4 PTG80 plus					Percent of wings showing the following phenotypes							
Genotype	larval	Day 1	Day 2	n	Thin hair	Split hair	Misaligned hairs	Multiple hair cells	*fz/stan* polarity	Thin *ptc* domain	Eroded ACV	Polyploid cells
UAS-DN-Rab11	21 °C	21 °C	21 °C	19	0	0	0	0	0	0	0	0
UAS-DN-Rab11	27.5 °C	27.5 °C	27.5 °C	44	64	23	39	100	82	100	100	11
UAS-DN-Rab11	25 °C	25 °C	25 °C	34	9	12	6	29	0	0	12	0
UAS-DN-Rab11; Rab11-ex1/+	25 °C	25 °C	25 °C	7	29	29	86	57	14	100	100	0
UAS-DN-Rab11	21 °C	27.5 °C	27.5 °C	16	63	69	31	63	0	0	6	0
UAS-DN-Rab11	21 °C	21 °C	27.5 °C	29	48	28	48	7	0	0	0	0
UAS-DN-Rab11	27.5 °C	21 °C	21 °C	33	3	6	0	0	0	0	0	0
UAS-DN-Rab11	27.5 °C	27.5 °C	21 °C	9	0	11	0	78	67	78	67	0
UAS-DN-Rab11	27.5 °C	29.5 °C	29.5 °C	22	77	45	45	100	77	100	100	14
UAS-DN-Rab11	25 °C	29.5 °C	29.5 °C	10	100	50	30	70	80	20	100	0

Table S2
Genes that did not give a *dyl*, *kkv* or *ect* hair phenotype.

Gene	RNAi stock	Reason for
CG10283	V101168	Up 40
CG10287	V102518	Up 32 more 40
CG10425	V109284	Up 40
CG10670	V47601	Up 32
CG10717	V30288	Up 32 more 40
CG11498	V31514	Up 40
CG11836	V109470	Up 40
CG12063	V106568	Up 40
CG12256	V109715	Up 32
CG12432	V106789	Up 32
CG12508	V109545	Up 32
CG1275	V105418	Up 32 more 40
CG12811	V101055	Up 40
CG12880	V106407	Up 32
CG13081	V1443	Up 32
CG13082	V109511	Up 32
CG13796	V102516	Up 32
CG14681	V49663	Up 32 more 40
Cad89D	V8405	Up32
CG1499	V102187	Up 32
CG15629	V108604	Up 40
CG15822	V100293	Up 32 more 40
CG16733	V105889	Up 40
CG17137	V44768	Up 32
CG17271	V103101	Up 32
CG17530	V100632	Up 40
CG17834	V103308	Up 32
CG1969	V103542	Up 40
CG2157	V51069	Up 32 more 40
CG2556	V108504	Up 40
CG3285	V52669	Up 32 more 40
Wdp	V37208	Up 40
Indy	V9982	Up 40
CG4386	V109488	Up 32 more 40
CG4666	V109818	Up 40
CG5001	V103761	Up 32
CG5065	V101744	Up 32 more 40
CG5431	V104303	Up 40

CG5800	V103679	Up 32 more 40
CG5873	V14374	Up 32
CG5987	V103773	Up 32
CG6055	V106554	Up 40
Quail	V100856	Up 32 more 40
CG6816	V104180	Up 40
CG7356	V103601	Up 32
CG7442	V106555	Up 32
CdsA	V103415	Up 40
CG8180	V102576	Up 32
CG8192	V13979	Up 32 more 40
CG8425	V44050	Up 32 more 40
CG8790	V103757	Up 32 more 40
CG8854	V23631	Up 32 more 40
CG9089	V40966	Up 40
CG9121	V46328	Up 32
CG9134	V108295	Up 32
CG9149	V108623	Up 40
CG9285	V6296	Up 32
CG9664	V42467	Up 40
CG9665	V23720	Up 32
Fal	V24085	Up 32

Supplemental Figure Legends

Fig. S1. (A) A 36 hr pupal wing. (B) A 40 hr pupal wing. (C) A 42 hr pupal wing. Note the folding of the wing as wing cell expansion proceeds. (D) Chitin staining of a 42 hr pupal wing. All of the hairs stain. (E-H) F-actin in a 42 hr pupal wing. Starting at the level of the hairs in E each subsequent image is from a scan 2 um lower into the cell. Note the apical hairs and the foci of F-actin just below the apical surface of the wing. (J) Chitin staining of a 36 hr pupal wing. Note the lack of staining. (K-N) F-actin in a 36 hr pupal wing. Starting at the level of the hairs in E each subsequent image is from a scan 2 um lower into the cell.

Fig S2.*dyl* alters hair polarity in unmounted wings. (A). The D region of an unmounted wing $dyl^{MI02880}/Df$ wing. Note the many hairs that display abnormal polarity (some are marked by red arrows). (B) A flip out *dyl* kd clone (outlined) in the D region of an unmounted wing. Note the distal polarity of the wild type cells and the abnormal polarity of clone cells that show a relatively mild morphology phenotype (noted by red arrows). (C) A flip out *dyl* kd clone (outlined) in the A region of an unmounted wing. Note the distal polarity of the wild type cells and the abnormal polarity of clone cells that show a relatively mild morphology phenotype (noted by red arrows).

Fig S3. Gliotactin flip out kd clones show a distinct PCP phenotype. (A). A low mag SEM of a Gli kd clone. (B) A higher magnification image of part of (A). Arrowheads point to hairs that show abnormal polarity due to the hair and base being at an abnormal angle to the wing blade.

Fig S4. Dyl antibody staining is specific in 36 hr pupal wings. (A) Dyl antibody staining of a *ptc-Gal4/UAS-dyl RNAi* wing. Note the lack of staining within the *ptc* domain. (B) Merge of A and C. (C) F-actin staining of the same wing shown in A. Also note the relatively strong Dyl antibody staining at the base of the hair.

Fig S5. *dyl* flip out clones lead to the nonautonomous accumulation of Dyl. (A). The accumulation of oe Dyl (immunostaining) is shown in green. Due to its relative faintness the staining of the endogenous Dyl in the wild type hairs is not visible. (B). A merge of A and C with LacZ staining to show the mutant cell nuclei. Note the mutant nuclei appear to be displaced from the clone as assayed by Dyl expression. This is due to the nuclei being at a lower focal plane and the apical basal axis of the cells not being perfectly aligned with the microscope axis. (C). F-actin staining of the cells to mark the growing hairs. Note the retarded and abnormal hairs (arrows) produced by wild type cells that are below the non-autonomous Dyl accumulation. Panels DEFGH are Z sections that go through a typical *dyl* oe clone. (D) F-actin (red) and Dyl (green). (E) F-actin (red). (F) Dyl (green). (G). LacZ (blue). (H) Dyl and LacZ. Note the Dyl is apical and spreads beyond the LacZ.

Fig S6. Consequences of expressing DN-Rab11. (A) The legs of a *ptc-Gal4 Gal80ts/DN-Rab11* pharate adult raised at 29.5ºC. Note the shortened and deformed legs. (B) The legs of a *ptc-Gal4 Gal80ts/DN-Rab11* pharate adult raised at 29.5ºC. Note the shortened and deformed legs. (C) The notum from a *Gal80ts/DN-Rab11* pharate adult raised at 27.5ºC until wpp and then shifted to 29.5ºC. The arrow points to the scutellum, which is small and lacks bristles.

Fig S7. Rab11 and hair morphogenesis. (A). F-actin staining of a 38 hr *ptc-Gal4/UAS-GFP-Rab11* wing. (B) A merge of A and C. Note that at this late stage Rab11 is concentrated at the base of the hair. (C) The wing from A showing GFP-Rab11. (E). GFP-Rab11 in a 32 hr *ptc-Gal4/ UAS-GFP-Rab11* wing. (F) GFP-Rab11 in a 32 hr *ptc-Gal4/ UAS-GFP-Rab11; mwh* wing. The arrows point to cells where the early accumulation of GFP-Rab11 is broader than that seen in a wild type wing.

Fig S8. GFP-Rab11 across the cell. (A) A micrograph of a region of a *ptc-Gal4/UAS-GFP-Rab11* pupal wing. The image is of direct visualization of GFP (no staining). The black line is an example of how we assessed the concentration of GFP-Rab11 as a function of distance from the base of the hair to the other end of the cell. (B). A plot of the change in GFP intensity as a function of distance from the base of the hair. The data are for a collection of 20 cells.

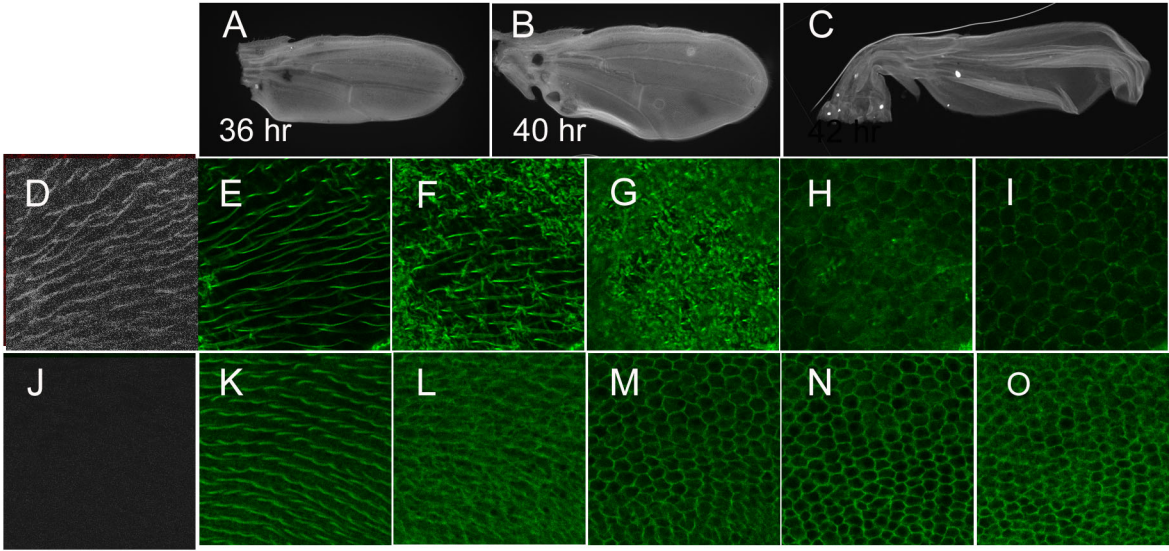
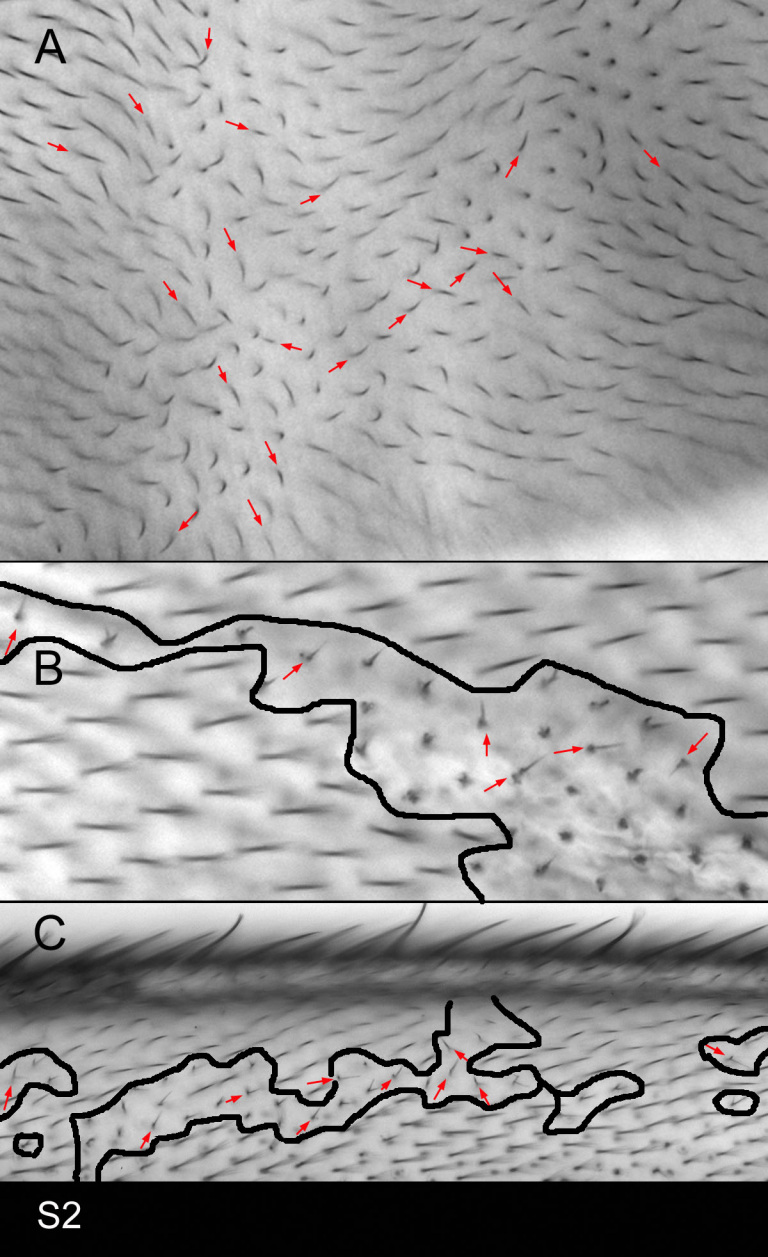
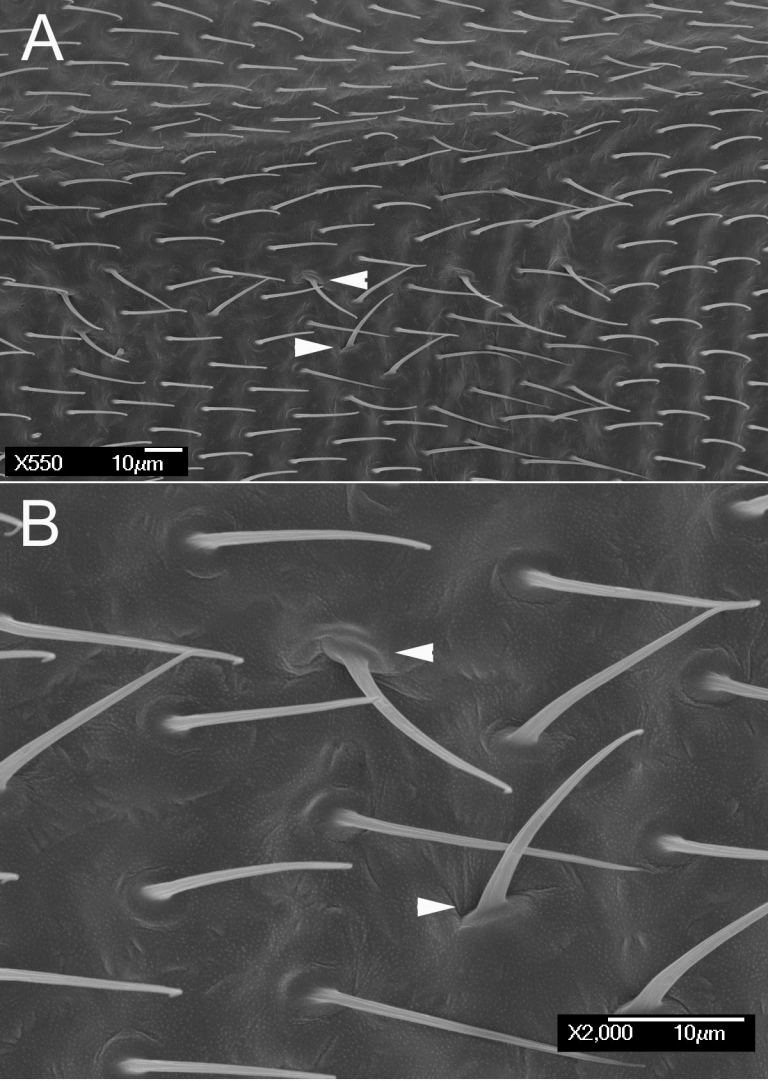
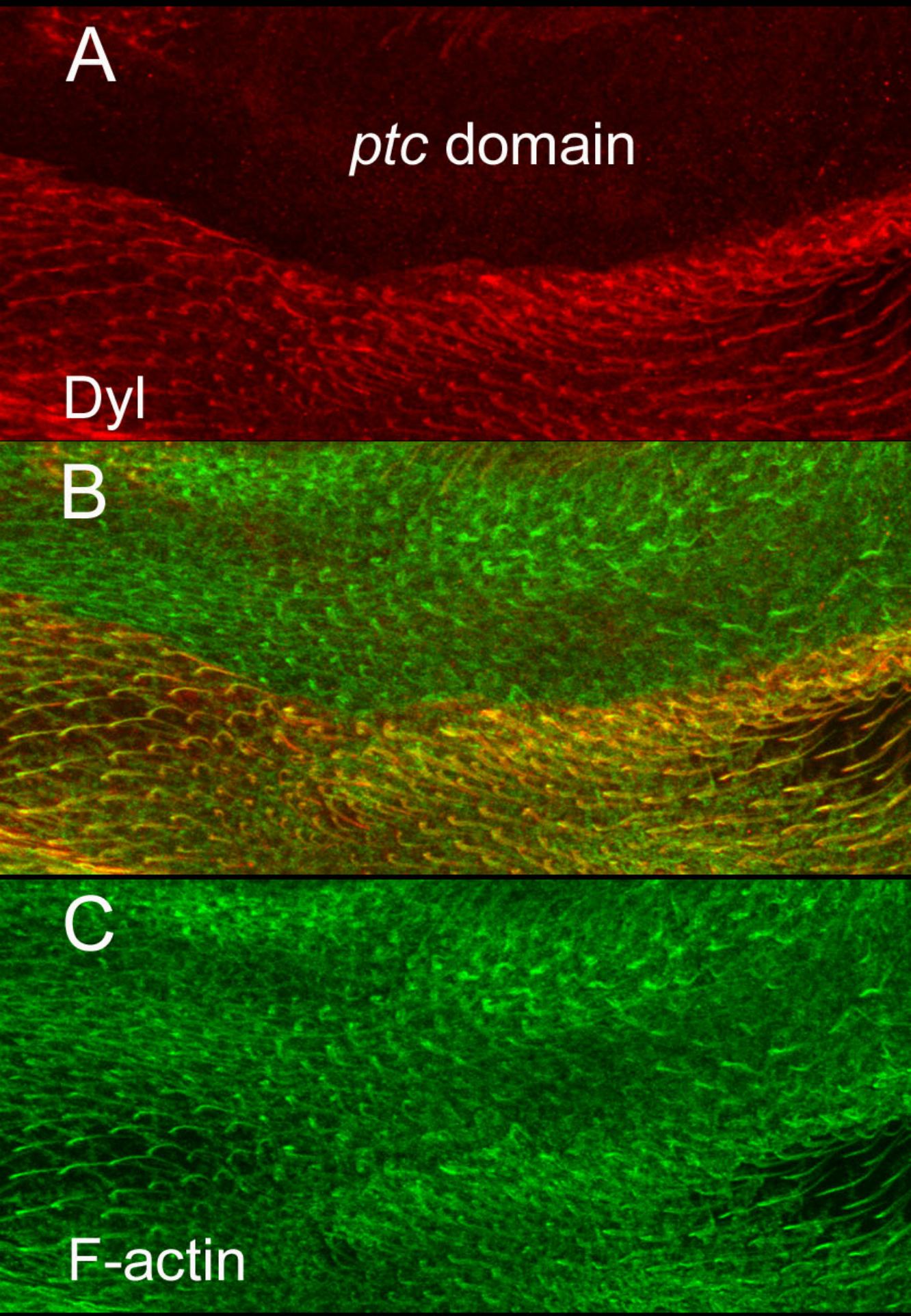


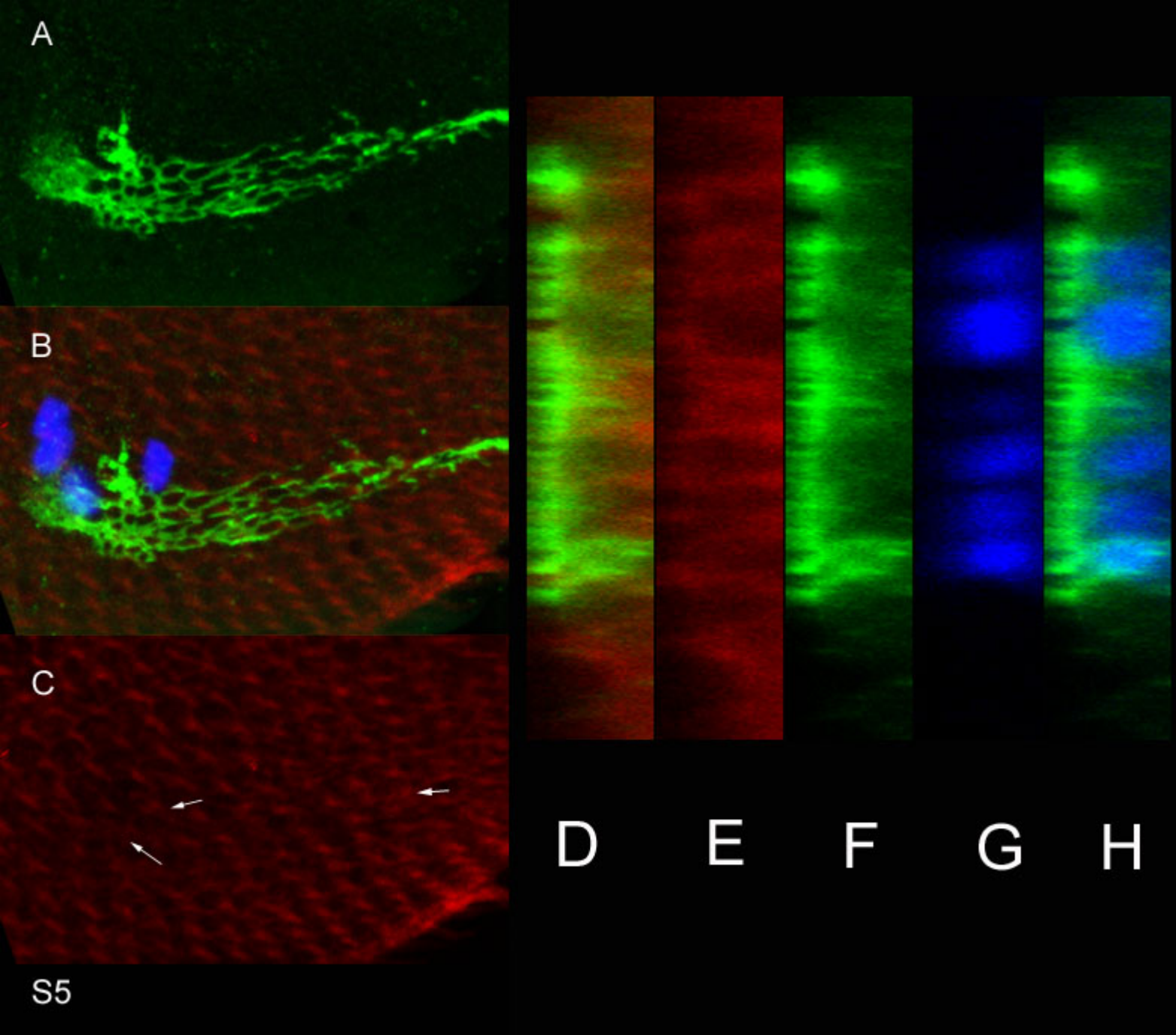
Fig S1

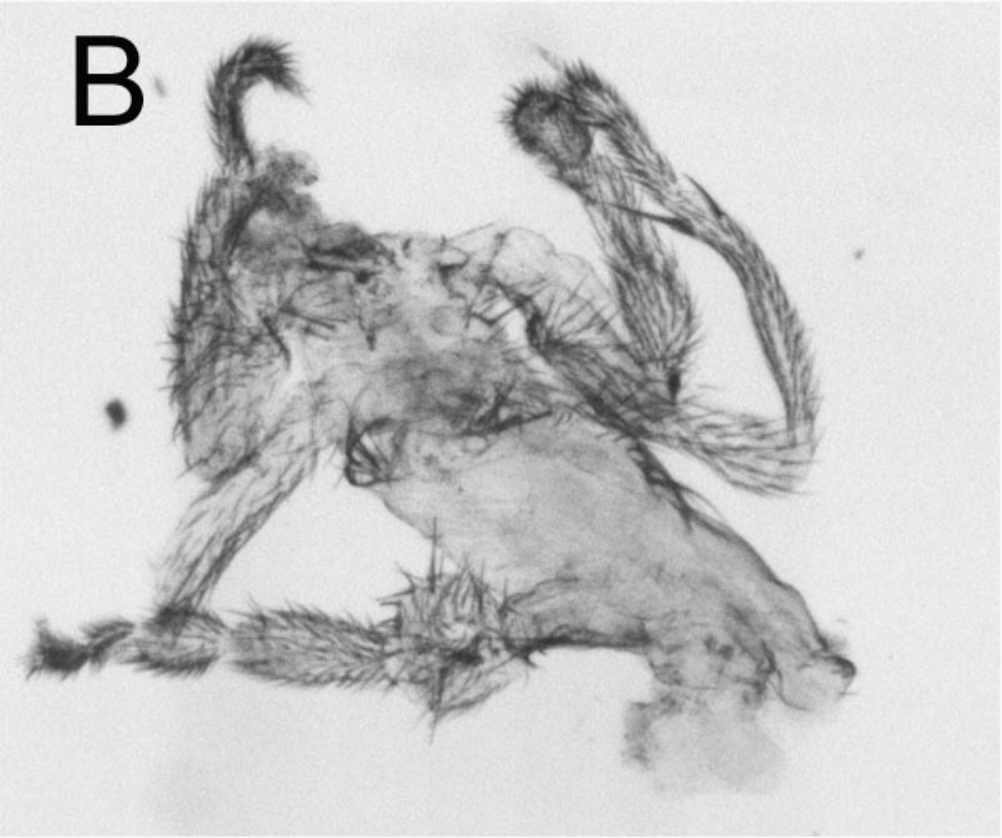

A
B
C
S2

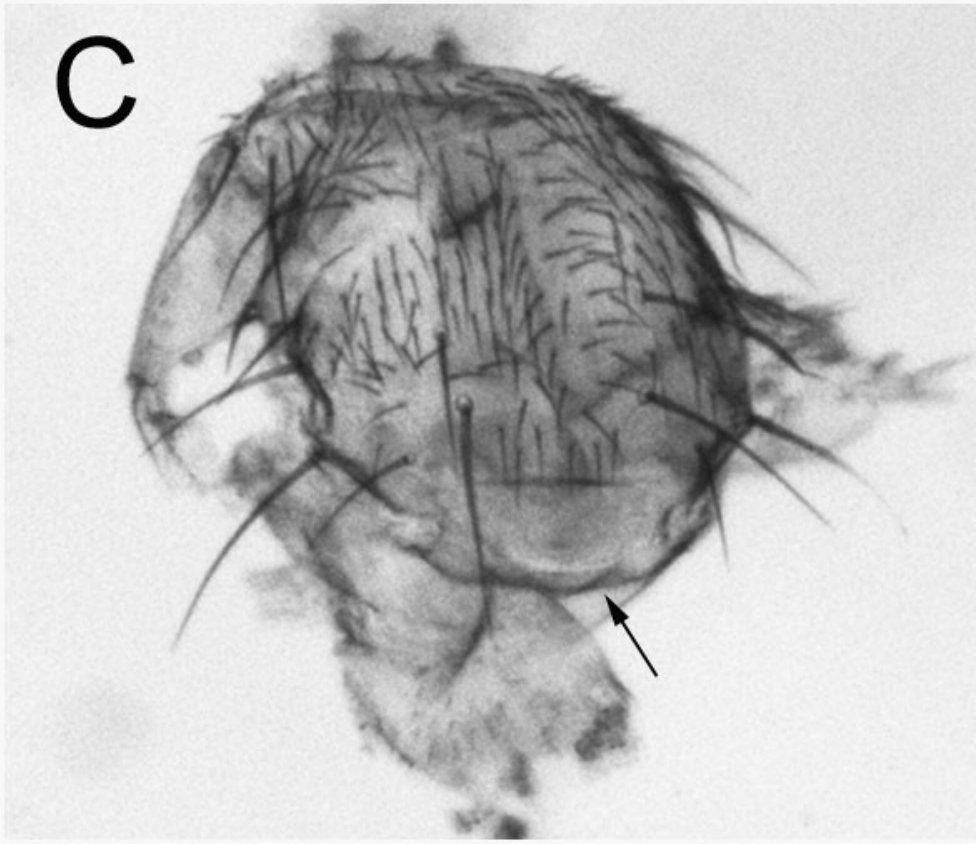


S3


A
ptc domain
Dyl
B
C
F-actin


A
B
C
D
E
F
G
H
S5





S6

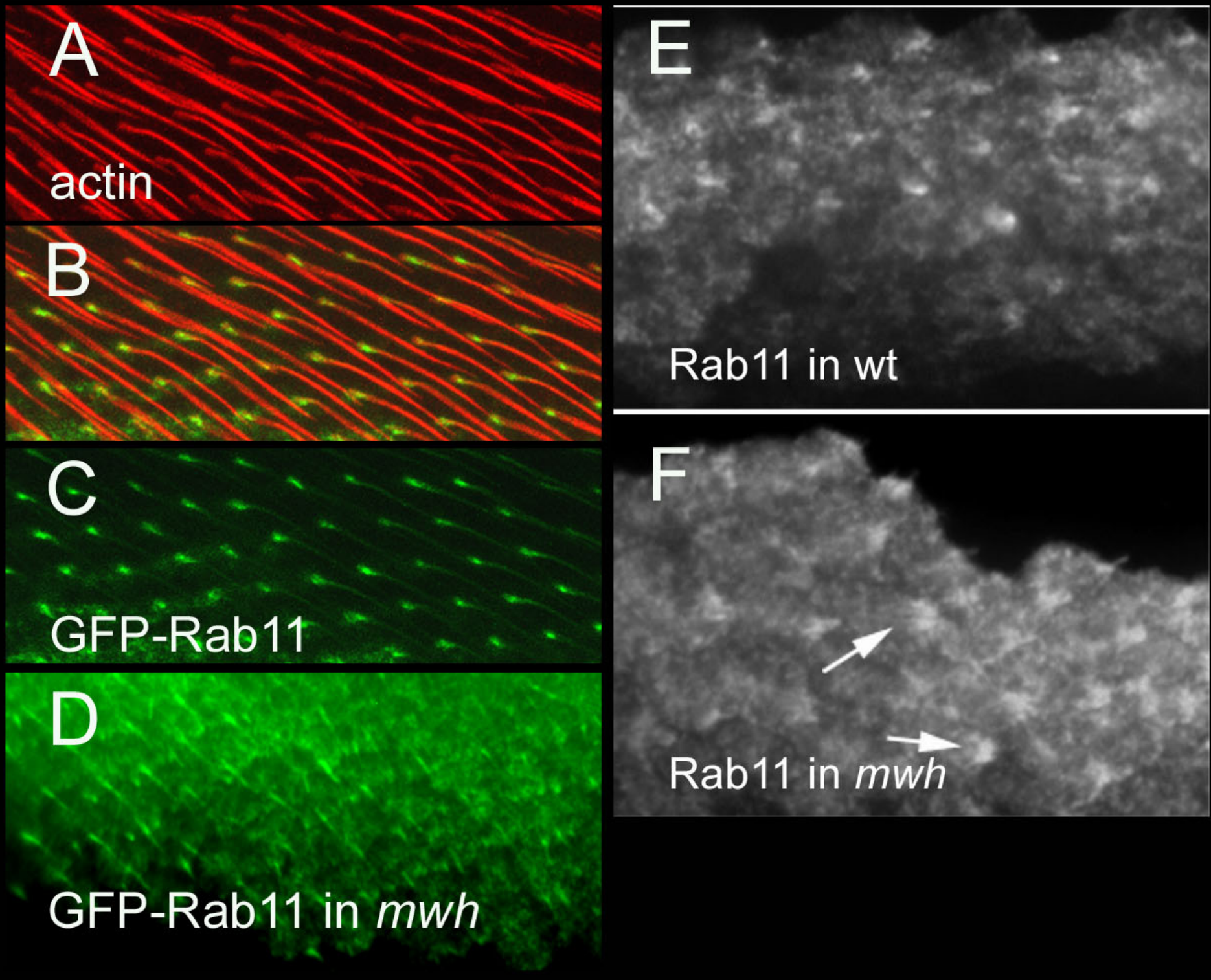
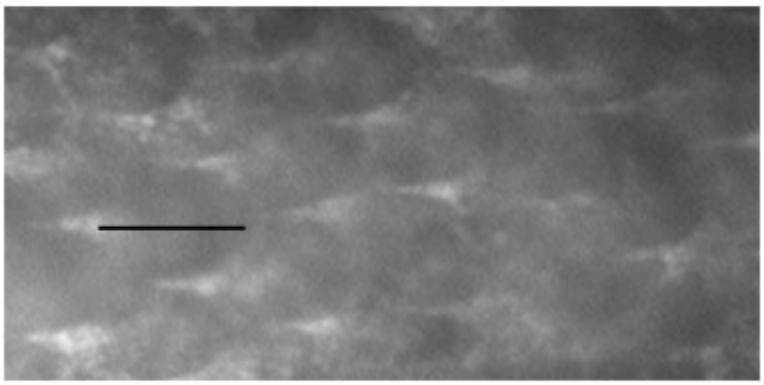
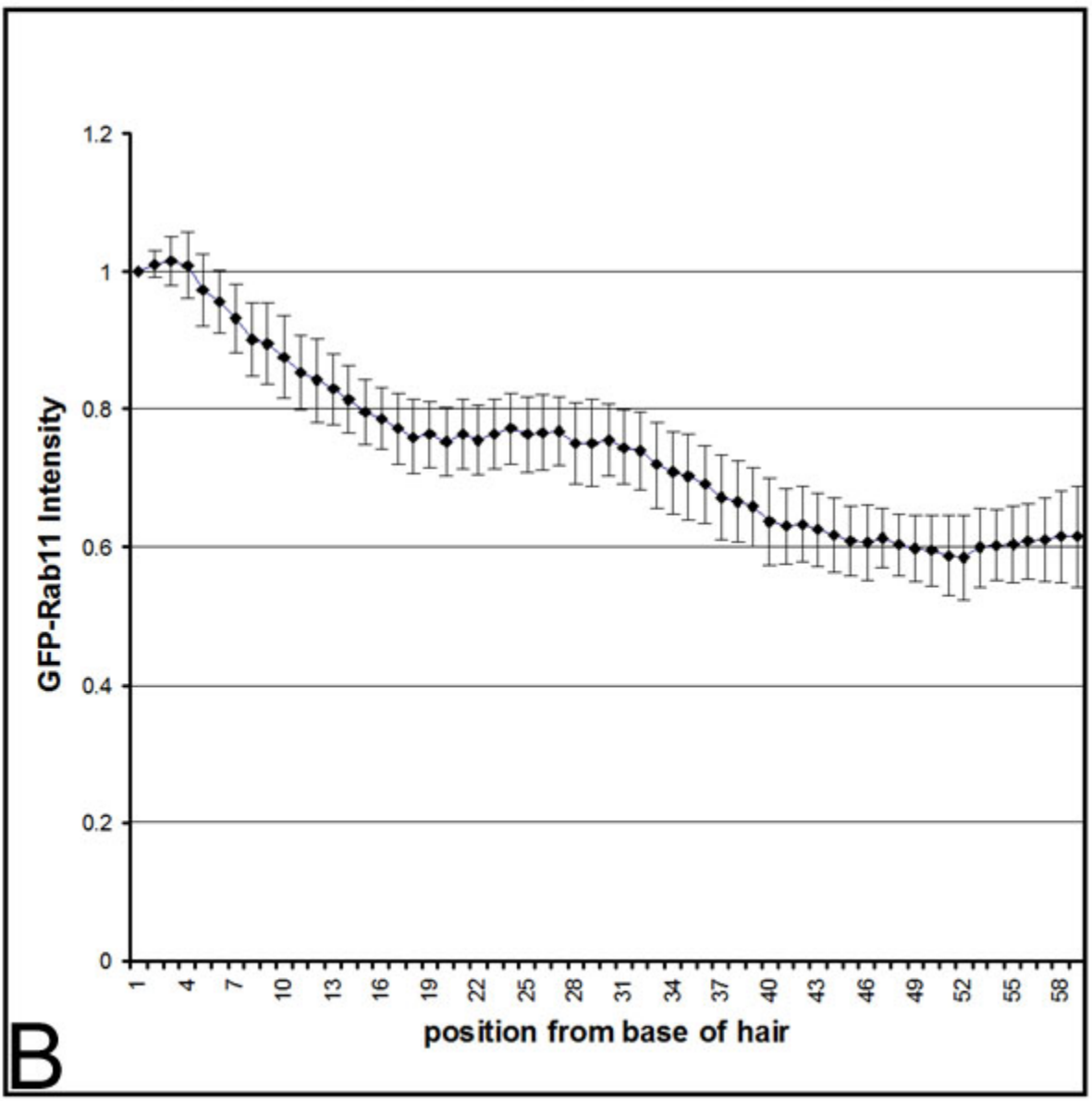

A
actin
B
C
GFP-Rab11
D
GFP-Rab11 in *mwh*
E
Rab11 in wt
F
Rab11 in *mwh*

Fig. S4

Fig S5

A




GFP-Rab11 Intensity
1.2
1
0.8
0.6
0.4
0.2
0
1
4
7
10
13
16
19
22
25
28
31
34
37
40
43
46
49
52
55
58
position from base of hair
B