

**Figure S3** Chart showing relative planar polarity and canonical allele strengths. For each missense and nonsense allele subjected to detailed analysis, the strength of the planar polarity defect is plotted in terms of the number of extra tarsal segments (blue bars). The canonical defect is show in arbitrary units with a large red bar indicating a "strong" phenotype with anterior wing margin notching of more than 10%, and a medium sized red bar indicating an "intermediate" phenotype with notching between 0-10% and fewer than 10% *yellow* bristles present. Red arrows indicate alleles where Fz protein is not stably localize to junctions. Turquoise arrows indicate alleles showing phenotypes consistent with similar defects in canonical and planar polarity activity and magenta arrows indicates alleles with a strong defect in planar polarity activity but normal canonical activity (magenta).

4 SI D. Strutt et al.