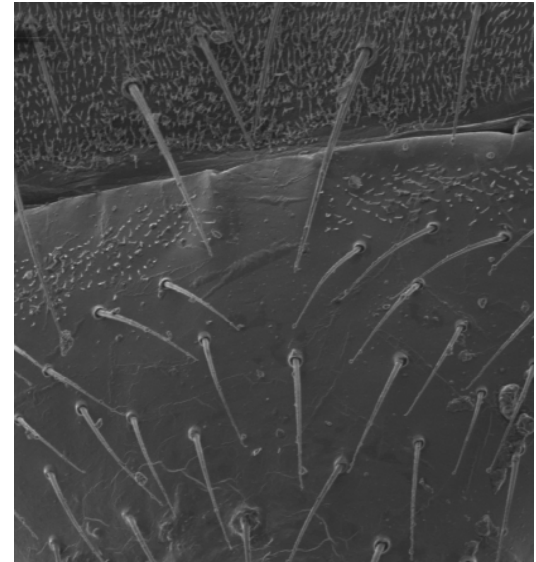


Master's Plan II Defense Announcement

shavenbaby and its role in the formation of adult trichomes in *Drosophila melanogaster*

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The evidence in support of cis-regulatory evolution has continued to grow in recent years. One such example exists in the patterning of larval trichomes. The gene *shavenbaby* (*svb*) integrates regulatory information from epidermal growth factor receptor (EGFR) and Wingless (Wg) signaling to specify the patterning of trichome formation. In larvae, variation in trichome patterning between species is the direct result of modifications in cis at the *svb* locus. Upon evaluating the patterning of trichomes within the adult tergum, we found that the regulatory mechanism governing *svb* has been modified from the system present within the larval epidermis. Here, we present gene expression and functional genetic studies that support a model in which the development and patterning of adult abdominal trichomes relies on interpreting a gradient of *svb* expression, and that threshold sensitivity, rather than a binary switch, determines whether trichomes will form in the developing abdominal epithelium. Transcriptional regulation of *svb* by the transcription factors Bric-a-brac (Bab) and Abdominal-B (Abd-B) could account for the repression of trichomes in the A6 tergite. The results of this study suggest that *svb* is not entirely restricted from the posterior abdomen, leading to the repression of adult trichomes, but rather threshold responses to Svb activity underlie spatial modifications to trichome patterning.