



Javelin, a novel protein is essential in *Drosophila* bristle actin bundles formation

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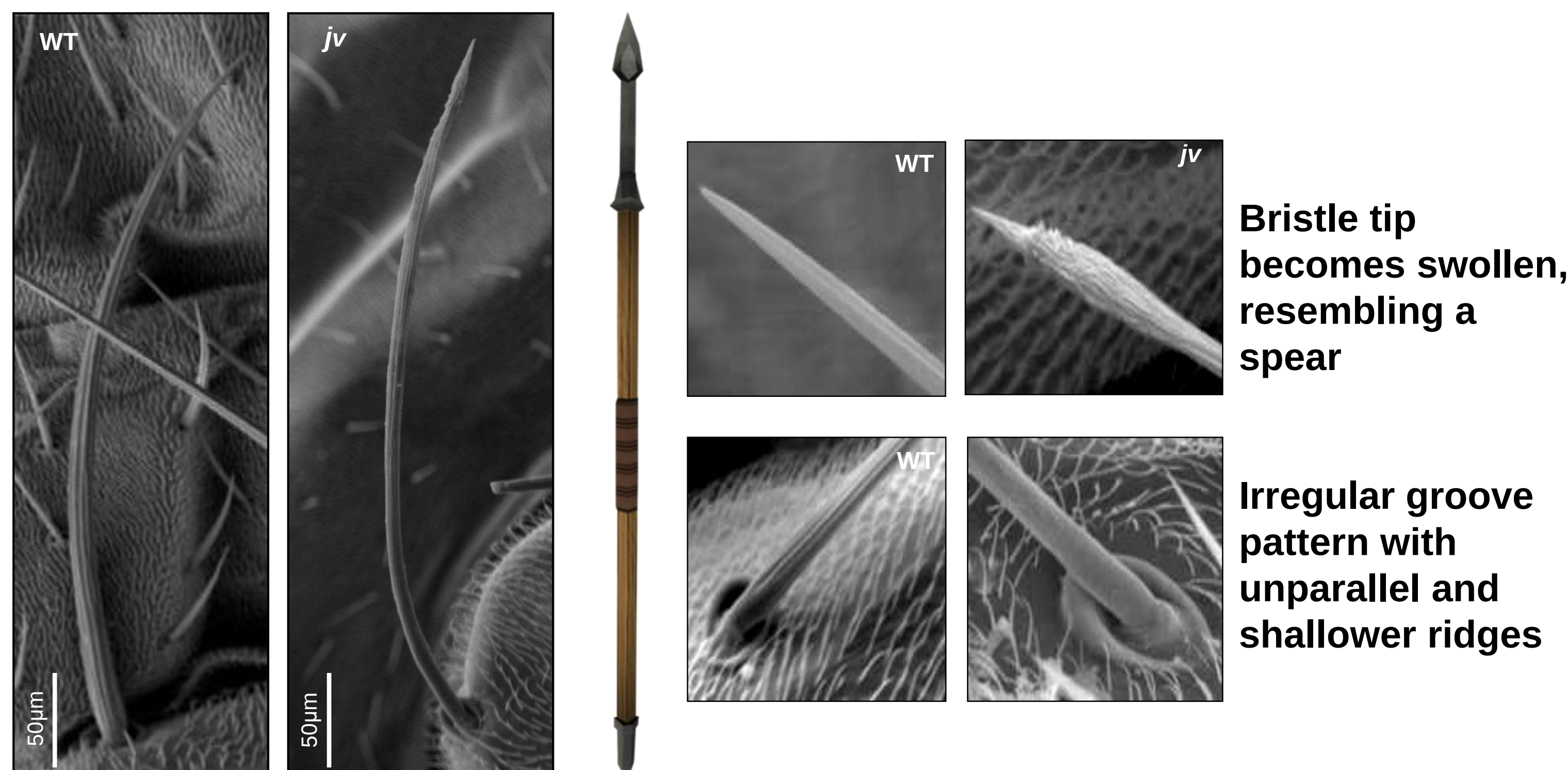
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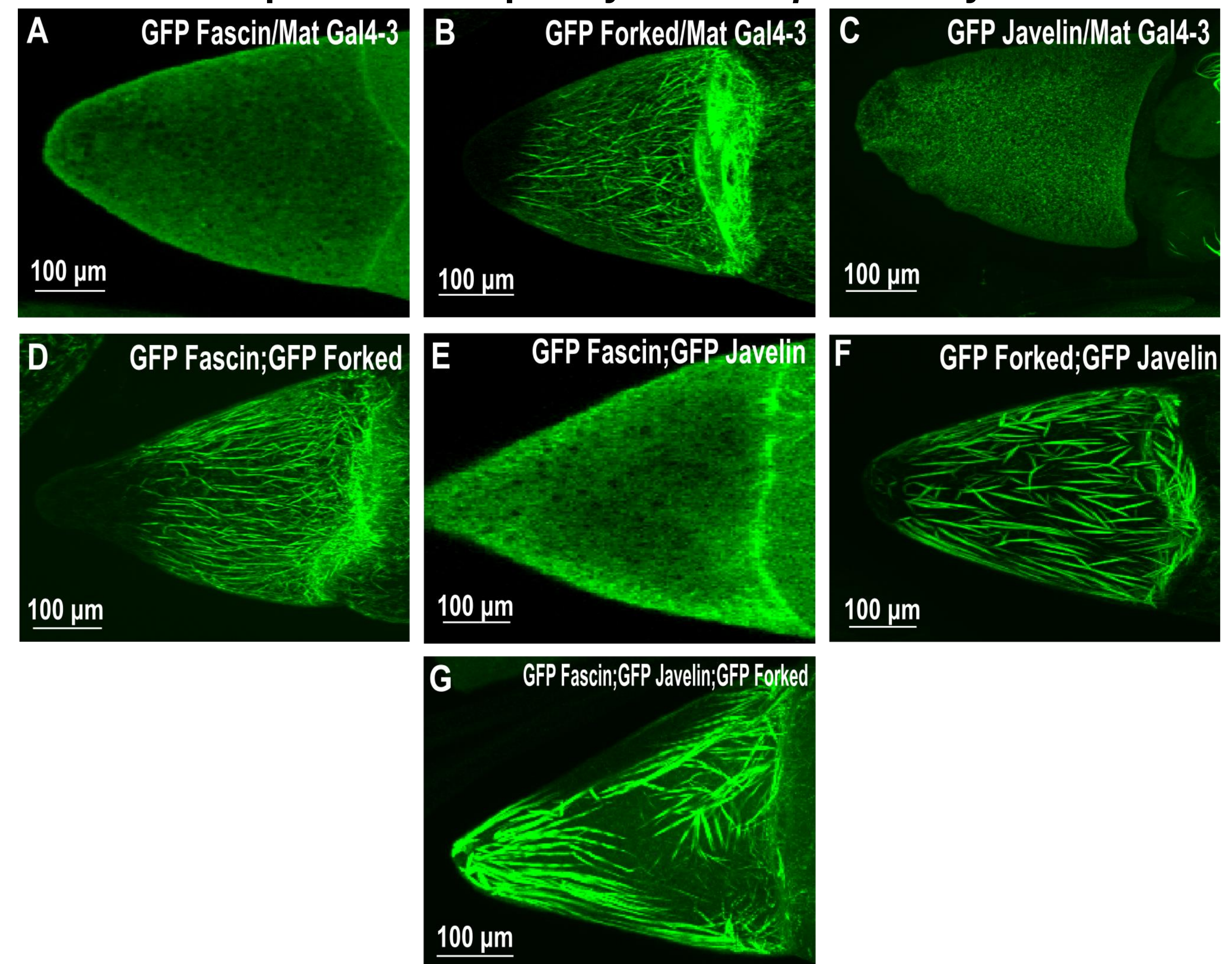


In several specialized cell types, such as intestinal microvilli, stereocilia of the inner ear and *Drosophila* bristles, the structural integrity requires a specific actin filament organization brought about by a set of actin bundling proteins. In *Drosophila* bristle development, two major actin bundling proteins – Forked and Fascin are involved in forming actin networks but only little is known about the utilization of these proteins in a time- and space- dependent manner. In our present study, using RNA sequence analysis a new gene, Javelin (*Jv*), was identified that directly affect actin bundles formation. Javelin mutant bristles do not taper like bristles in wild-type flies, instead they present a small enlargement before the tip. *In-vitro* and *in-vivo* studies using Javelin in the presence of Forked and Fascin showed that *jv* plays a role in actin bundling in *Drosophila*.

Javelin (*jv*) mutants show aberrant bristle morphology

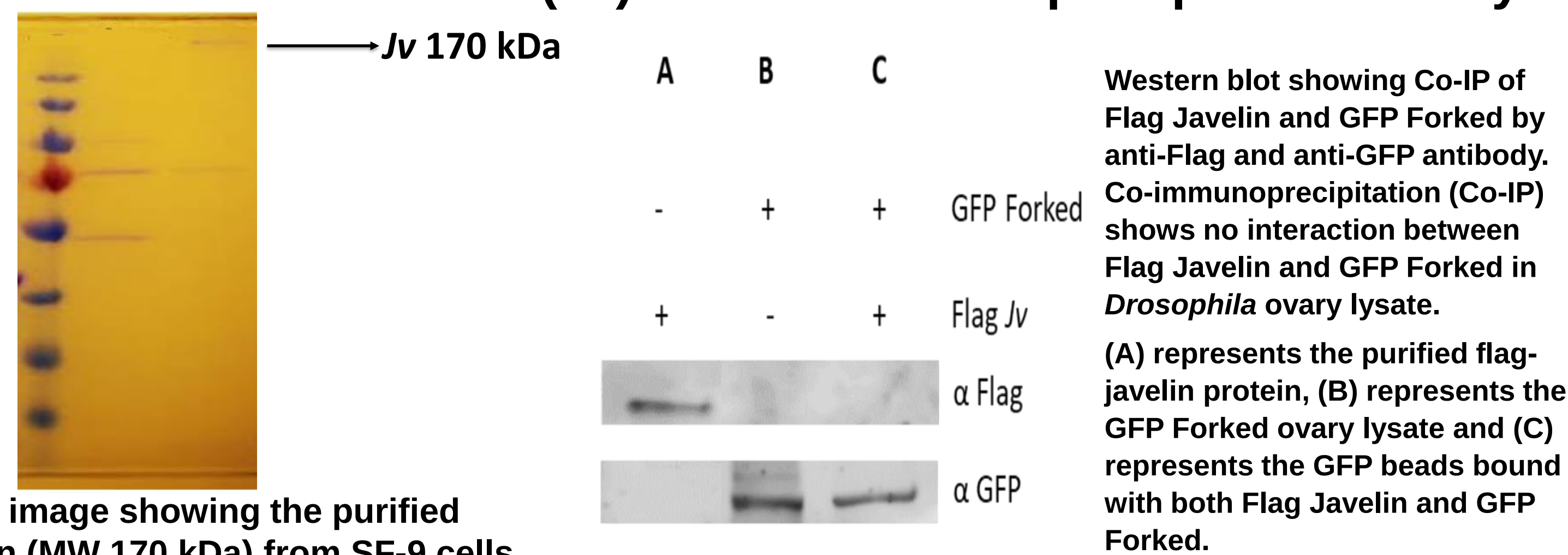


In-vivo actin bundling - *Jv* interacts with Forked and Fascin when expressed ectopically in *Drosophila* oocyte

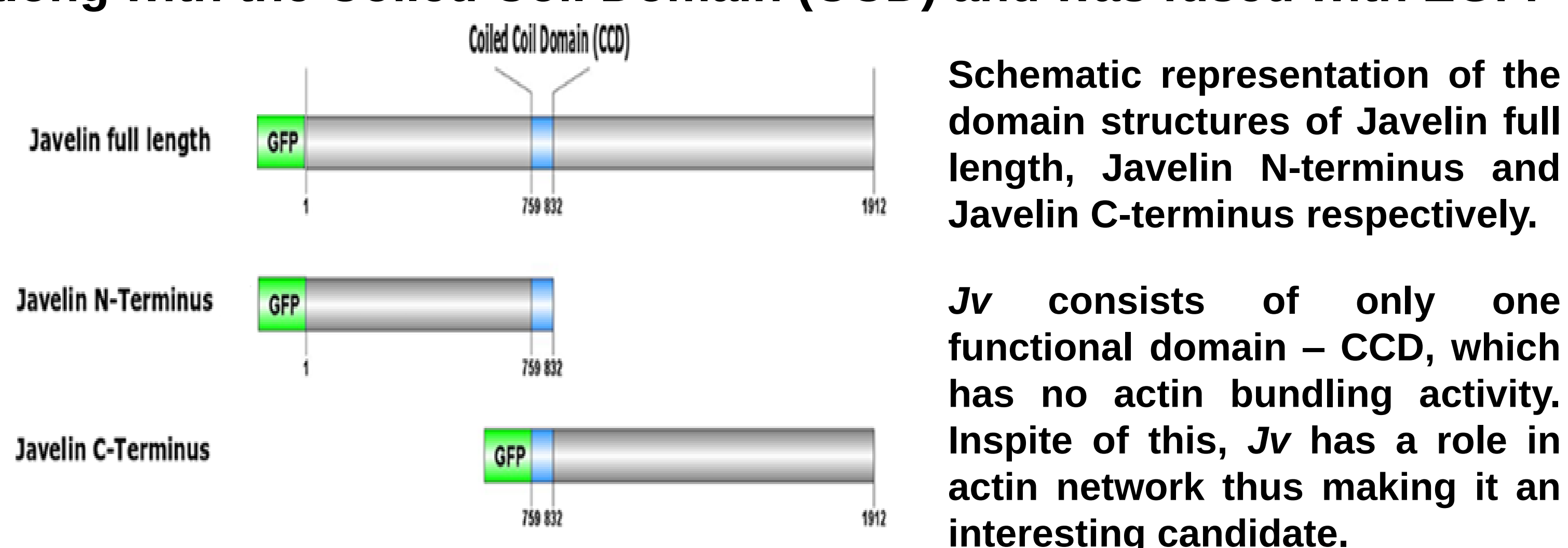


Confocal projections showing the ectopic expression of GFP Forked, Fascin and Javelin and their different combinations in *Drosophila* oocyte and the resulting actin networks.

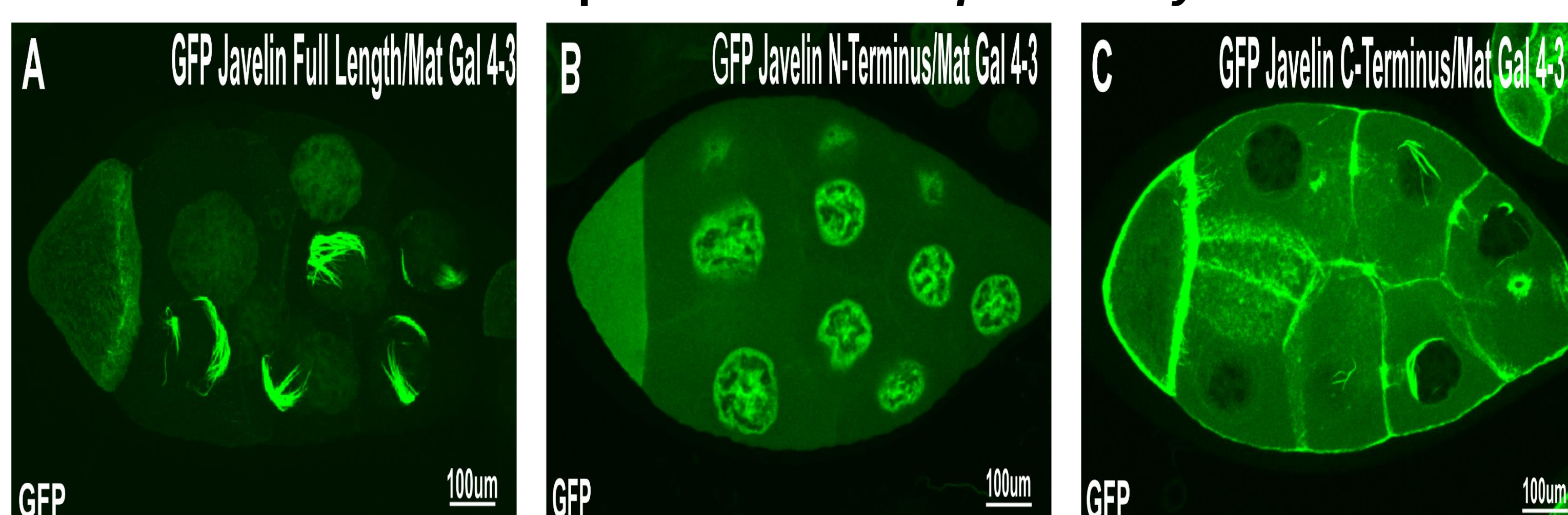
Purification of Javelin (*Jv*) and Co-immunoprecipitation assay



Javelin was cloned into two parts – N terminus and C-terminus along with the Coiled Coil Domain (CCD) and was fused with EGFP

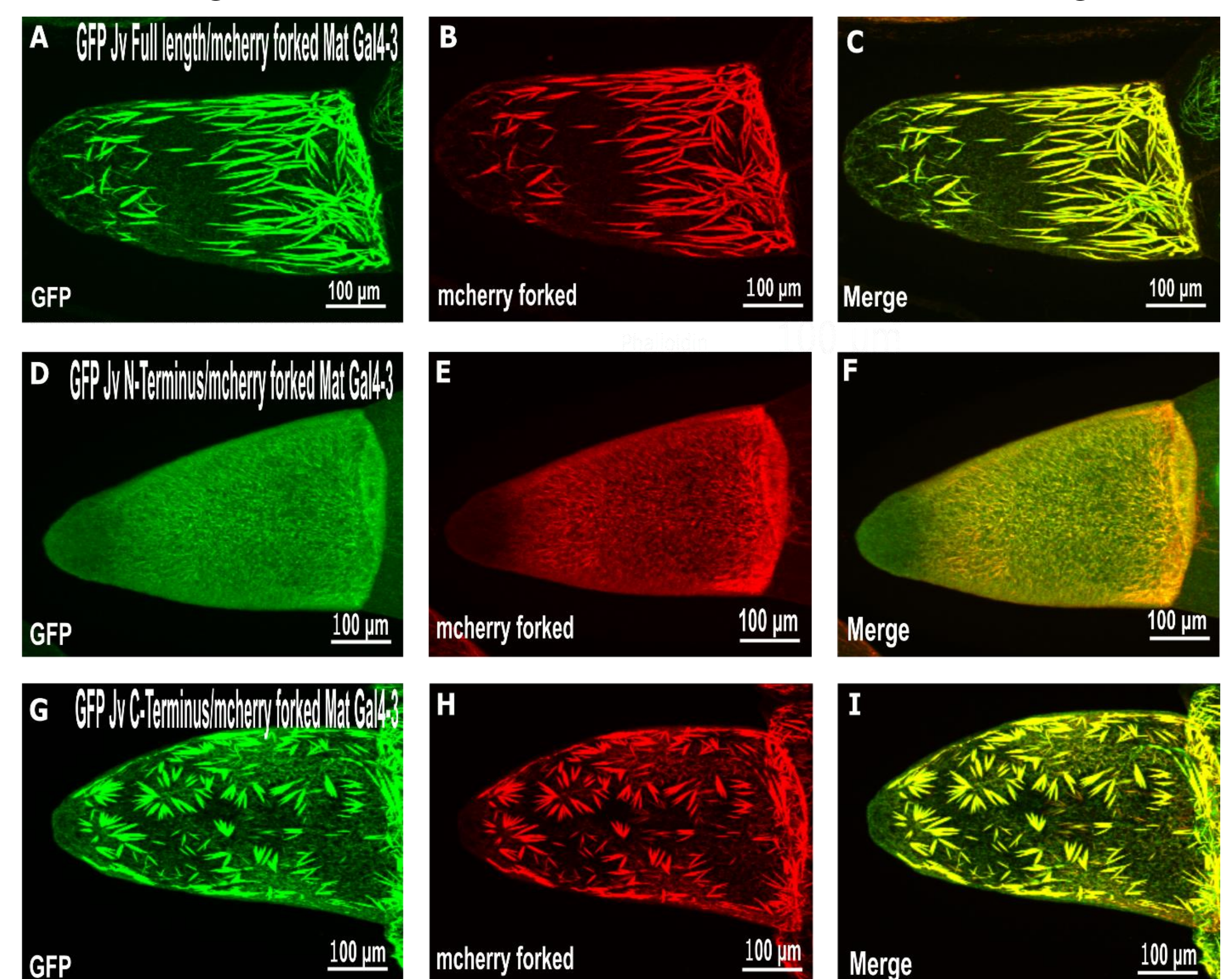


Jv full length, Javelin N-terminus and C-terminus exhibit unique localization pattern in *Drosophila* oocyte



Confocal projections showing the localization pattern of Javelin full length (A), N-terminus of javelin (B) and C-terminus of Javelin (C) when driven with a maternal Gal4-3.

When expressed with Forked, *Jv* N-terminus inhibits actin bundling whereas *Jv* C-terminus favours actin bundling



Confocal projections showing the effect of Javelin full length (A-C), Javelin N-terminus (D-E) and Javelin C-terminus (G-H) on the actin bundles when expressed with mCherry Forked.