

## The molecular function of the BMP feedback regulator pentagone

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BMP signalling is required in all organisms for the control of tissue growth and morphogenesis. We focus on the regulation and function of BMP signalling in the wing precursor of the model organism *Drosophila melanogaster*. The lab has previously identified and characterised Pentagone (Pent), a secreted feedback regulator of BMP signalling in *Drosophila*. Transcription of *pentagone* is repressed by BMP signalling, and Pentagone in turn promotes spreading of the BMP ligand Decapentaplegic through the wing imaginal disc. Wing precursors that are *pent* mutant have defects in growth and patterning which are due to deficiencies in BMP signalling. In addition to BMP patterning defects, *pent* mutant wings also have phenotypes that appear to be due to a reduction in Wingless signalling, a *Drosophila* Wnt protein. This leads us to hypothesise that Pent exerts its function through factors that are common to both the BMP and Wnt pathways in the wing precursor. Chief among these are two glycosaminoglycan anchored heparan sulphate proteins (glypicans), Dally and Dally like (Dlp). Pent genetically interacts with Dlp, antagonizing phenotypes caused by over-expression of Dlp. Pent physically interacts with both Dally and Dally like, and when in high levels causes internalisation and degradation of Dally and Dlp. We are now exploring how this internalisation may occur, and how this regulation of the localisation of glypicans may regulate BMP signalling.