The Mi-2$\beta$ nucleosome-remodelling protein LET-418 is targeted via LIN-1/ETS to the promoter of lin-39/Hox to regulate vulval development in *C. elegans*

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The mammalian and fly NuRD (nucleosome remodelling and histone deacetylase) complexes have been implicated in transcriptional repression through chromatin remodelling and histone modifications. During vulval development in *C. elegans*, an inductive RTK/Ras signalling pathway is antagonized by the inhibitory action of redundantly acting classes of synMuv genes. Some class B synMuv genes encode orthologs of NuRD complex components, including LET-418/Mi-2$\beta$, suggesting that regulation of chromatin structure, possibly by a NuRD-like complex, might be important for vulval cell-fate specification in *C. elegans*. We have found that *let-418* and *hda-1* antagonize the RTK/Ras pathway by negatively interfering with the transcription of the Hox gene *lin-39*, a key regulator for vulval development. LET-418 and HDA-1 control *lin-39* transcription by directly associating with its promoter. Moreover, targeting of LET-418 and HDA-1 to the promoter of *lin-39* depends on the transcription factor LIN-1/ETS, a direct downstream target of the inductive RTK/Ras signalling pathway.

These findings provide a direct link between RTK/Ras signalling and chromatin remodelling. They also show the molecular action of a synMuv gene and its target gene.

Thesis jury:
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