Regulatory crosstalk between ecdysone-induced transcription factors confers temporal specificity to chromatin-state & gene expression during metamorphosis

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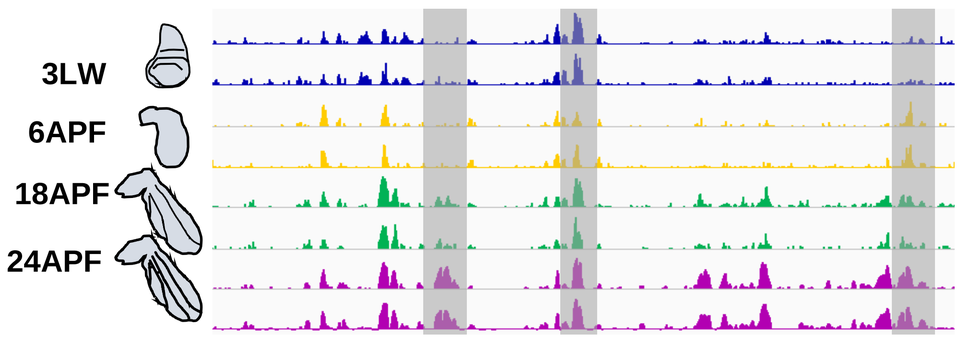
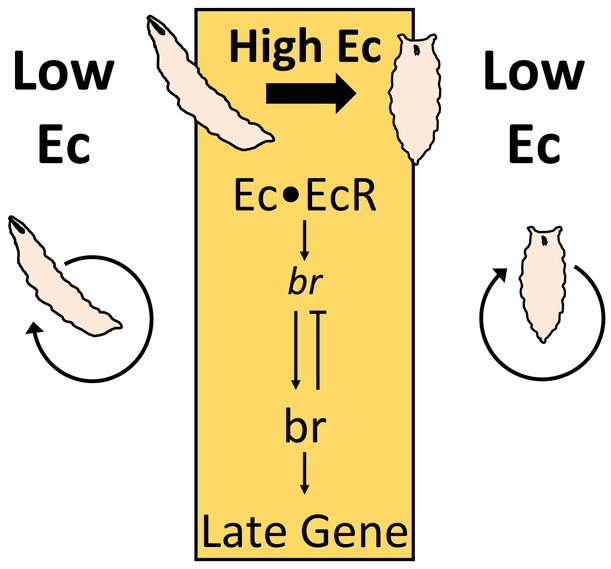
Introduction

Chromatin accessibility is dynamic during wing development

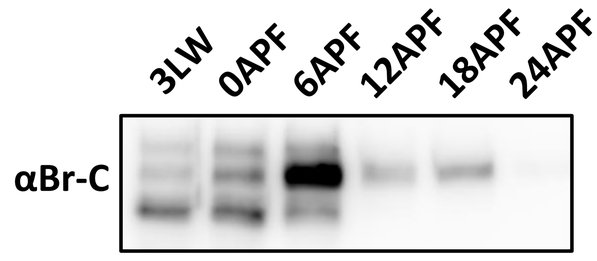


Factors responsible for regulation of temporal programs are not well understood

Broad is a known regulator of developmental timing



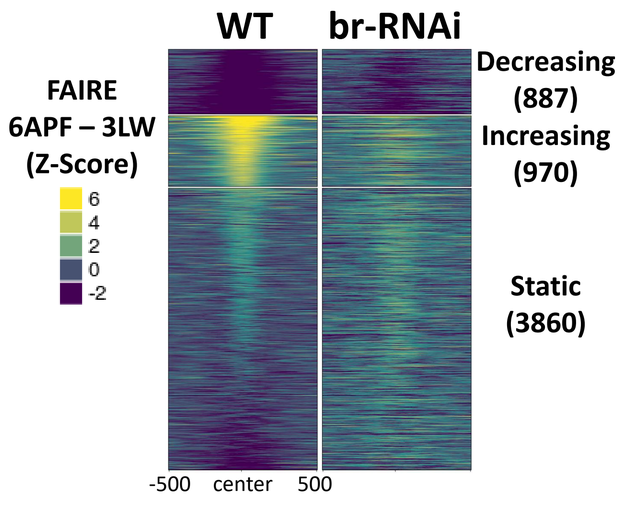
Broad levels are dynamic during wing development

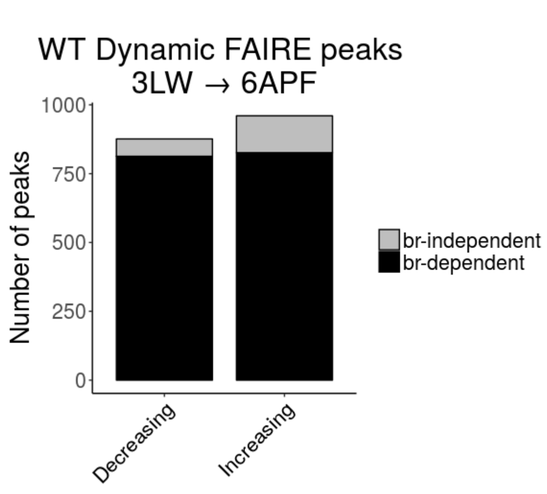


We <u>hypothesize</u> that br enacts stage-specific gene expression programs in-part by regulation of chromatin accessibility

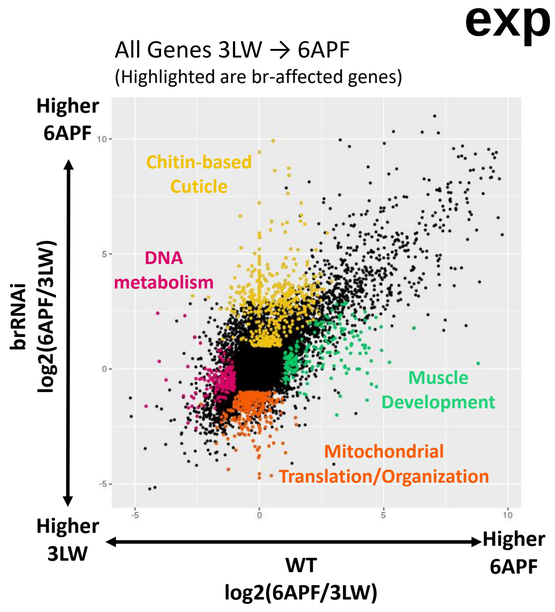
Results

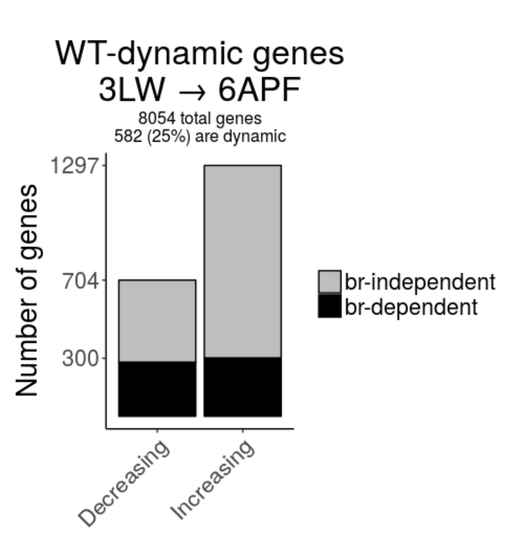
Dynamic chromatin fails to change in the absence of br



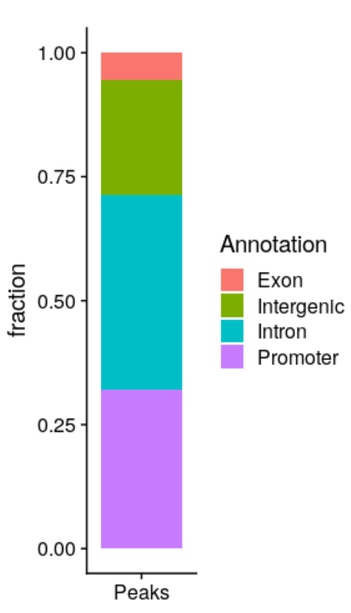


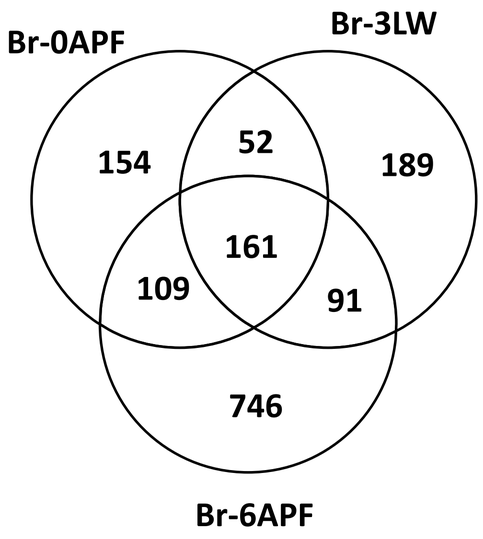
A subset of dynamic genes require br for expression



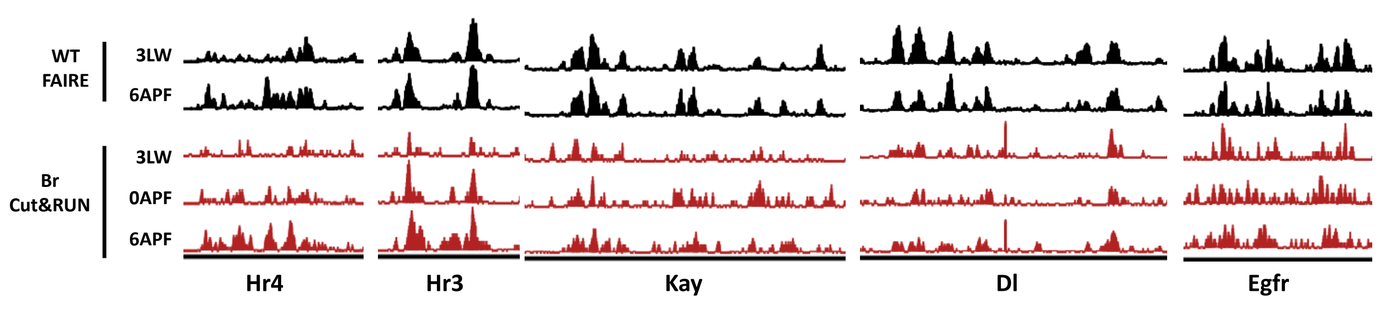


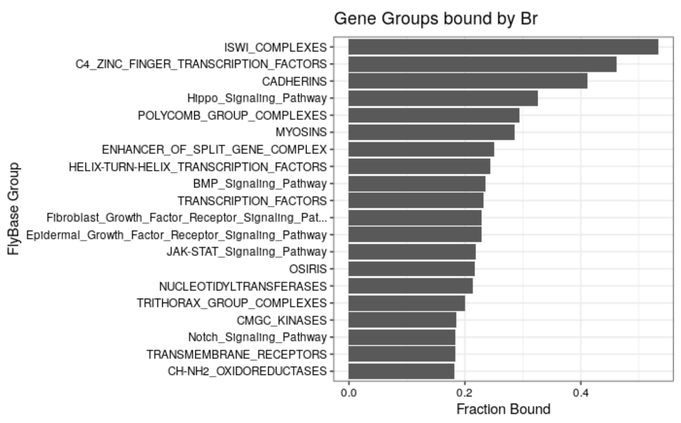
Br binds a limited number of genomic loci

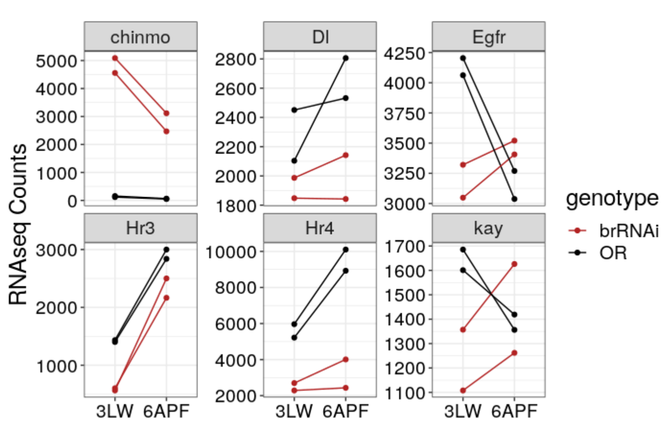




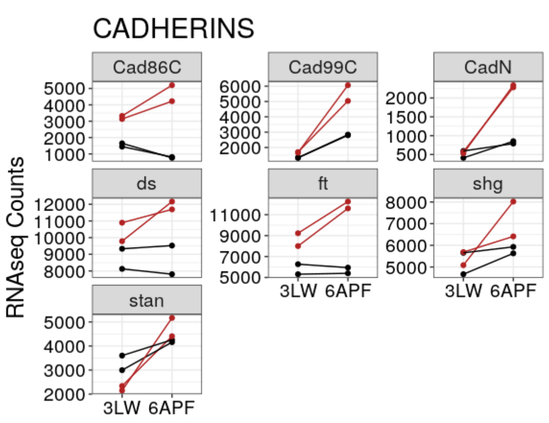
Broad binds major developmental regulators

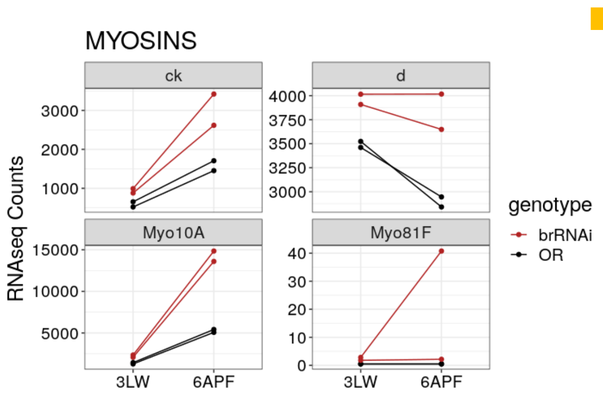






Br binds morphogenesis effectors





Conclusions

- Br acts indirectly through regulation of transcription factors
- Br also has a direct role at a limited number of targets

Future Work

- Identify binding sites of target TFs with CUT&RUN
- RNAseq in TF mutants to build regulatory networks
- Examine enhancer activity in isoform-specific mutants
- Characterize developmental defects in brRNAi

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