

Analyzing the Function of PcG Bound DNA Fragments Outside of H3K27me3 Domains

Joshua Price¹, J. Lesley Brown¹, and Judith A. Kassis¹

¹ Eunice Kennedy Shriver National Institute of Child Health and Human Development

Introduction

- Polycomb group (PcG) proteins play a vital role in maintaining developmental genes in a silenced state
- In *Drosophila melanogaster*, the Polycomb system works in complexes to create silenced domains through the addition of H3K27me3

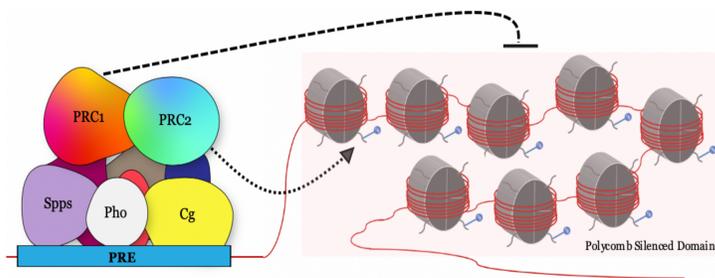


Figure 1: Polycomb repressive complexes are recruited to PREs by multiple PcG proteins and maintain silenced domains through the addition of H3K27me3.

- Genome-wide, the majority of PcG protein binding occurs outside of H3K27me3 domains

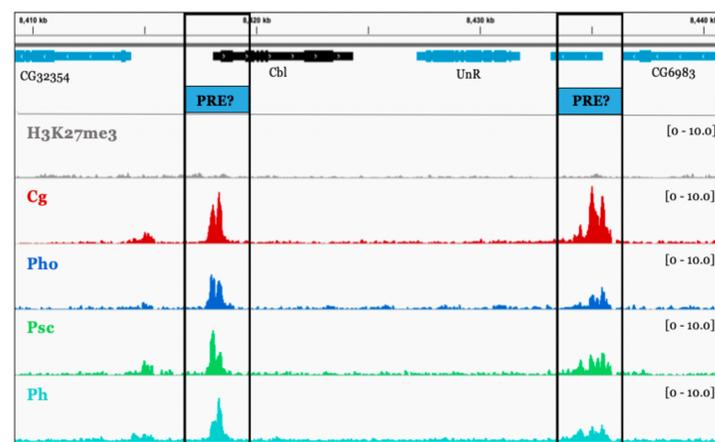


Figure 2: The majority of PcG protein binding occurs outside of H3K27me3 domains.

Methods

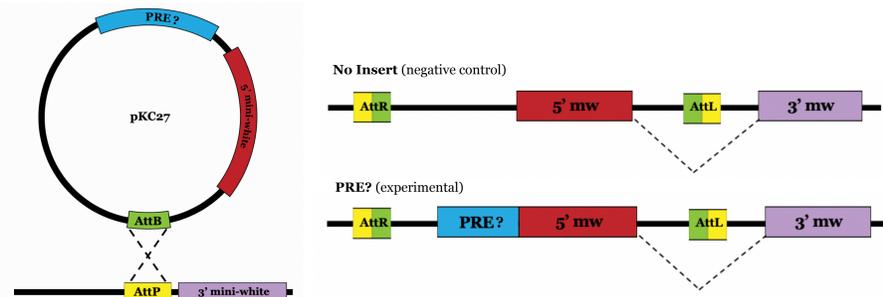


Figure 3: The pKC27 split mini-white transgenic assay used to test PcG bound fragments for PRE function. Schematic and method adapted from Okulski et al (2011).

Results

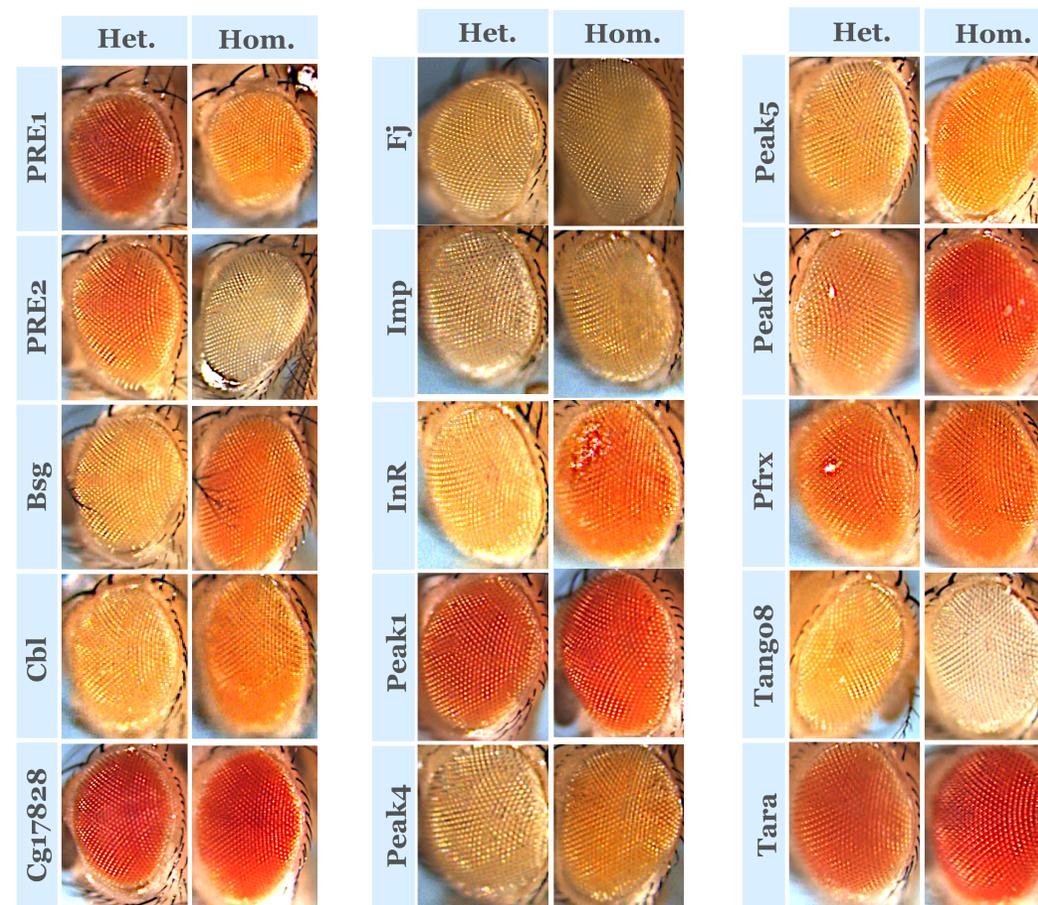
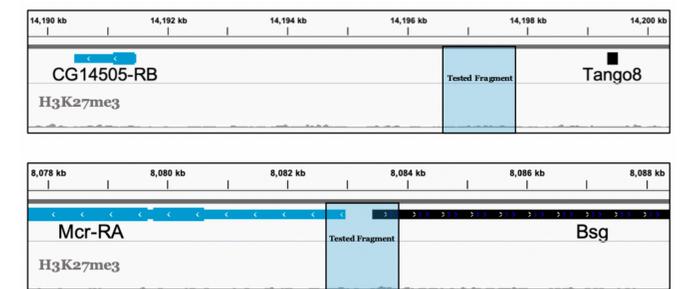


Figure 4: Comparison of *Drosophila melanogaster* eye color in females collected as virgins, with meconium still visible, and imaged within 8 hours of collection.

Summary

- Only one tested fragment induced pairing sensitive silencing
- Comparisons between tested fragments offers minimal insight



	Pho	GAGA	Sp1	Dsp1	Zeste	Grh	Cg
Tango8	4	4(5)	4	3	7	1	3(8)
Bsg	4	2(7)	2	9	3	0	11(18)

Figure 5: Comparison of two tested fragment's loci and PcG binding motifs.

Future Direction

- A total of 24 fragments will be tested using the described assay
- ChIP-qPCR experiments for H3K27me3 across the mw transgene may provide valuable insight

Acknowledgements

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