

S60-6 **Epigenetic regulation of winged eye capable of inducing eye to wing transformation in *Drosophila***

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In *Drosophila*, the developmental program of imaginal discs is determined. We previously identified *winged eye* (*wge*), the overexpression of which induced ectopic wings on the head. WGE localized on polyten chromosomes, and almost all Posterior sex comb (PSC) that one of Polycomb group (PcG) protein were coincident with some WGE binding sites. The analysis of genetic interaction between *wge* and *Psc*, *Polycomb* or *Pleiohomeotic*, revealed that *wge* antagonizes *PcG* genes. Surprisingly, *wge* also antagonizes *trx* (*trithorax*) that one of *trithorax group* (*trxG*) genes, which generally antagonize *PcG* genes. The phenomenon is also supported by effects of *wge* mutation on *PcG* / *trxG* response element (PRE / TRE) –mediated gene regulations to know whether *wge* maintains either silenced (*PcG* like) or active (*trxG* like) transcriptional states. *wge* is involved in maintenance of active transcriptional states on Fab-7, a genetically identified PRE / TRE of the bithorax-complex necessary to regulate transcription of the *Abdominal-B*, whereas, *wge* is involved in maintenance of silenced transcriptional states on PRE of *vestigial*, a target of Wge during eye to wing transformation. These results suggest that *wge* is the new type of epigenetic regulator different from *PcG* and *trxG*.