

F824**Regulation of the *Drosophila raf* and *PCNA* Gene Expression by the Homeodomain Protein, Ftz and Engrailed**

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The proliferating cell nuclear antigen (PCNA) is a nuclear protein whose expression is high at S phase of the cell cycle. Raf-1 plays an important role in the signaling process in cell proliferation and differentiation. The binding consensus for homeodomain proteins are located in the regulatory regions of the *Drosophila PCNA* and *raf* genes. The homeodomain protein Ftz is shown to be a site-dependent activator of transcription. Another homeodomain protein, the *engrailed (en)* gene product, competes for homeodomain-binding sites and counteracts ftz activation. In this study, to investigate a possibility that the expression of *PCNA* and *D-raf* genes is regulated by these homeodomain proteins, we examined effects of the Ftz and the Engrailed on expression of the *Drosophila raf* and *PCNA* genes by transient expression assays in *Drosophila* Kc cells using the reporter plasmids, p5'-168DPCNACAT and p5'-878DrafCAT, and the effector plasmids, pAct5c-ftz and pAct5C-en.

F825**Oxidative Stress-regulated Metallothionein Gene Expression by Analysis of MT-lacZ Transgenic *Drosophila***

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Metallothionein(MTs) are small, cysteine-rich, metal binding proteins that are ubiquitous among eukaryotes. The biosynthesis of MTs is enhanced both *in vivo* and in cultured cells by metal ions and by glucocorticoids, cytokines, growth factors, and many other chemicals. Overexpression of the MTs can protect against heavy metal toxicity. Recently, it has been known that the MT mRNA is also induced by oxidative stress *in vitro*. In this study, whether expression of the MT gene is regulated by oxidative stress is examined in cultured cells and transgenic *Drosophila*. CAT activity of S2 cells transfected with MT-CAT plasmids was induced by paraquat. Expression patterns of the MT-lacZ gene induced by oxidative stress in transgenic flies were examined by X-gal staining and colorimetric assays. We confirmed that expression of the lacZ gene under the MT promoter in transgenic flies is strongly induced in response to paraquat in fat body, brain lobe, and ganglion of transgenic line.