

The Effects of MeHg on the Developing *Drosophila* Nervous System

Methylmercury (MeHg) is an environmental toxin with particularly damaging effects on the developing nervous system. Although it is well known that MeHg exposure leads to perturbations of the nervous system in various organisms, the exact mechanisms by which these disturbances occur is less clear. An important step in determining the mechanisms by which MeHg effects the developing nervous system is to isolate exactly where and during what stages of development MeHg has its damaging effects. Here we established a model with which to treat *Drosophila melanogaster* embryos with MeHg and visualize possible disturbances to the developing nervous system. Using various staining protocols to highlight different developmental processes, we found evidence of morphological and migrational disturbances resulting from MeHg exposure in fly embryos. Additionally, we used the GAL4>UAS system to express the human cytochrome P₄₅₀ gene CYP3A4, the human homologue of CYP6g1, in *Drosophila*. We demonstrated that CYP3A4 expression in *Drosophila* conferred some amount of MeHg tolerance indicated by increased hatching rates of CYP3A4 expressing larvae on MeHg containing food.