

3-3-2. Molecular Characterization of the Insect Immune Protein Hemolin and its High Induction During Embryonic Diapause in the Gypsy Moth, *Lymantria dispar*

Kyeong-Yeoll Lee¹, Frank M. Horodyski², Algimantas P. Valaitis³
and David L. Denlinger⁴

¹Department of Agricultural Biology, Kyungpook National University, Daegu;

²Department of Biomedical Sciences and the College of Osteopathic Medicine, Ohio University, Athens, OH, U.S.A.; ³USDA Forest Service, Northeastern Forest Experiment Station, Delaware, OH, U.S.A.; ⁴Department of Entomology, The Ohio State University, Columbus, OH, U.S.A.

During the embryonic (pharate first instar) diapause of the gypsy moth, *Lymantria dispar*, a 55 kDa protein is highly up-regulated in the gut. We now identify that protein as hemolin, an immune protein in the immunoglobulin superfamily. We isolated a gypsy moth hemolin cDNA and demonstrated a high degree of homology with hemolins from three other moth species. Hemolin mRNA levels increased at the time of diapause initiation and remained high throughout the mandatory period of chilling required to terminate diapause in this species, and then dropped in late diapause. This mRNA pattern reflects the pattern of protein synthesis. These results suggest that hemolin is developmentally up-regulated in the gut during diapause. Presumably, hemolin functions to protect the gypsy moth from microbial infection during its long, overwintering diapause.