

INSULIN AND NUTRITION IN THE SOUTHERN HOUSE MOSQUITO, CULEX PIFIENS
QUINQUEFASCIATUS.

Lisa M. Friedli* and Peter W. Atkinson.

Dept. Entomol., University of California, Riverside, CA 92521, USA

Insulin has been shown to play a critical role in regulating growth and development in both vertebrates and invertebrates through a conserved signaling pathway. The downstream events that occur in the cell due to the binding of insulin to its receptor can affect both organismal growth and nutrition through DNA synthesis, cell division and differentiation, lipogenesis, lipolysis, and protein synthesis. In Drosophila, insulin-like proteins and insulin receptor activity play a role in controlling cell size and number, and in the coordination of cellular metabolism with nutrition. Inhibition of the insulin system causes reduced cell growth and the early mobilization and use of nutrients in the fat body; whereas, stimulation of the signaling pathway promotes nutrient storage in the fat body and partially overrides the nutritional requirements for cell growth.

Our current work focuses on correlating the insulin pathway with nutrition in the southern house mosquito, Culex pipiens quinquefasciatus, by identifying the main components involved in the pathway and assessing the nutritional thresholds for survival, growth and development.