

Successes and Problems in Developing a Pesticide Resistance Monitoring Tool in the mosquito *Aedes aegypti*

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The mosquito *Aedes aegypti* is the principal vector of dengue and yellow flaviviruses on a global basis. As part of a Gates Global Challenge in Public Health, we have been developing a Pesticide Resistance Monitoring Tool with the intent of developing a system for Insecticide Resistance Management in this species. This approach has entailed surveying by bottle bioassay a large number of *Ae. aegypti* collections from throughout Latin America, West Africa and Thailand for resistance to permethrin and temephos, the principal adulticide and larvicide for this species, respectively. Target site insensitivity has been identified by screening for mutations in the voltage gated sodium channel gene and the acetylcholine esterase genes. Metabolic resistance is being tested using conventional biochemical assays as well as a microarray containing probes from 235 members of the cytochrome P450, glutathione transferase and carboxy/cholinesterase families. Several candidate genes have been identified with the majority belonging to two gene families, the CYP9 P450s and the Epsilon GSTs. Successes and problems with these approaches will be discussed.

Dr. Black's Seminar presentation is scheduled for:
Friday, February 15, 2008
4:00 p.m.
Room 221, Ackert Hall

Co-sponsored by the Division of Biology

References:

- [Saavedra-Rodriguez K, Urdaneta-Marquez L, Rajatileka S, Moulton M, Flores AE, Fernandez-Salas I, Bisset J, Rodriguez M, McCall PJ, Donnelly MJ, Ranson H, Hemingway J, Black WC 4th.](#) A mutation in the voltage-gated sodium channel gene associated with pyrethroid resistance in Latin American *Aedes aegypti*. *Insect Mol Biol.* 2007 Dec;16(6):785-98.
- [Strode C, Wondji CS, David JP, Hawkes NJ, Lumjuan N, Nelson DR, Drane DR, Karunaratne SH, Hemingway J, Black WC 4th, Ranson H.](#) Genomic analysis of detoxification genes in the mosquito *Aedes aegypti*. *Insect Biochem Mol Biol.* 2008 Jan;38(1):113-23.