

Transgene-mediated gene silencing in *Anopheles*

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In recent years, RNA interference (RNAi), a form of post-transcriptional gene silencing that results in the sequence-specific degradation of mRNA by homologous double stranded RNA molecules (dsRNAs), has been utilized in numerous organisms as a powerful tool to investigate the function of target genes. In most cases, targeted disruption of gene function is achieved through the injection of *in vitro* synthesised dsRNA molecules. More recently, heritable RNAi from transgenes stably integrated into the genome has been utilized in numerous organisms including *Caenorhabditis elegans*, trypanosomes, *Drosophila* and plants.

Here we report on the development of stable RNAi in *Anopheles stephensi* mosquitoes, the major vector of human malaria in Asia. Transgenic mosquitoes stably expressing an RNAi transgene, designed to produce intron-spliced double-stranded RNA (dsRNA) targeting the green fluorescent protein *EGFP* gene, were crossed to an *EGFP*-expressing target line. *EGFP* expression was dramatically reduced at both the protein and RNA levels. The levels of gene silencing depended upon the RNAi gene copy number and its site of integration. We now propose to apply the development of heritable gene silencing to *A. gambiae*, to identify and study genes involved in the interactions between the mosquito vector and the malaria parasite and to unravel the pathway of sexual differentiation.