

## **Molecular and Chromosomal Forms of *Anopheles gambiae sensu stricto* in Ghana: Relationship to Malaria Transmission Dynamics and Vector Control Strategies**

Asmah, RH<sup>1\*</sup>, Appawu, MA<sup>2</sup>, Boakye, DA<sup>2</sup>, Bosompem, KM<sup>2</sup>, Wiredu EK<sup>1</sup>, Wilson, MD<sup>2</sup> & Brown, CA<sup>1,2</sup>

<sup>1\*</sup>*School of Allied Health Sciences, College of Health Sciences, P. O. Box KB143, Korle-Bu, Accra, Ghana. E-mail: rasmah@noguchi.mimcom.net*

<sup>2</sup>*Noguchi Memorial Institute for Medical Research, College of Health Sciences, P. O Box LG 581, Accra, Ghana.*

### **Abstract**

Malaria is endemic in Ghana as in most countries of sub-Saharan Africa. The Afrotropical mosquito *Anopheles gambiae sensu stricto* (*s.s.*) is established as one of the main vectors transmitting the disease. The vector is undergoing incipient speciation, mainly in West Africa characterized chromosomally by five population forms (Bamako, Mopti, Savanna, Forest and Bissau) and molecularly by two forms (M and S). To better understand the roles the genetic populations of *A. gambiae s.s.* play in the dynamics of malaria transmission and its implication for vector control, data on the molecular forms of the vector generated using rDNA analysis of the X-linked ribosomal DNA region and chromosomal forms using cytogenetic analysis of the polytene chromosome were analyzed. M-forms of *A. gambiae s.s.* are found across the country particularly in urban, rural and irrigated areas whilst the S-forms occur mostly found in non-irrigated and rural areas. M/S hybrid forms also occur in the Kassena-Nankana district of Northern Ghana. In Southern Ghana *A. gambiae s.s.* populations show Mopti, Savanna and Forest cytological profiles, whilst Mopti and Savanna chromosomal forms were reported in Northern Ghana. Relationship of the vector population forms to malaria transmission dynamics and vector control strategies employed in Ghana will be discussed.