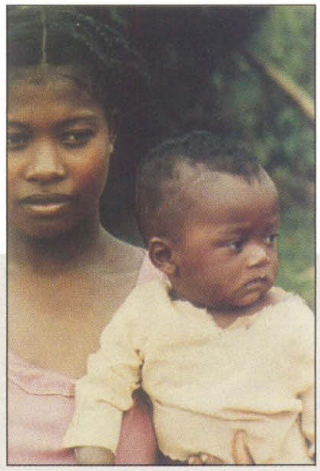
Taking a Genomic Bite of the Malaria Mosquito

For millennia, the nefarious mosquito has mined the riches of the human bloodstream. With the publication in this special issue of the complete genome sequence of *Anopheles gambiae,* it is the research community's turn to mine the molecular riches of the mosquito. The extraordinary potential of this achievement to open new doors in tropical medicine is described in the following pages. The first look at the proteome of the mosquito; data-mining work on genes involved in insec-



CREDIT: MARIO COLUZZI

CONTENTS

See also the Editorial on p. 13, News story by Pennisi, Perspective by Hastings* et al. *on p. 74, and Reports by Sidhu* et al. *on p. 210, Niaré* et al. *on p. 213, Volkman* et al. *on p. 216, and Coluzzi* et al. *in* Science *Express (www.sciencexpress.org).

Science

4 October 2002

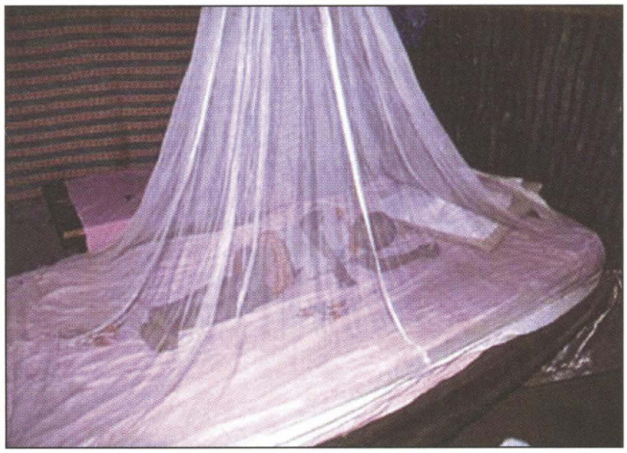
Science

Vol. 298 No. 5591
Pages 1–310 $10

THE MOSQUITO GENOME
Anopheles gambiae

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

ticide resistance; changes in gene expression upon feeding and after infection; comparisons with the classic genetic model system, *Drosophila*; and new insights into speciation are just a few of the research advances. We also salute the researchers who have published the genome sequence of the malaria parasite *Plasmodium falciparum* and present some views of new insights being gained there as well.



A successful battle can only be waged by understanding the enemy. We need to know more about the mosquitoes' proclivities—who they bite, where they lay their eggs, how they spread to different ecological niches. To help in reconnaissance, the News section gets up close and personal with the mosquito itself. Articles chronicle how these cunning insects have adapted to and exploited human habits to become an ideal disease vector. Several stories profile researchers who, armed with Shop-Vacs and other tools, hunt mosquitoes in the field. A series of "mosquito cards" scattered throughout the section introduces the reader to the diversity of these fascinating and deadly creatures.

Perhaps the most radical approach to combating malaria is to genetically engineer mosquitoes to be refractory to parasite infection. Knowledge of the genome sequence of *A. gambiae* brings this plan one step closer to fruition. However, many basic research questions remain, and a host of ethical, legal, safety, and social issues would have to be addressed before any release of a genetically modified insect. Summaries of two recent workshops will help move discussions forward.

In the fight against malaria, basic research can only do so much. Successful international efforts require a long-term infusion of funds and a cohesive infrastructure that can set strategic goals. However, with the tools described here, we have reached a new stage of the war.

–BARBARA R. JASNY, ORLA M. SMITH
–NEWS: LESLIE ROBERTS, MARTIN ENSERINK

CREDITS: WHO/TDR