VOLUME 53 AUGUST 1995 NUMBER 2

PROGRAM AND ABSTRACTS OF THE 44TH ANNUAL MEETING OF THE AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE

The Hyatt Regency
San Antonio, Texas
November 17–21, 1995

172 THE *ANOPHELES GAMBIAE* COMPLEX IN SENEGAL: A VERY HETEROGENEOUS TRANSMISSION OF MALARIA. Fontenille D*, Faye O, LeMasson JJ, Lochouarn L, Simard F, Diatta M, Konate L, and Trape JF. ORSTOM, Dakar, Senegal.

Species from the *Anopheles gambiae* complex are the main malaria vectors in Senegal. *An. gambiae, An. arabiensis* and *An. melas* are present and are identified by PCR. Malaria transmission is very heterogenous depending on the regions and the local environment. In Senegal the climate ranges from Sahelian in the north (less than 300 mm of rain per year in 3 months) to Soudanian in the South (1200 mm of rain per year in 7 months). Since 1992 longitudinal surveys have been conducted in 6 areas representative of these climates. Three kinds of transmission are observed: (1) high and continuous: Dielmo (annual EIR: 100 to 200 infected bites per man per year) and Wassadou (annual EIR:200). (2) High and seasonal: Barkedji (annual EIR: 120) and Ndiop (annual EIR: 20 to 60). (3) Low and seasonal: banks of the Senegal river and Dakar (annual EIR: less than 1). *An. gamblae* and *An. arabiensis* are sympatric in 5 of the 6 stations, sometimes with *An. fenestus*. In Dakar *An. arabiensis* is the only species. *An. gamblae* is a better vector than *An. arabiensis* . Malaria transmission by *An. gamblae* (represented by its Savana cytotype) occurs during the rainy season, whereas transmission by *An. arabiensis* is longer, sometimes all year long as in Dielmo. It was observed that the main vectors and the level of transmission could be very different each year. In the Sahelian region, where breeding sites are a long way from each other, malaria transmission is isolated in time and space. For these regions Senegal is an interesting place to study gene flow between vector populations and genetic factors of malaria transmission.

173 IDENTIFICATION OF SURFACE MOLECULES OF MOSQUITO SALIVARY GLANDS WHICH MALARIA SPOROZOITES USE AS RECEPTORS FOR INVASION. Barreau C*, Touray M, Miller LH, and Vernick KD. Laboratory of Parasitic Diseases, N.I.A.I.D./N.I.H., Bethesda, MD.

There is evidence which suggests that malaria sporozoites recognize mosquito salivary glands by specific ligand-receptor interactions. We are interested in identifying the putative salivary gland receptor(s) for sporozoite invasion. We use an *in vivo* bioassay for sporozoite invasion of salivary glands. In this assay, purified sporozoites from mature oocysts of *Plasmodium gallinaceum* were injected into *Aedes aegypti* mosquitoes and salivary glands were dissected at different time points after injection. This assay was used to determine the effect of experimental treatments with antibodies and lectins at 24 hours post-injection (where the maximum sporozoite invasion into glands was reached). We raised a rabbit polyclonal antiserum against female *Ae. aegypti* salivary glands which recognized tissue-specific determinants in the basal lamina of salivary glands. Purified IgG antibody fraction of the immune serum blocked sporozoite invasion *in vivo*. We tested a panel of 19 lectins and found seven which bound to salivary glands. Of these seven, S-WGA and WGA completly blocked sporozoite invasion, PSA and SBA partially blocked and Con A, DBA and PHA-E did not block. These observations suggest that there are glycoconjugates on the surface of salivary glands which sporozoites must specifically interact with in order to invade. Because the putative sporozoite receptors contain immunogenic determinants, it is feasible to identify them by an immunological strategy. We generated monoclonal antibodies directed against the surface molecules of salivary glands by immunizing mice with a salivary gland membrane preparation. Results from these studies will be reported.

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Supplement to
THE AMERICAN JOURNAL OF
TROPICAL MEDICINE AND HYGIENE

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