

Press Release

The National Hellenic Research Foundation and the ENAROMaTIC research consortium, a new European effort to reduce the spread of malaria, the plague of the Third World, which is responsible for the death of one child every 30 seconds

Over a million children under the age of five die due to malaria infection in countries of the developing world every year. Responsible for this plague of the Third World is a parasite, which is transmitted by female mosquitoes sucking blood from their human hosts.

Female mosquitoes locate their human hosts by sensing certain volatile compounds emitted by humans. Specialized biological molecules in their antennae, the main organs for odor sensing, regulate how mosquitoes perceive the various odors in their environment through a complex procedure. If we could succeed in disrupting this procedure, then female mosquitoes would lose their ability to orient themselves towards their human hosts, obtain a blood meal from them and transmit the malaria parasite in the process. Consequently, the rate of transmission of the malaria parasite would be curtailed.



In a new effort to constrain malaria, the European Union is supporting the endeavors of the research consortium ENAROMaTIC (European Network for Advanced Research on Olfaction for Malaria Transmitting Insect Control) to the tune of 2.500.000 €. Ten institutions from 7 European countries, one from USA and one from a sub-Saharan African country participate in this consortium, which aims to reduce malaria transmission rates by interfering with the capacity of the female mosquito to detect the presence of odors of human origin in its environment. The National Hellenic Research Foundation is participating actively in the ENAROMaTIC research effort through the membership of the Structural Biology and Chemistry group (SBCG) led by Dr. Spyros E. Zographos in the consortium.

In the framework of the ENAROMaTIC project, the way that *Anopheles gambiae* (the mosquito disease vector) detects various volatile compounds in its environment will be investigated. Newly identified bioactive compounds of natural and synthetic origin that are capable of acting as effective disruptors of normal olfactory and host seeking mosquito behavior under laboratory conditions and are safe for humans and the environment newly will be tested for their effectiveness under field conditions in model sites in Africa where *A. gambiae* and malaria are endemic.

The identification of multiple disruptors of host seeking behavior of female mosquitoes will provide multiple new and effective tools to be employed in the effort to reduce the incidence of contact between the human host and the insect vector carrying the malaria parasite. Formulated versions of such biologically active compounds could be used for the protection from mosquito bites of individuals (via bednet treatment and/or dermal application) as well as larger groups of people (via perimeter positioning of odor-based disorienting, repellent or attractant baits in villages where malaria is endemic). Last but not least, the approach, methodology and outcome of the ENAROMaTIC effort should serve as a paradigm for analogous efforts aimed at a reduction in disease transmission by other disease-carrying insect vectors.

Title: European Network for Advanced Research on Olfaction for Malaria Transmitting Insect Control

Acronym: ENAROMaTIC

Instrument: HEALTH-2007-2.3.2-9 Blocking the transmission of malaria: the mosquito vector target

Contract/Grant agreement number: 222927

EC contribution: 2.500.000 €

Duration: 48 months

Starting date: 01/12/2008

Participants:

National Centre for Scientific Research “Demokritos”, Greece (Coordinator, scientific and administrative head of the consortium)

National Hellenic Research Foundation, Greece

Centre National de la Recherche Scientifique, France

University of Hohenheim, Germany

NeuroProof GmbH, Germany

Universita di Pisa, Italy

Universita degli Study di Firenze, Italy

Rothamsted Research Center, United Kingdom

Biological Research Centre, National Academy of Sciences, Hungary

University of Neuchâtel, Switzerland

Nigerian Institute of Medical Research, Nigeria

Inscent, Inc., USA