

Major European Research Project, coordinated by the Institute of Molecular Biology and Biotechnology (IMBB) at the Foundation for Research and Technology - Hellas (FORTH), receives prestigious Horizon 2020 grant for the development of molecular diagnostics for mosquito -malaria vectors

The group of Prof. **John Vontas** at **IMBB-FORTH** won an important large grant, within the framework of the EU Horizon 2020 Programme. Notably, the research proposal ranked first within its thematic area, after rigorous and highly competitive evaluation. The project titled «Automated diagnostic platform, data management system and innovative communication tool, for improving the impact of malaria vector control interventions» (DMC-MALVEC), has a duration of 4 years and has been awarded a substantial sum of 3.1 M Euro.

“This is a highly innovative and critical Research Programme for public health worldwide, that also promotes the excellence and international recognition of IMBB-FORTH in the strategic field of vector borne diseases”, commented **Nektarios Tavernarakis**, the Director of IMBB and Professor at Medical School of the University of Crete.

The project fits within nanobiotechnology and molecular diagnostic are of research. It aims to develop a fully integrated and automated multiplex **vector-diagnostic platform (LabDisk)** (Figure 1) for monitoring the **species ID**, the **infection status** of mosquitoes and the **insecticide resistance profile** of malaria vector populations.

The diagnostic platform will be capable of analyzing 10-15 molecular markers at the DNA and RNA level, in a sample-to-answer mode, since all steps (nucleic acid extractions, synthesis of cDNA, amplifications) will be fully automated. Results will be available within 1h, without specialized personnel, and at very low cost (<\$1/marker). The LabDisk will be interfaced and connected **with Decision Support Systems**.

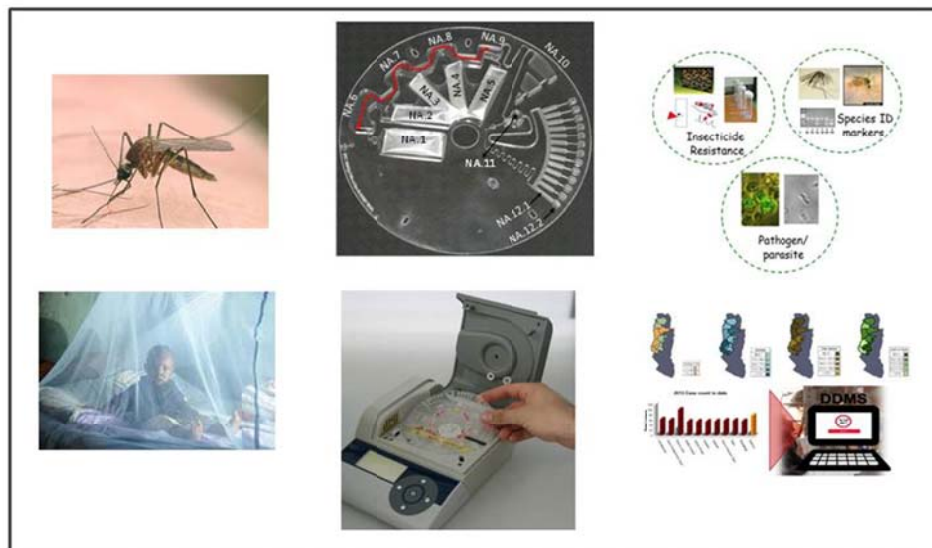


Figure 1: The major **malaria vector** mosquito *Anopheles gambiae* (left) is the “**World’s biggest killer**” as it causes more than 600,000 deaths every year in sub-Saharan Africa, mostly in children under five. The diagnostic platform (**LabDisk**) (middle) will simplify and automate a complex molecular process in a disposable Disk, to provide a **sample-to-answer for monitoring the species ID, the infection status of mosquitoes and the insecticide resistance profile** of malaria vector

populations. The LabDisk will be interfaced and connected with appropriate Databases and Decision Support Systems (*right*) to improve vector control, and the management of insecticide resistance.

IMBB-FORTH Researcher and Principal Investigator, Prof. **John Vontas**, will coordinate the research project, which is a Pan-European endeavor that will be performed in collaboration with several highly acclaimed European Institutes, such as the HSG-Germany (notably, head and major contributor of the relevant HSG activities is **Konstantinos Mitsakakis**, a University of Crete PhD graduate), the Liverpool School of Tropical Medicine and the Swiss Tropical and Public Health Institute, in addition to 4 African countries.

The diagnostic platform that will be developed aims to contribute towards improving tactical decision making for Malaria Vector Control in the field, and the management of insecticide resistance that mosquito develop, which is one of the biggest problems in malaria control, a life-threatening disease causing more than 600,000 deaths every year in sub-Saharan Africa, mostly in children under five and pregnant women.

This versatile and powerful molecular platform has the potential to be developed further, to become readily adapted and applied for additional mosquito species and vector-borne diseases.