



Co-Funded by the European Union
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DMC-MALVEC

www.dmc-malvec.eu

DiagnosisManagementCommunication-MalariaVectorControl

Editorial

DMC-MAVEC is a Horizon 2020 EU-funded project that aims to address challenges in organizing, interpreting and communicating vector control data through the development and integration of a fully automated diagnostic platform (LabDisk), a data management system (DDMS) and an innovative communication tool (GAME).

Among the very recent developments of the DMC-MALVEC project, a 10-days hands on laboratory workshop was organized in Yaoundé, Cameroon, where our African partners learned how to test mosquito field samples for species ID, Plasmodium infection & insecticide resistance markers using ready-to-go lyopellets and the LabDisk. They participated in the validation of the newly developed diagnostic technologies versus gold standard methods, using the mosquito samples that they had previously collected from Côte d'Ivoire, Ethiopia and Cameroon (*pages 3-5*). Educational Videos and serious Game platforms were also launched during this period, for Training in Insecticide Resistance Management (*pages 6-8*).

During the past months DMC-MALVEC increased significantly its visibility through scientific publications, targeted dissemination and communication activities to the general public. It will continue to do so, even after the official end of the project (June 2020). Get to know the project's activities and its participants (*page 13*).

We are happy to announce that the DMC-MALVEC project was selected by the European Commission as a success story under the EU-funded Research and Innovation thematic. Success stories" are finalized projects that have distinguished themselves by their impact, contribution to policy-making, innovative results and/or creative approach and can be a source of inspiration for others (*page 14*).

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LabDisk Workshop (Cameroon, January 2020)



Participants of the DMC-MALVEC – LabDisk hands-on workshop Yaoundé, Cameroon (January 2020)

In a 10-day lab workshop our African partners learned how to test mosquito field samples for species ID, Plasmodium infection & insecticideResistance markers using ready-to-go lyopellets and the LabDisk.

The specific objectives of the practical laboratory workshop were:

Objective 1. Training on the use of ready-to-go lyopellets for molecular diagnosis of mosquito samples.

Objective 2. Training on the use of the automated diagnostic platform “Anopheles gambiae s.l. LabDisk” on the LabDisk player

Objective 3. Training on the analysis and reporting of RT-qPCR results generated with the DMC-MALVEC RT-qPCR assays.

LabDisk and ready-to-go lyopellets validation

Workshop attendees (Yaoundé, January 2020) participated in the validation of the newly developed diagnostic technologies versus gold standard methods, using the mosquito samples that they had preciously collected from Côte d'Ivoire, Ethiopia and Cameroon.



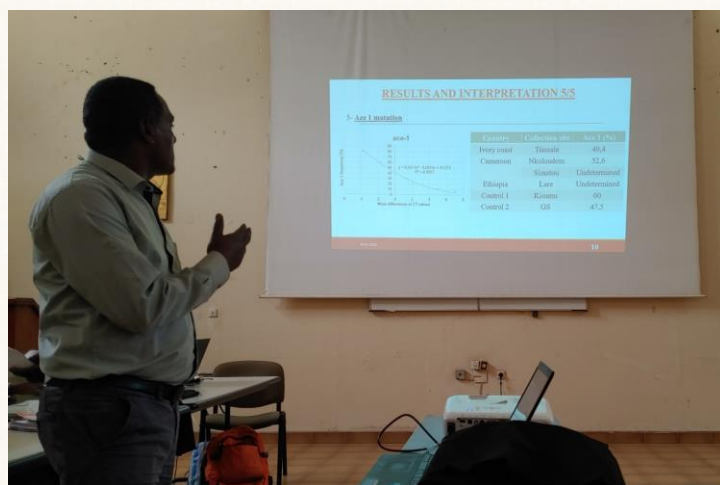
Upper left part: Kostas Mavridis (FORTH) explaining the experimental workflow.

Upper right part: Nadja Wipf (SWISS TPH) training France-Paraudie Kouadio (CSRS) on the use of the DMC-MALVEC's ready-to-go lyopellets.

Lower part: Michael Piameu (OCEAC) loading a sample on the LabDisk during the workshop

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Training on Result Interpretation



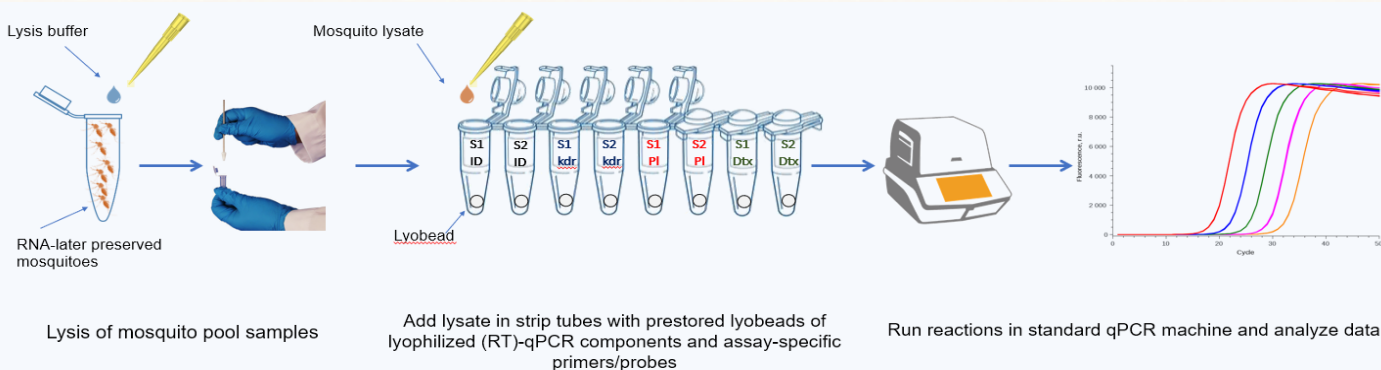
On the last day of the meeting and after providing detailed instructions, the participants were divided in two groups and each group presented the analysis and interpretation of the data derived from the application of the diagnostic assays (upper part).

Deleegn Woyessa (JU) (lower left part) and Stanislas Elysee Mandeng (OCEAC) (lower right part) presenting the results that they obtained during the workshop.

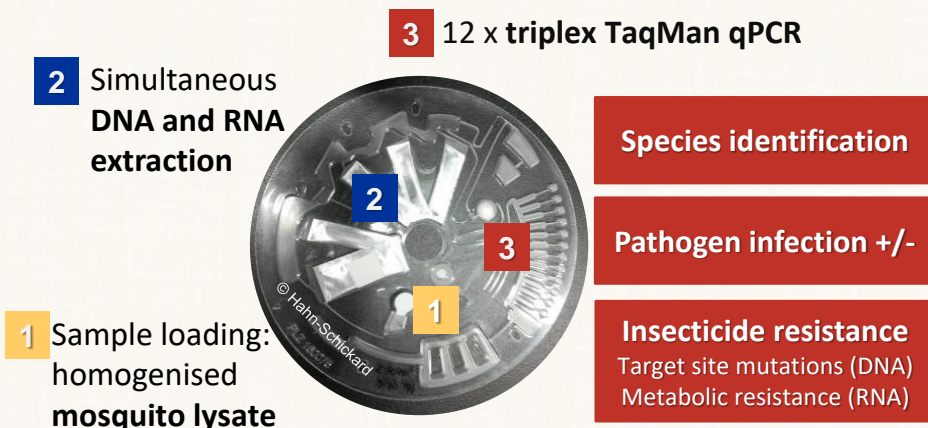
Molecular Diagnostics were never that easy..



We introduce the **DMC MALVEC ready-to-go lyopellets** (upper part)
They can be used directly on mosquito lysate without the need for RNA extraction (lower part).



Opt for full automation and leave the rest to the **DMC-MALVEC LabDisk**



Anopheles gambiae s.s. © Thomas Brasey



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Educational Videos Available

<https://dmc-malvec.eu/downloads/game-videos>

Watch 8 stunning videos to learn the fundamentals of insecticide resistance.

Available in **English** and in **French**.

(1) Resistance101 - Insecticide based vector control



(9) Resistance101 - Insecticide based vector control (French)



Screenshots from the Educations videos available for free to understand the fundamental concepts of insecticide resistance in mosquitoes

A Game Changer for Training in Insecticide Resistance Management

Resistance101 Game
available in:



Google Play



App Store

Resistance 101 is an engaging, arcade-style game that lets you learn about insecticide resistance and its role in the fight against malaria.



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Communicating the DMC- MALVEC GAME as an educational platform

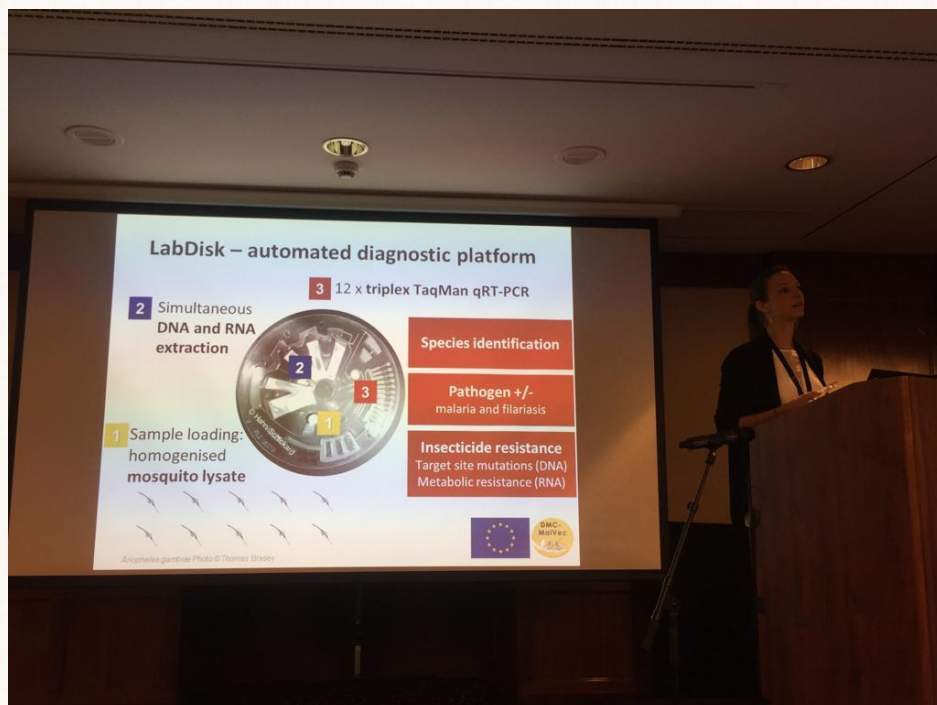


DMC-MALVEC's Kirsten Duda (LSTM) discussing the lessons learnt from an evaluation of IRM training using digital games on insecticide resistance at ISNTD Press festival 2020 (upper part) and teaching insecticide resistance and good practice with Restistance 101 at the RBM-VCWG 2020 meeting (lower part)



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Communication of DMC-MALVEC Diagnostics



DMC-MALVEC's Nadja Wipf (Swiss-TPH) presents the promising new diagnostic tools for malaria vectors at 2019 RBM-VCWG (upper part).

The coordinator of DMC-MALVEC John Vontas presents the LabDisk at ECE 2018 (lower part).



Communication of the DMC-MALVEC project to local communities

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Communication of the project's activities and impact to local communities. Introductory remarks by Prof. Josiane Etang (upper part) and presentation to the community of Ekyé (middle part). Media interview on the DMC-MALVEC project activities in Nkolondom with Prof. Etang and traditional authorities (lower part)



Peer-Reviewed Scientific Publications

- (1) Vontas J et al. Cytochrome P450-based metabolic insecticide resistance in Anopheles and Aedes mosquito vectors: muddying the waters. *Pestic Biochem Phys.* **2020**.
- (2) C. Dormann, et al. Evaluation of a game-based training course to build capacity for insecticide resistance management in vector control programmes. *Plos One.* **2020**. Under review
- (3) Vontas J et al. Vector population monitoring tools for insecticide resistance management: Myth or fact? *Pest Biochem Physiol.* **2019**, 161:54-60.
- (4) Ekoko WE et al. Patterns of anopheline feeding/resting behaviour and Plasmodium infections in North Cameroon, 2011–2014: implications for malaria control. *Parasit Vectors.* **2019** ;12(1):297.
- (5) Simma EA et al. Genome-wide gene expression profiling reveals that cuticle alterations and P450 detoxification are associated with pyrethroid resistance in Anopheles arabiensis populations from Ethiopia. *Pest Manag. Sci.* **2019** 75(5):1808-1818.
- (6) Mavridis K et al. Rapid multiplex gene expression assays for monitoring metabolic resistance in the major malaria vector Anopheles gambiae. *Parasit Vectors.* **2019**;12(1):9.
- (7) Mavridis K et al. Detection and Monitoring of Insecticide Resistance Mutations in Anopheles gambiae: Individual vs Pooled Specimens. *Genes.* **2018**;9(10).
- (8) Kefi M et al New rapid one-step PCR diagnostic assay for Plasmodium falciparum infective mosquitoes. *Sci Rep.* **2018**;8(1):1462.
- (9) Mitsakakis K et al. Converging Human and Malaria Vector Diagnostics with Data Management towards an Integrated Holistic One Health Approach. *Int J Environ Res Public Health.* **2018**;15(2).
- (10) Hin S et al. Temperature change rate actuated bubble mixing for homogeneous rehydration of dry pre-stored reagents in centrifugal microfluidics. *Lab Chip.* **2018**;18(2):362-70.
- (11) Mitsakakis K et al. Diagnostic tools for tackling febrile illness and enhancing patient management. *Microelectron Eng.* **2018**; 201:26-59.
- (12) Vontas J et al. Automated innovative diagnostic, data management and communication tool, for improving malaria vector control in endemic settings. *Stud Health Technol Inform.* **2016**; 224:54-60.



Patents

The project has already produced **2 patents**:

- (1) Manipulation magnetischer Partikel in einem zentrifugalen Gravitationsfeld. Patent # PCT/EP2019/080517, Dec **2019**
- (2) Malaria Biomarkers, Method of identifying mosquitoes with infective Plasmodium sporozoites in their salivary glands. Patent #: P534198GBJSW. Dec **2017**



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Dissemination



Selected conferences, meetings and public events

Type of activity	Title	Date	Place	Audience type	Audience Size	Countries
Conference (Oral)	14 th Roll Back Malaria - Vector Control Working group meeting	2 Feb 2019	Geneva, Switzerland	Malaria specialists, Stakeholders	200	International
Podcast	Looking at the Big Picture: Using Point-of-Care Diagnostics to Advance a One Health Approach	May 2019	molecularx europe.com/podcasts	Scientific community	>1000	International
Conference (interactive booth)	ISNTD Festival	01 June 2019	Liverpool, UK	General audience	5000	International
Conference (oral)	6th Pan African Mosquito Control Association (PAMCA) Annual Conference & Exhibition	23 - 25 Sept 2019	Yaoundé, Cameroon	Scientific Community	1000	International
Conference (oral)	Entomological Society of America (ESA) Annual Meeting Entomology 2019	17-20 Nov 2019	St. Louis, Missouri, USA	Scientific Community	2000	International
Conference (poster)	4th CAMES Scientific Days	2-5 Dec 2019	Ouidah, Benin	Scientific Community	200	Africa
Conference (oral)	15 th Annual Meeting of Vector Control Working Group (VCWG)	01 Feb 2020	Geneva, Switzerland	Malaria specialists, Stakeholders	500	International
Popular Press Article	EC Success Stories: Handy mozzie-checking platform to help keep malaria at bay	4 Feb 2020	European Commission Website	General Public	N/A	International
Popular Press Article	Newspaper Kathimerini	03 Mar 2020	Newspaper with nationwide circulation	General Public	15000	Greece



Visibility of DMC-MALVEC

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12 Peer Reviewed
Papers



2 Patents



>60 publications in major scientific
conferences



Targeted dissemination activities to
policy makers, local stakeholder advisory
groups , academic community



Communication to the general public
(open days, social media, web page,
popular press articles)



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Meet us in 2020-2021



2020 ANNUAL MEETING

NOVEMBER 15-19
(Sunday through Thursday)

METRO TORONTO CONVENTION CENTRE
TORONTO ONTARIO CANADA

astmh.org ajtmh.org [#TropMed20](https://twitter.com/TropMed20) [#IamTropMed](https://twitter.com/IamTropMed) [f](https://www.facebook.com/TropMed20) [i](https://www.instagram.com/TropMed20) [in](https://www.linkedin.com/company/astmh)

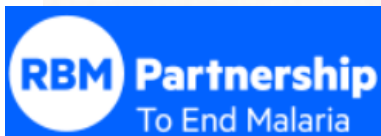


XXVI International Congress of Entomology

Helsinki, Finland, July 18-23, 2021



World Health
Organization



Vector Control Working Group (VCWG)



DMC-MALVEC: A success story

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Our project was selected by the European Commission as a success story. Success stories” are finalized projects that have distinguished themselves by their impact, contribution to policy-making, innovative results and/or creative approach and can be a source of inspiration for others



English EN

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Handy mozzie-checking platform to help keep malaria at bay

To spray or not to spray - and potentially, what with: EU-funded researchers are developing a sophisticated system to facilitate analyses of mosquitoes and their mechanisms of resistance to insecticides, support data sharing and refine decision-making processes. Scientists in Cameroon are helping to advance this bid to boost malaria vector control.



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The DMC-MalVec project is working on an integrated solution that will combine three main components: a fully automated diagnostic platform (LabDisk) for the analysis of mosquitoes, a dedicated data management system (DDMS) and a “serious game” designed to raise end-user awareness of guidelines and good practices in vector control in order to influence malaria control on Africa.



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DMC-MALVEC PARTNERS



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AGRICULTURAL UNIVERSITY OF ATHENS



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