



MARCAD

*Malaria Research Capacity Development
in West and Central Africa*

NEWS

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MARCAD GROUP
picture Annual Meeting 2018

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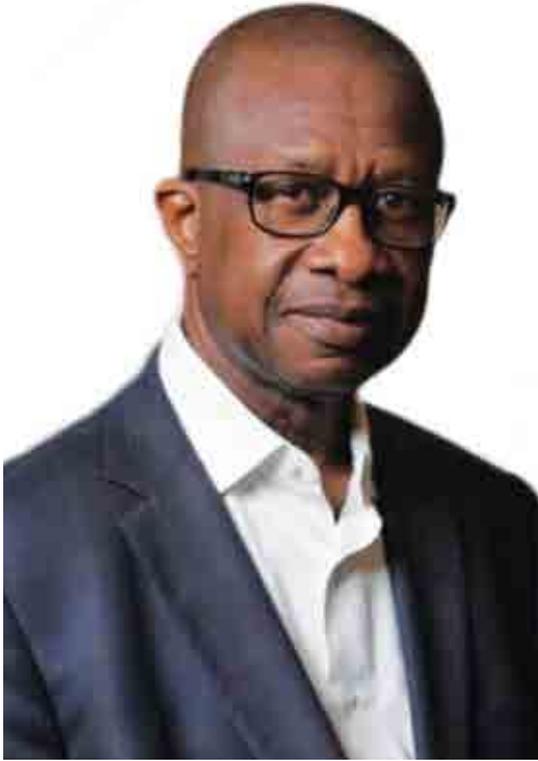


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EDITORIAL By **Prof Oumar Gaye** MARCAD Director

After the selection in early 2017 our fellows are working in established institutions with a good research environment and benefit from a high quality supervision provided by high level scientists from the African partner institutions and their European collaborators, the London School of Hygiene and Tropical Medicine / U.K., the Liverpool School of Tropical Medicine / U.K. and the Center of Parasitology (COP) / Denmark.

With the support of a Research committee and an Advisory board MARCAD has made good progress with key achievements:

Training courses: The Research Methodology Course in 2017, the Malaria Elimination Course in 2018 and the planned Leadership Course and Biostatistics in 2019.

Research activities : Fellows have made good progress proven by several publications and participations at international scientific meetings, winning new grants and advocating for a Public and Community Engagement.

The MARCAD secretariat received a warmly welcome from the partner institutions during the different visits ;the commitment of the academic authorities is a real motivation to strengthen the research environment which is essential for the management of research. At MARCAD we are committed to roll back malaria in the continent. Support we received from stakeholders increase our motivation that malaria could be eliminated with the engagement of scientists , communities and funders.

We are looking for more results from our fellows in the coming months and by the end of this first round of the program no doubt that substantial progress will be made in the way of malaria elimination.

MARCAD with UCAD is very proud to host the Deltas Africa meeting in July in Dakar and together with our all partners we are dedicated to accelerate the excellence in science in our continent.

Three years now the Malaria Research Capacity Development (MARCAD) in West and Central Africa, one of 11 Deltas Africa programs was launched with the objective to strengthen the quality of research through the training of young African researchers at PhD and Post-docs level who will be able to address the new malaria challenges with malaria elimination. A malaria research program was set with the contribution of our partners from the Medical Research Council Unit The Gambia at London School of Hygiene and Tropical Medicine, the University of Health and Applied Sciences de Ho in Ghana, the Malaria Research and Training Center of the University of Sciences, Technics and Technologies / Mali and the University of Yaoundé 1 in Cameroon. MARCAD seeks to train African scientists toward building a critical mass for the control and the elimination of malaria, equip them to compete effectively for international funding, offer them international exposure, and facilitate their networking and collaboration with other institutions. The program aims also :

- To encourage women to become more involved in research.
- To contribute to gender equality in the scientific research community in Africa.
- To facilitate national and international mobility of our young researchers.
- To engage policymakers and the community on the issue of research for the fight against malaria.
- To encourage collaboration in malaria research between African Universities

NEWS Malaria Elimination Course 2018



To provide to Fellows, skills to be able to contribute to malaria elimination was the aim of the three days course organized by the Malaria Research Capacity Development in West and Central Africa (MARCAD) Training Committee led by Professor Wilfred Fon Mbacham, held from October 7th-9th, 2018 in Dakar, Senegal.

The course entitled « Key Considerations for Malaria Elimination » had Facilitators Advisors/ Supervisors from different MARCAD committees and some other international well-known experts in malaria elimination.

Twenty-two (22) participants from Benin, Cameroon, Ghana, Kenya, Mali, Nigeria, Senegal, and Togo attended the MARCAD workshop. They include the MARCAD fellows and other trainees working in malaria research area.

During the three-day course, facilitators allowed to the attendees to have a holistic vision of the situational analysis and historical control efforts of malaria and a clearer understanding of the epidemiology of malaria and the changing nature of the epidemic.

The course load was divided into three sections addressing issues on vectors, the parasite, and programmatic issues.

The teachings were focused on a participatory method. The course material which was provided

to the participants before the lectures were essentially composed by published literature on Malaria Elimination, position papers on elimination strategies from the MALERA, HARVARD group and WHO, policy briefs from countries moving towards elimination (...). This approach allowed fellows to be able to discuss some of the contents during the group work sessions. Discussions on main strategies that would allow the students to appreciate the science of elimination were also led. Fellows were evaluated at the beginning and end of the course to ascertain that certain notions have been understood and certain competencies acquired.

At the end of the three-day course, participants gained new skills to identify the different factors to address in malaria elimination. Fellows were found able to discuss strategies to mitigate the challenges of elimination. Each Candidate is able to review published articles to pick out the concerns of various authors and proponents. They are able from their respective disciplines to draw a road map for their own efforts towards elimination.

Only those participants who make the pass mark received their certificates at the end of the course due to the competency-based approach used to raise the candidates understanding of the complexities involved in Malaria Elimination.

The three sections addressing issues of the Malaria Elimination Course

1/ Issues on Vectors included Vector, Diversity, Infectivity & Vector Competency; Mosquito behavior and Efficacy of Insecticides and Larvicides; Vector Dependent Control Measures –such as IRS & LLIN. At the end of this section, participants group working and discussion on Elimination, Transmission Blocking, and Control Methods was done.

2/ Parasite dependent factors and included Parasite Variants & Infectivity; Evolution of drug resistance. Epidemiology of resistant parasite populations; Drug developments. This section ended with a debate on the impact of resistance on elimination and of drug resistance and interventions progress to stifle drug resistance.

3/ Program and Systems Issues: Matters discussed included Malaria Case Management in Public and Private sectors. The usefulness of RDTs and the importance of highly sensitive & specific diagnostic tools; Population wide treatments - IPTi, IPTp, IPTsc, SMC. The feasibility of vaccine deployment and combination approaches as well as the socioeconomic factors impacting on malaria elimination. Discussions were centered on Surveillance Programs within Health Systems and the African Leadership Initiatives & Global Endeavors.

MARCAD Annual General Meeting, Dakar 2018, October 10th - 12th



The importance of supporting programs like DELTAS / MARCAD in the training of future world-renowned researchers has been emphasized during the MARCAD Annual general meeting held on October 10th -12th, 2018 in Dakar, Senegal.

The opening ceremony was honored to welcome Dr. Youssoupha Ndiaye, representative of the Minister of Health of Senegal in the presence of Professor Oumar Gaye (Director of MARCAD), Professor Brian Greenwood (Chair of the Research Committee), Dr. Halima Mwenessi (Chair EAB), Dr Alphonsus Neba (DELTAS Africa Program Manager) and Professor Abdoulaye Samb (Dean of the Faculty of Medicine).

The meeting framework was the internal mid-term evaluation of the MARCAD program progress and success recorded as well as all the Fellows individual projects progress. Partner institutions representatives, members of Research Committee (RC), Expert Advisory Board (EAB), Finance Staffs and other guests were also attending.

The first meeting day was marked by a global update on the program Secretariat. The occasion was also given to partner institutions to present an update of their institutional programmes implementation, challenges encountered and future major milestones, followed by a series of questions and answers.

Seven MARCAD Fellows working on “Vector Biology and Vector Control” domain have also presented their research activities progress, challenges faced and ways they mitigated issues. This first day ended with the keynote speech of Professor Souleymane Mboup, IRESSEF founding President,.

The second day of the annual meeting started with presentations of the eight remaining Fellows. After that, Dr Alphonsus Neba gave a conference on “Research Management”, “Public and Community Engagement” and “Diplomacy and Negotiations” before “Cross-site collaborations within MARCAD & other DELTAS Africa consortiums; Lessons learned from the DELTAS AGM”.

Parallel sessions of “Mentorship experience”, “Finance management”, “Scientific & Grant writing” and “Exchange meeting AESA/MARCAD Secretariat” was organized in the afternoon for Advisors, Fellows, and Financial’ teams capacity building.

Dinner with live music and projection of cultural presentations from Cameroon, Gambia, Ghana, Mali and Senegal gathered all participants.

The first 90 minutes of the last day of the event was punctuated by other parallels sessions (Steering Committee, Research Committee, Training Committee; Expert Advisory board) for ad-hoc discussions.

This 2nd MARCAD Annual general meeting was closed by Feedback done publicly by each Committee followed by a certificate ceremony of Malaria Elimination Course that was organized some days before.

NEWS “I want to be among people who help....”



The world has celebrated the international Day of women and girls in science the 11th of February. In this occasion, the women researchers of the MARCAD program have shared their passion for science.

Oumou Kalsom GUEYE, PhD fellow, is one of them. The Senegalese young researcher started her career as a student at the Cheikh Anta Diop University of Dakar (UCAD) where she obtained a Bachelor of Science Degree in Biology and a master's degree in Medical Entomology with specific focus on malaria.

Being a researcher was a strategy for Oumou to continue doing what she has always like.

“I have always been passionate by medicine but unfortunately, I am afraid by hospitals; so, to stay in the health field I choose to do research that can help in the fight against diseases” she explained.

Oumou Kalsom chose to investigate on malaria. She considers that Malaria is among the most deadly diseases in their country (Senegal) and participating in malaria elimination is for her a way to contribute in the improvement of the health system in her country “ I want to be among people who will help the NMCP, (national program of malaria control ’she said.

The MARCAD PhD fellow has focused in her thesis on the control of malaria vectors which are showing an

increasing resistance to most available insecticides; and in the understanding of the speciation between 2 major malaria vectors *Anopheles coluzzii* and *Anopheles gambiae* in Senegal.

“ we know that malaria vectors are resistant to almost all classes of insecticides used for their control, so we have to resort to other alternatives of control like the genetics’ ‘told Oumou.

She is convinced that her research thematic will allow a better understanding of the vector’s biology and their genetic structuration; therefore, this will help for a change of classic chemical control by the genetic.

After her PhD Oumou Kalsom plans to strengthen her knowledge through a Post-Doc position, to become an independent researcher and then to contribute in malaria elimination fight worldwide.

Sensitization workshop at the University of Health and Allied Sciences, Ghana



The Malaria Research Capacity Development in West and Central Africa (MARCAD) team of the University of Health and Allied Sciences, Ghana held its maiden sensitization meeting on 13th February 2018 at the School of Medicine conference room of the university.

The meeting called at the instance of the MARCAD was chaired by the Volta Regional Director of Health Services, Dr. Timothy Sewornu Letsa, in the presence of health managers and health workers from the four study districts.

Professor Tagbor, MARCAD principal investigator at UHAS, took the opportunity to make a presentation on the project objectives and activities to the participants. The two postdoctoral candidates on the project Dr. Gifty Ampofo and Dr. Matilda Aberese-Ako, took part in the sensitization workshop.

The meeting was successful, and the parties agreed to cooperate with UHAS to ensure that the study went on successfully.



NEWS Field attachment at the Ghana National Malaria Control Programme



As part of the progress of her MARCAD PhD fellow project, Virtue F. DE-GAULLE, spent two weeks at the Ghanaian National Malaria Control Programme (NMCP) from 14th to 25th January 2019.

“ My PhD research aims at assessing how effective the Ghana health system is in controlling malaria among pregnant women. This requires that I get acquainted with the policy documents detailing the interventions and measures that have been rolled out to the disease among the target group (pregnant women) in the country” explained Virtue.

During her stay at the NMCP, the MARCAD PhD fellow interacted with the various unit heads to understand their roles and activities in the control of malaria among pregnant women in Ghana.

“ I had the opportunity of joining personnel from the NMCP to a tertiary hospital in Accra Ghana to update the maternal health unit of the hospital with the current practices on the administration of Sulfadoxine Pyrimethamine with varying dosage of folic acid tablets and address issues relating to gaps in data entered into the District Health Management Information System (DHIMS)” she argued.

Being the main programme overseeing

malaria control in Ghana, for Virtue, it was imperative to get the opportunity to learn within the Ghana National Malaria Control Programme (NMCP) how malaria control activities are coordinated in the country with particular emphasis on malaria in pregnancy.

The two weeks spent with the NMCP team allowed her to have a holistic view of the situation of malaria control in the country.

“ I was able to gain insight into where the NMCP is situated in the Ghana Health System, their organizational structure, activities in place to control malaria in Ghana with particular emphasis on measures specific to pregnant women” she said

Collaborating with the Ghanaian National Malaria Control Programme (NMCP) fostered the MARCAD PhD fellow ultimate goal of research translating into practice, where the findings from her research can inform the development of strategies to improve implementation of MIP interventions or even influence policy.

Master students supervised within the MARCAD program defended their research projects with honors.

MARCAD was honored with the public defense of two Master theses in Medical Entomology, Mouhamed Abderehmane NOURDINE and Pape Cheikh SARR, two students from UCAD's Faculty of Science and Technology, research works were supported and supervised as part of the programme. The defenses held on January 25th at the Cheikh Anta Diop University of Dakar (UCAD).

Mouhamed Abderehmane NOURDINE and Pape Cheikh SARR respectively carried out their research work on the topics of: «Morphological and biomolecular identification of the members of the *Anopheles gambiae* complex in the coastal zone of Senegal and study of their sensitivity / resistance to insecticides» and of the «Prevalence of West Kdr, Kdr East and Ace -1 mutations in aggressive and endophilic populations of *Anopheles arabiensis* and *An. melas* in the residual transmission zone of malaria in west-central Senegal «.

These themes were in line with the research project of their mentor Dr. Ousmane Sy, a MARCAD postdoctoral fellow, which focuses on the problem of residual malaria transmission in hotspots in west Senegal.

«With the MARCAD program, we have benefited from excellent supervision with the necessary equipment at our disposal to carry out our research work,» said Abderehmane NOURDINE.

In most African universities, students in their final cycle often face problems of choice of subject for their thesis memory and supervision due to a high demand and an insufficient number of supervisors. In this way, MARCAD seeks to contribute to the resolution of these challenges by supporting high-level university training by improving students' careers at UCAD and at the Universities of the four other institutions that account the program.

MARCAD offers to students the opportunity to be integrated into a research team and to benefit from quality supervision. Each postdoctoral fellow of the program is responsible for supervising two to three master's or doctoral students from different fields of medicine and biology.

«It's a fairly complete and interesting framework. I had to be trained in field data collection techniques and participated in the laboratory work,» said Pape Cheikh SARR.

During their mentoring internship, both students learned and experimented with different research methods in the field and in the laboratory.

«My trainer taught me methods for breeding larvae, sampling pre-imaginary stages (larvae and nymphs) and managing an insectarium. He also taught



me techniques for identifying vectors, dissecting mosquito ovaries to study their physiological age, methods of evaluation of the sensitivity / resistance of vectors to insecticides, biomolecular identification species of the *An. gambiae* complex. I also benefited from a research environment with a dynamic and well-organized team. I also learned scientific writing techniques «said Mr. Mohamed Abderehmane NOURDINE.

The national and international mobility of young researchers being one of the priorities of the MARCAD program, it was important that the student Pape Cheikh SARR benefited from a three-week training course at the Medical Research Council (MRC) of Gambia (supported by WANETAM and MARCAD) to learn biomolecular techniques for real-time PCR identification of insecticide resistance mutations and all other aspects related to medical entomology.

In addition to their internship opportunities in MARCAD's partner institutions and their various field experiences, the two students also participated in major scientific meetings.

«MARCAD gave us the opportunity to participate at the Multilateral Initiative on Malaria Conference (MIM) 2018, we met many world-renowned scientists working in the malaria field during this event. We also participated in an international course on pre-elimination and malaria elimination held from 7th to 9th October 2018 and at the MARCAD Annual General Meeting from 10th to 12th October 2018,» said Mohamed Abderehmane NOURDINE.

INTERVIEW Pr. Wilfred MBACHAM , MARCAD Partner PI at the University of Yaounde1 (UoY1), Cameroon

Prof. Mbacham Wilfred is a Titular Prof of Public Health Biotechnology. He researches at the Biotechnology Center (BTC) and teaches at the Faculties of Science and of Medicine and Biomedical Sciences of the University of Yaoundé I. His current research focuses on pharmacogenomics and response to drugs, the molecular diversity and epidemiology of drug resistance in Malaria, HIV & Tuberculosis.

In this interview Pr. Wilfred MBACHAM share his opinion about the three years of the MARCAD program and the progress of the work he and his fellows are doing in their institution in Cameroon.

What assessment do you make of the three years of MARCAD ?

It has helped us improve on governance and has influenced our way of conducting business and many others have benefitted from our presence. MARCAD has helped in putting in place a number of infrastructure and it has provided visibility for the group.

What goals did you set for your staff at the beginning of the program ?

The goal was first that fellows reach their stated objectives which at first were very ambitious and challenging starting from scratch. Then for the staff to build on the administrative rigor of DELTAS and learning the procedures or wish to see in reporting. We have made enormous strides.

What progress do the fellows make towards these initial objectives ?

It was slow in the beginning and then they caught up. The learning curve has been steep but I am happy that they were able to work hard to meet these objectives. Now they have gone pass the lag phase and are now on the exponential rise in

New hypotheses are emerging from the work of the MARCAD Program and leading us to propose to the group the addition and training for the use of big data that would make meaningful insights in all that we would have as research findings.

strength. This has been seen by the numbers of papers that are coming out and by their assertion in the knowledge and maturity they have acquired over time.

Are the expected results of the fellows' research starting to be visible ?

Yes their results have surfaced lately in journals of good repute and new ideas have been



generated from the originally stated objectives. Also their impact and results can be seen by the flood of students soliciting supervision and their being called up to seat on Malaria governance committees. This is due to their productivity.

What are the perspectives you have set for your group in terms for the sustainability of the activities?

On the part of the research, the Fellows are preparing to solicit new funding from elsewhere. We are also hoping that with the deliverables underway of being achieved, we would be part of the second round of the DELTAS funding to be able to complete this useful exercise for the University. A Coordination Office for Research and Development which does grant management and a Joint Institution Review Board have been created which were due to MARCAD's presence. The Coordination Office for Research and Development within 3 weeks of its creation is about to host 4 grants from multilateral donors.

Thanks to the training to Louis Bukong and Tatou Fidel Alain by Mango and GFGP at AAS they have been useful in.

The Community and Pubic Engagement is being done in association with the Fobang Foundation that has a long standing history for such activities. They have national and international partners in Holland, USA and Germany.

New hypotheses are emerging from the work of the MARCAD Program and leading us to propose to the group the addition and training for the use of big data that would make meaningful insights in all that we would have as research findings.

International Events

MARCAD participation at the 7th MIM Conference



H.E. President Macky Sall receiving the ALMA Award during the Dakar MIM Meeting 2018

Twenty years after the first Multilateral Initiative on Malaria Conference (MIM) in Dakar, Senegalese was once more honored to organize the 7th edition of this prestigious conference, the meeting took place at the International Conference Centre of Diamniadio on April 15th to 20th 2018.



International Events

The MARCAD with the Department of Parasitology of the Faculty of Medicine of Cheikh Anta Diop University was the key organizer of the Conference with Professor Oumar Gaye chairing the Organizing Committee. The 7th Multilateral Initiative on Malaria Conference (MIM) conference theme was “ Dakar II: Two decades of progress, challenges and perspectives in ending Malaria”.

The opening ceremony of the conference was chaired by the Senegal Head of State, His Excellency Macky Sall in presence of Dr Pedro Alonso, Director of WHO Global Malaria Programme and many other state authorities, prestigious scientists, stakeholders, communities and medias.

Some 2500 participants from all over the world came together to discuss latest findings in malaria research, control and elimination, during five intensive days.

Malaria being a research priority for MARCAD, the MIM conference in Dakar was for the programme a great event of advocacy

with the different MARCAD institutions PIs, all members of the scientific committee .The MARCAD Secretariat was fully involved in the organization activities. All MARCAD Fellows attended the Conference and made presentations.

The Pan-African MIM conference with the participation of senior African Union people was an opportunity for MARCAD to advocate for a better involvement of the African Union in the goal of eliminating malaria from the continent.

Beyond the main goal the 7th Multilateral Initiative on Malaria Conference (MIM), also served as an opportunity to review MIM’s 20 years of contribution to the global goal of ending malaria in Africa, build on the gains achieve and transmute MIM activities to better address current malaria research and control priorities.

The conference offered to the MARCAD fellows and all participants new insights for malaria research, new knowledge and practices on malaria control, prevention and treatment. Current and emerging challenges in malaria control were deliberated.



Great interest for the MARCAD program at the Centenary of the Faculty of Medicine, Pharmacy and Odontology (FMPO) of the University Cheikh Anta Diop of Dakar (UCAD)



Dakar, the capital of Senegal, was from 1 to 5th December 2018, the rallying point for scientists from Africa and around the world, on the occasion of the simultaneous celebration of the Centenary of the Faculty of Medicine, Pharmacy and Odontology (FMPO) of the University Cheikh Anta Diop of Dakar (UCAD) and the «Homecoming-Delsi naniu_ Return of the old to the UCAD».

On this occasion, like the other institutions of the Faculty of Medicine, the Department of Parasitology-Mycology marked its presence by the presentation of its various achievements and program including MARCAD.

The Opening Ceremony was chaired by Senegal's Prime Minister Mahammed Dionne, in the presence of the Minister of Higher Education Mary Tew Niane and university authorities.



The Director of MARCAD Professor Oumar Gaye had the honor to present to the Prime Minister of Senegal, Mahammed Dionne the positive impact of the achievements of the Department of Parasitology in the fight against malaria in Senegal and soon throughout Africa with the Malaria Capacity Development in West and Central Africa (MARCAD), a program which t has a major role in the strengthening of the quality of research in the continent.

International Events



Prime Minister of Senegal, Mahammed Dionne was also privileged to discover the Keur Soce Center, an achievement of the Parasitology Department that benefits to all Senegalese, African and international researchers.

Keur Soce is a platform built in rural area in the Kaolack region, where malaria research programs (such as MARCAD) and other diseases research are being conducted.

In addition to the Senegalese authorities, other reputed UCAD graduates such as the Grand Chancellor of Côte d'Ivoire Henriette Dagri Diabaté and the Chair of the High Council of Local Authorities (HCCT), Ousmane Tanor Dieng also took part to the ceremony.

The Nigerian Minister of the Interior Mohamed Bazoum, the Senegalese Minister of environment Prof Mame Thierno Dieng, and other academics, former diplomats, businessmen and many students were also present at the event.

Exhibition was organized on the sidelines of the activities of the centenary. The visitors showed a great interest for the MARCAD program whose stand was always full. The

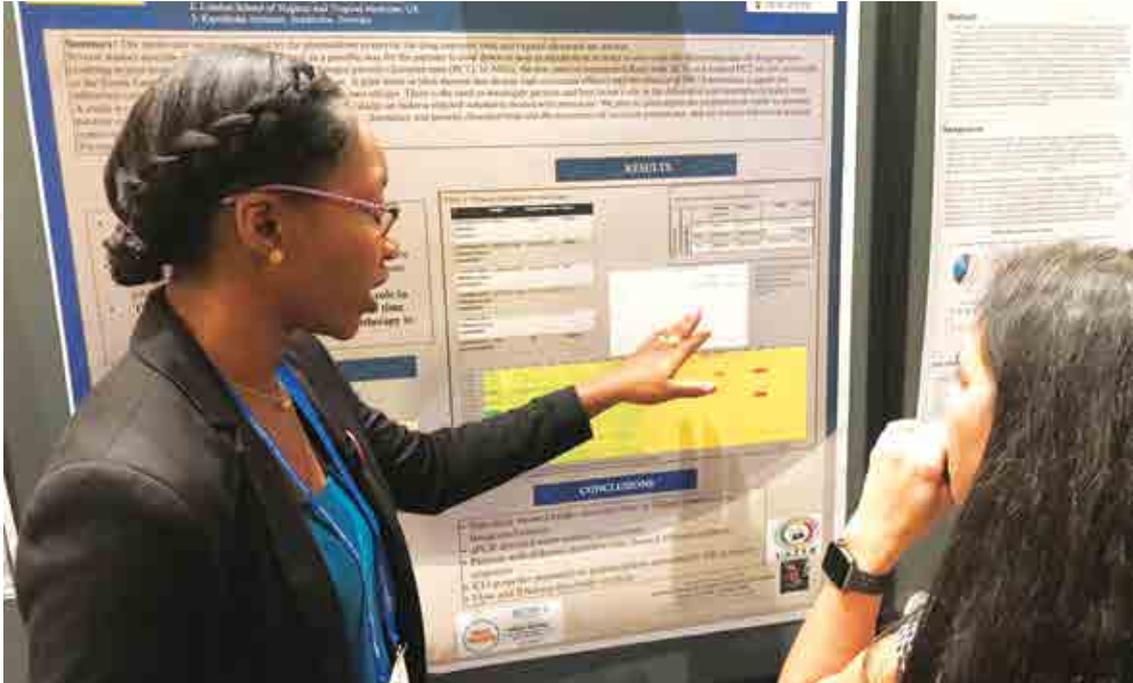
exchanges with the public have been very rewarding. Visitors expressed their support for projects such as MARCAD and claimed that different projects driven by MARCAD fellows will have a definite impact on the elimination of malaria in the African continent.

The Centenary of the Faculty of Medicine, Pharmacy and Odontology (FMPO) has served as a framework to urge authorities, policymakers and citizens to become more interested and supportive in the field of research.

«The African and Malagasy Council for Higher Education,» is a perfect illustration of the excellent training provided in Dakar, «said the Prime Minister of Senegal Mr. Dionne.

A total of 55 of the 62 candidates from the Faculty of Medicine, Pharmacy and Dentistry of UCAD were received at the end of CAMES 'latest aggregation competition.

MARCAD fellow at the 67th meeting of ASTMH in New-Orleans



”This was definitely the opportunity for us, young researchers, to meet well experienced people...”

MARCAD Post-Doc and PhD Fellows participated at the American Society of Tropical Medicine and Hygiene (ASTMH) 67th Annual Meeting held in Oct. 28-Nov. 1 in New Orleans, Louisiana, USA. They presented their research to the public and got a major interest from the participants of the ASTMH Meeting.

Dr Aminatou Kone is one of the post-doctoral fellows who attended to this meeting. She shared her experience as a young African scientist.

”It is always a great pleasure to attend this international meeting but in the context of representing the MARCAD as one of the fellows was a pride. We had the mission to make the network more visible at the meeting level.” Dr Aminatou MARCAD Post-Doc Fellow.

The MARCAD delegation joined nearly 4,600 tropical medicine and global health professionals representing academia, non-profits, philanthropy, government and the private sector at the ASTMH 67th Annual Meeting.

An occasion given to the MARCAD Post-Doc and PhD Fellows as young African scientists to present their projects.

” It gives the chance to expose our work and interact with people that can improve or help finalizing some aspect by offering their lab or platforms access through exchange trips” said Dr Aminatou.

The MARCAD Fellow’s research projects got many useful feedbacks from the publics of the ASTMH 67th Annual Meeting.

” I got to meet several people with many suggestion and improvement on the analysis I’m doing for my project. Some other gave useful information on how and where to find the right tool to proceed some analysis. Some other got interested by the project itself and could see a good opportunity for collaboration for next steps” Dr Kone said.

According to the MARCAD Post-Doc fellow, the ASTMH 67th Annual Meeting was an opportunity for young African researchers to meet well experienced people from many other places they would not have met if they did not attend the meeting.

MARCAD program offers national and international mobility funds to the fellows. This allow them to also visit all the other MARCAD partner institutions as much as needed.

”The partner institutions having different type of research orientations, this is helping us to take the advantage of each skills when it is needed in our projects with the support of the MARCAD core” said the MARCAD Post-Doc fellow Dr Aminatou Kone.

Fellows Grants Winners



POSTDOCTORAL FELLOW BENOIT ASSOGBA AWARDED AS ONE OF THE FIVE TOP YOUNG AFRICAN SCIENTISTS TO TACKLE INFECTIOUS DISEASES PREVALENT ON THE CONTINENT and BMGF (BILL & MELINDA GATES FOUNDATION), CO-PI WITH DR KEVIN OPONDO.

sbassogba@mrc.gm



DR AMINATOU KONE, POSTDOCTORAL FELLOW, AWARDED TWAS RESEARCH GRANTS PROGRAMME IN BASIC SCIENCES (INDIVIDUALS)

Email: amina@icermali.org



POSTDOCTORAL FELLOW, DR KEVIN OCHIENG' OPONDO AWARDED A SCIENCE AND LANGUAGE MOBILITY SCHEME AFRICA GRANT

Email: Kopondo@mrc.gm



DR OUSMANE SY, POSTDOCTORAL FELLOW, AWARDED A SCIENCE AND LANGUAGE MOBILITY SCHEME AFRICA GRANT

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Scientific contributions

MARCAD PIs, CoPIs and Fellows at UCAD/Senegal, MRTC/Mali, MRC/The Gambia, UHAS/Ghana and BTC/Cameroon have made major scientific contributions

A. SEASONAL MALARIA CHEMOPREVENTION :

MARCAD' teams at UCAD and MRTC have made strong contribution for the adoption of Seasonal malaria chemoprevention (SMC) by WHO to prevent malaria in children under five years during 4 months. Recent study carried out by UCAD indicate that SMC could be administered over a longer period of 5 months and to a wider age group up to 10 years (Ndiaye and al, PLoS One, 2016, Pharmaceut Med. 2018; 32(3), Plos Medicine 2019 in press)

B. PLASMODIUM VIVAX :

Plasmodium vivax was thought to infect only the erythrocytes of Duffy blood group positive people. Africa was concerned recently with evidence shown in Ethiopia Madagascar and Kenya). For the first time in West Africa MARCAD team at MRTC in Mali and in Senegal with UCAD's partner the Pasteur Institute revealed children Duffy blood group negative with P.vivax infections (Niangaly and al, Am J Trop Med Hyg. 2017 Sep;97(3):744-752, Niang and al Trop Med Health. 2018 Dec 29;46:45). Given the capacity of P.vivax to induce dormant form of parasites in the liver, these findings implied a change in National Malaria Control Program to include specific strategies targeting P. vivax.

C. VACCINATIONS :

UCAD in Senegal and MRC's team in Gambia showed that in adults in Senegal and the Gambia the pre-erythrocytic malaria vaccine adenovirus (ChAd63) ME-TRAP is safe and induces significant immunogenicity (Mensah and al PLoS One. 2016; 11(12)). Further efficacy evaluation is in progress. In Mali MRTC showed that Plasmodium falciparum sporozoite (PfSPZ) Vaccine is safe and confers a protective efficacy against naturally acquired P falciparum (Thera and al, Lancet Infect Dis. 2017 May;17(5):498-509

D. TRANSMISSION :

Sy at UCAD demonstrated the role of Anopheles melas, a neglected malaria vector on malaria transmission. Coulibaly at MRTC provi-

de evidence of existing malaria transmission clusters which should be targeted by dedicated malaria control approaches in view of disease elimination Coulibaly and al (Am J Trop Med Hyg.2017Dec;97(6):1761-1769); the team demonstrates also the contribution of asymptomatic parasitemia in maintaining malaria transmission in an area of high seasonal malaria transmission.

E. SURVEILLANCE :

The UCAD's and the Cameroon's teams were involved in the surveillance of drug resistance both in the malaria parasites and in the vectors. Their studies provide a proof of concept that reuse of discarded P. falciparum positive RDTs can be applied in large-scale surveillance of antimalarial drug (Ndiaye and al, Am J Trop Med Hyg. 2017 Nov 8; 97(5): 1593–1596. Combined with the use of next generation sequencing this can provide molecular data of importance for drug policy makers in a timely fashion.

For vectors P 450 pyrethroid resistance reduces bednet efficacy; Wondji and

al in their studies in Cameroon discover the first DNA-based marker for cytochrome P450 metabolic (Science Translational Medicine, in press). The same team with Wondji describes patterns of gene flow in An funestus populations across southern Africa combined with genome -wide gene expression showing that restrictions of gene flow correlate strongly with changes in gene notably for major genes such as CYP6P9ab (Proc Natl Acad Sci USA 2017 Jan 10 ;114 :266-291) . MRC team investigate the early evolution of several duplications, in natural populations from West Africa. Their study showed that an internal deletion of all coamplified genes except ace-1 is currently spreading in West Africa and introgressing from An. gambiae s.s. to An. coluzzii. Their study provides a unique example of the early adaptive trajectory of duplications and underlines the role of the environmental conditions It also emphasizes the striking diversity of adaptive responses in these mosquitoes and reveals a worrisome process of resistance/cost trade-off evolution that could impact the control of malaria vectors in Africa. Assogba and al Evol Appl. 2018;11:1245–1256.



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