



CRID

Second Quarter

Newsletter

010

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EDITORIAL

Prof Charles Wondji, CRID's Executive Director Revolutionizing Diagnostic of Infectious Diseases Diagnosis in Remote Areas

As we continue to face the challenges of infectious diseases, especially in remote areas with limited access to healthcare, there is a growing need for field-applicable diagnostic assays that can be easily used by less qualified staff and with minimum equipment. Fortunately, new technologies such as the HYRIS™ bCUBE™ are emerging that can address these challenges and help improve the diagnosis and treatment of infectious diseases. bCUBE is a portable molecular diagnostic device that can be used to detect a wide range of infectious agents, including bacteria, viruses, and parasites. It is easy to use and can be operated by less



qualified staff with minimal training. The device is also compact and lightweight, making it ideal for use in remote settings with limited resources. One of the key advantages of bCUBE is that it can be used in the field, allowing for coverage of each health district and rapid diagnosis of infectious diseases nationwide. The results of bCUBE tests can be recorded electronically and stored in the cloud, allowing for easy analysis and tracking of disease trends over time. This can help inform public health interventions and guide resource allocation by control programs. bCUBE can also be adapted to detect drug and insecticide resistance and other genetic markers associated with specific infections. For example, Through a Bill and Melinda Gates Foundation project between The John Hopkins University and CRID and the Hyris Company, bCUBE assays have recently been designed to

detect mutations in the genes conferring resistance to insecticides. These novel assays have successfully been performed in the field even in the absence of electricity using dry cartridges and lyophilized reagents. Such progress opens the door for next generation nationwide disease/vector surveillance with data generated at the health district level through community health workers. Similar study could be extended to detect and map the spread of resistance to antibiotics or antimalarial drugs. This can help guide treatment decisions and prevent the spread of drug-resistant infections. Overall, bCUBE is a promising technology that can help improve the diagnosis and treatment of infectious diseases in remote and resource-limited settings. With continued investment in such technology as done by the Bill & Melinda Gates Foundation, we can hope to make significant strides in the fight against infectious diseases and improve the health outcomes for millions of people around the world. The revolution in nationwide disease surveillance in Africa is here!



Employee Milestone

New staff recruited at CRID

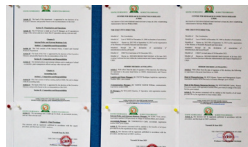
- » **NJENWIE Godric** : Master Student
- » **MBOBDA Romaric Jonathan** : Technician
- » **KOULAYO Derous** : Watchman

Départure

- » **Nkongho Ayuk Ambang** : Finance Officer
- » **Mugenzi Léon** : Researcher

CRID Establishes New Administrative Service and Appoints Key Personnel

On June 26, 2023, CRID announced the establishment of a new Administrative Service to better manage their operations



and will consist of seven administrative units: Communication, Information Technology (IT), Logistics and Estate, Internal Policy and External Relations, and Accountancy Units. Several individuals have been appointed to key positions within the department.

- » **Logistic and Estate Manager** : Mr. Tseyep Rodrigue, Logistician (post created).

and support their staff and stakeholders. This service will be led by Prof Charles Wondji

- » **Communication Manager** : Mr. Tadam Tadam William
- » **IT Manager** : Ms. Weladj Chastine
- » **Internal policy and External relations Manager** : Mr. Jesse Yvon Fogang (Post created).
- » **Accountant Manager** : Mr. Yankouglo Caleb (Post created).
- » **Head of Finance service** : Ms. Ndi Falenne (Post created).
- » **Head of the human resources services** : Ms. Nguemegni Carine (Post created).

CRID looks forward to the success of this new services and thank everyone for their continued support.



Capacity Building

The first Wellcome Trust gene drive project annual meeting in Cameroon

The First Annual Project Team Meeting in Cameroon held from May 14 to 18, 2023 and focused on the use of gene drive technology for reducing malaria infection. Teams from Burkina Faso, Cameroon, Tanzania, Mali, and United Kingdom presented their progress and activity reports. Discussions were held on the applicability of gene drive and difficulties of its applicability in the African context. Training sessions on population genetics and genomics, and high-altitude-long-distance migration of mosquitoes using a helium balloon were conducted by CRID and the Malaria Research and Training Center (MRTC), Mali. The training provided practical and theoretical knowledge on data analysis and interpretation. The high-altitude-long-distance migration training included a demonstration of the release of a helium balloon with attached screen panels for collecting mosquitoes at different altitudes.



Dr Kamgang Basile represented CRID at WAASuN meeting

The 3rd West African *Aedes* Surveillance Network (WAASuN)



meeting was held in Praia, Cape Verde from June 5 to June 9, 2023. During this event, on June 6, 2023, Dr. Kamgang Basile, who serves as the Head of the Entomology Department at CRID, delivered a comprehensive presentation that provided the latest updates on *Aedes* and *Aedes-borne* viral diseases in Cameroon. The WAASuN 2023 meeting provided an excellent opportunity for experts in the field to share their knowledge and insights on this critical issue, and Dr. Kamgang's presentation was a valuable contribution to these discussions.

Empowering of young CRID's researchers



Francine SADO, a PhD student at CRID, was awarded two travel grants for training and networking. She participated in a training program on genomics and bioinformatics in South Africa, where she gained hands-on experience in whole genome sequencing and bioinformatics analyses. She also attended the Crimean-Congo hemorrhagic fever virus (CCHFV) Africa conference in Cape Town, where she presented her recently published research paper on Crimean-Congo hemorrhagic fever orthonairovirus prevalence in Cameroon. Additionally, she participated in a training program on Loop-Mediated Isothermal Amplification (LAMP) assay in Ghana, where she collaborated with the West African Centre of Cell Biology and Infectious Pathogens (WACCBIP) team in conducting fieldwork activities to detect infections in people in villages. These travels and training demonstrate CRID's commitment to training talented young researchers like Ms. Sado.



Collaboration

bCUBE Meeting 3

Advancing Vector Control Strategies with Field-Deployable Technology

The 3rd annual bCUBE meeting was held from June 12th to 23rd, 2023 at CRID's premises. The meeting brought together collaborators from Johns Hopkins University (JHU) and Hyris. On the first day, the stakeholders discussed the Year 3 milestones, which included developing field-compatible sample preparation methods and designing bCUBE-compatible insecticide resistance diagnostic assays. On the second day, a training session was held for Ph.D. students from CRID to provide an overview of genotyping using the bCUBE machine. On the third day, the b-Cube team went on a field trip to Elende and collected mosquitoes to perform Deoxyribonucleic Acid (DNA) extraction and genotyping of insecticide resistance



markers using the bCUBE machine. On the fourth day, the team conducted successful fieldwork in Mbalmayo, Cameroon, and collected mosquito larvae to conduct DNA extraction and genotyping for insecticide resistance markers using the bCUBE machine. On the fifth day, the bCUBE team held a meeting with multiple high-level stakeholders, including the National Malaria Control Program (NMPC), the Pan-African Mosquito Control Association (PAMCA), and representatives from Pasteur Institute, to showcase the effectiveness of bCUBE in addressing health challenges. The stakeholders unanimously agreed that bCUBE is a crucial tool for vector control.



Grants

Dum-Buo Nnamdi, Commonwealth Scholar at LSTM Awarded the WHO_TDR Impact Grant for Malaria Research



We are delighted to announce that Nnamdi Dum-Buo has been awarded the WHO AFRO_TDR 2022 Impact Grant for Regional Priorities and Implementation Research for his research project aimed at assessing malaria burden using an mhealth tool in the conflict-Affected North-West Region of Cameroon. This is a significant recognition of his hard work, dedication, and exceptional research skills. His project is expected to make a positive impact in

the fight against malaria, which is a major public health concern in the region. We congratulate Nnamdi on this remarkable achievement and wish him all the best in the implementation of this project.

His success is a testament to the value of the Commonwealth Scholarship program in nurturing exceptional scholars and researchers who can make a positive impact in their communities and beyond. Nnamdi Dum-Buo, is an early career researcher from Cameroon, based at CRID and a recipient of the Commonwealth Distance Learning Scholarship, has recently achieved a remarkable milestone in his research career and professional development.



Events

Mr. Mbakam defended his masters dissertation at UYI



Thursday, June 8th, 2023. It was a pleasure to witness the successful defense of Mr. Mbakam Leuze Patrick Bertrand's Master's thesis in Biochemistry at the University of Yaoundé I (UYI). As a Laboratory Technician at

CRID, Mr. Mbakam has demonstrated a strong commitment to his work and a deep understanding of the complexities of biochemistry. Under the co-supervision of Professor Wilfried Mbacham and Professor Charles Wondji, CRID's Executive Director, he produced a dissertation entitled «UDP-GLYCOSYL Transferase Genes in the Primary Malaria Vector, Anopheles funestus and Their Potential Contribution to Pyrethroid Resistance». We congratulate Mr. Mbakam on this significant achievement and look forward to seeing his future contributions to the field of biochemistry.

Labour Day'23

Professional excellence rewarded

On May 1st, 2023, CRID celebrated World Labour Day by rewarding professional excellence. Several individuals were recognized for their outstanding performance in various categories. Yankoulo Caleb, the accountant at CRID, received the prize for «Best Administrative and Financial Employee of the Year» for the second time; Yvan Fotsso was awarded «Best CRID's Student of the Year 2022»; Dr. Mugenzi Jean



Leon, a postdoctoral researcher, received the award for «Best CRID's Scientist of the Year 2022»; Wirsy Charles was recognized as the «Best Support Staff of the Year 2022»; and Watsop Iness, a young laboratory technician,

was awarded «Best Technician of the Year 2022». All of the awardees were deeply surprised and attributed their success to hard work, goal setting, completing assigned tasks on time, and punctuality. CRID hierarchy encourages everyone to stay focused and strive for excellence in all their endeavors.

Sport activities

On April 29, 2023, CRID organized sport activities prior to the celebration of Labour Day 2023, with the aim of fostering the



social life of its staff. The activities included football and handball matches, where CRID's male football team played against United Bank of Africa's team, and CRID's female handball team played against the ladies of Evangelical

Church of Cameroon. The event took place at the International Rainforest school in Yaoundé, Cameroon, and was a moment of excitement, fair play, socialization and living together.

World Malaria Day

Dr Manaouda Malachie visited CRID Stand

On April 25th, 2023, was International Malaria Day, the Ministry of Public Health, launched weekly activities with a «Stop Malaria» symposium at the Hilton Hotel in Yaoundé, Cameroon. CRID attended the event alongside other organizations engaged in the fight against malaria, and exhibited a stand. During the symposium, CRID staff had the honor of discussing with the Minister of Public Health, Dr. Manaouda Malachie. The United States Ambassador, Christopher J. Lamora, also visited CRID's exhibition stand. The event was commemorated with the hashtag #WorldMalariaDay2023.



Dr. Mugenzi Jean Leon's farewell ceremony



Dr. Mugenzi Jean Leon, a Post-Doc research fellow at CRID, Best Researcher Prize of the Year 2022 has been called to join Syngenta in Switzerland. A farewell ceremony was held in his honor on Thursday, June 29th at CRID's building in Yaoundé. During the ceremony, Dr. Mugenzi expressed his gratitude to his colleagues and students for their support and inspiration. He also thanked his

boss, Prof. Wondji Charles, and shared his fond memories of working at CRID. Prof. Wondji Charles stated that Dr. Mugenzi's departure will open doors for future collaborations between CRID and other institutions. CRID's administration presented Dr. Mugenzi with a gift to commemorate his time at the institution. Congratulations to Dr. Mugenzi on his achievement, and we wish him all the best in his future endeavors.



Statistics

46
Women

72
Men

33
Scientists

30
Administration

36
Students

19
Technicians

Visits and internship

Prof. Rhoel R. Dinglasan's visit



On June 2nd, 2023, CRID was privileged to welcome Professor Rhoel R. Dinglasan, a distinguished authority on infectious diseases and the Director of the CDC Southeastern Regional Center of Excellence for Vector Borne Diseases at the

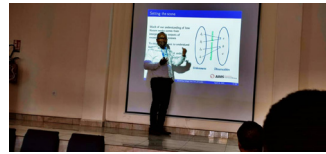
University of Florida. As part of his visit to CRID, Professor Dinglasan was given a comprehensive tour of the insectarium, laboratories, and facilities. After this tour, he engaged in a private conversation with Professor Charles Wondji, CRID's esteemed Executive Director. This exchange of ideas and expertise was a valuable opportunity for both scholars to share insights and perspectives on the latest advancements in the field of infectious diseases and vector-borne. We are honoured to have had the privilege of hosting Professor Dinglasan and look forward to future collaborations between our institutions.

Honoured to receive senior scientists

June 1st, 2023. CRID had the distinct honor of welcoming three renowned figures from the scientific research community to its premises. The esteemed visitors included Professor Anna-Bella Failloux, Head of the Arboviruses and Insects Vector Unit at Institut Pasteur in Paris, Dr. Florence Fouque from the World Health Organization (WHO) and team leader for TDR in Switzerland, and Dr. Pierre Formenty, group leader at WHO in Geneva. The distinguished guests were given a tour of CRID's state-of-the-art laboratories and facilities, and engaged in an enriching exchange of ideas regarding the latest advancements in infectious disease research. They were warmly welcomed by CRID's Executive Director, Professor Charles Wondji, who extended his hospitality and expertise to the visitors. The visit ended with a group photograph, immortalizing the memorable occasion. This meeting was a testament to CRID's reputation as a leader in infectious disease research, and to the importance of fostering collaborative relationships within the scientific community.



CRID hosted Dr. Wildfred Ndifon



On April 28, 2023, CRID hosted Dr. Wildfred Ndifon from the African Institute of Mathematical Sciences (AIMS) in Rwanda. Dr. Ndifon gave a 2-hour training session in

CRID's amphitheater on modeling real-time (RT-qPCR) results. The session was attended by CRID's students, particularly those from the AComVeC project. Dr. Ndifon is a theoretical biologist who conducts research at the intersection of mathematical and biological sciences. His work focuses on understanding the mechanisms that regulate immune responses to diseases and developing improved diagnostics and vaccines.

CRIDians at CDC Atlanta

Dr. Magellan Tchouakui, a highly skilled research scientist, and Mrs. Murielle Wondji, an experienced laboratory manager at CRID, embarked on a crucial mission to the U.S. Centers for Disease Control and Prevention (CDC) in Atlanta from March 19th, 2023 to May 20th, 2023. Their primary objective was to conduct RNA sequencing on malaria vector mosquitoes from Cameroon and analyze the resulting data using CDC bioinformatics platforms. This trip was part of the collaborative project between CDC and CRID, entitled «Novel molecular diagnostic tools to detect emerging resistance to new generation public health insecticides». The project, funded by the Office of Advanced Molecular Detection, seeks to identify molecular markers of chlorfenapyr resistance in the primary African malaria vector, *Anopheles gambiae*, and use them to develop a DNA-based molecular diagnostic assay for chlorfenapyr resistance monitoring. The visit was critical to ensuring the success of the project and reinforcing the RNA-Seq laboratory and data analysis capacity at the Centre of Research in Infectious Diseases in Yaoundé, Cameroon. We commend Dr. Tchouakui and Mrs. Wondji for their dedication and expertise in advancing the fight against malaria, a major public health concern in Cameroon and beyond.



Scientific Publications

- Canelas T and al. Demographic and environmental factors associated with the distribution of *Aedes albopictus* in Cameroon. Med Vet Entomol. <https://doi.org/10.1111/mve.12619>
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- Baina MT, Lissom A and al, Comparative study of *Plasmodium falciparum* msp-1 and msp-2 Genetic Diversity in Isolates from Rural and Urban Areas in the South of Brazzaville, Republic of Congo. Pathogens. 2023 May 22;12(5):742. <https://doi.org/10.3390/pathogens12050742>
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- Eouet C, Ashu F and al, Resistance to clothianidin reduces the efficacy of SumiShield® 50WG, a neonicotinoid formulation for indoor residual spraying, against *Anopheles gambiae*. <https://doi.org/10.21203/rs.3.rs-2847231/v1>
- Ibrahim SS and al, Molecular drivers of insecticide resistance in the Sahelo-Sudanian populations of a major malaria vector *Anopheles coluzzii*. BMC Biol. 2023 May 24;21(1):125. <https://doi.org/10.1186/s12915-023-01610-5>
- Tahmo NB and al, An epidemiological synthesis of emerging and re-emerging zoonotic disease threats in Cameroon, 2000-2022: a systematic review. <https://doi.org/10.1016/j.tjregi.2022.12.001>
- Etienne Fondjo and al, High vector diversity and malaria transmission dynamics in five sentinel sites in Cameroon. <https://doi.org/10.1186/s12936-023-04552-z>
- Huguette Simo Tchetsgna, Francine S. Yousseu and al, Molecular and serological evidence of Crimean-Congo hemorrhagic fever orthonairovirus prevalence in livestock and ticks in Cameroon. Front. Cell. Infect. Microbiol. 2023;13:2495. <https://doi.org/10.3389/fcimb.2023.1132495>

Partners and funders

