



**UNIVERSITY
OF GHANA**



NOGUCHI

Memorial Institute for Medical Research
University of Ghana

NEWSLETTER

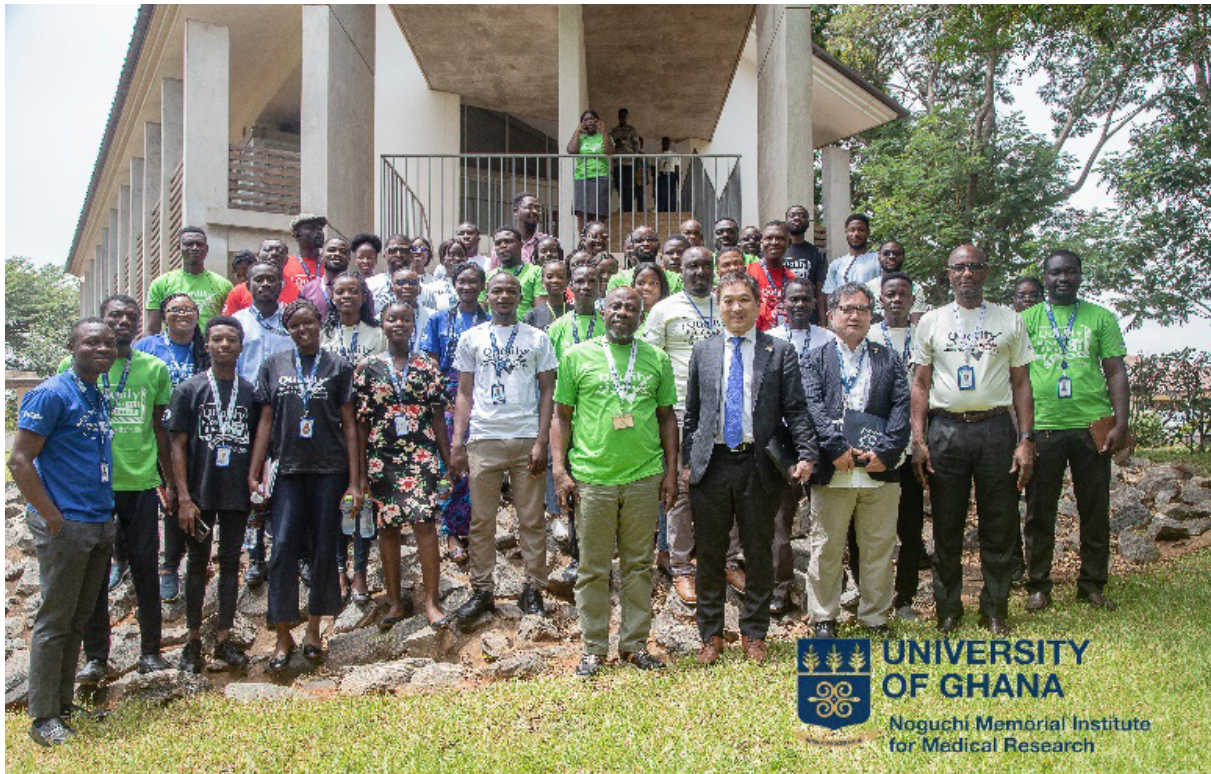
June 2023 Edition



IN THIS ISSUE

Editorial
Research Highlights
Personality Profile
Special Awards
Events in Pictures
Publications
Committee Members





EDITORIAL

Quality Management Systems (QMS) in the NMIMR

The Noguchi Memorial Institute for Medical Research (NMIMR) is one of the most recognized biomedical research institutions in Ghana and the West African sub-region. Consequently, the assurance of the quality of the Institute's research outputs and other services is expected to be high.

The concept of Quality can be traced back to the formation of guilds by artisans and at the onset of the Industrial Revolution when systems of quality management were employed to develop standards for regulating product manufacturing and process outcomes. It was imperative to employ best practices as production quantities grew. With time, these best practices were documented and have become the base standards for quality management systems. Quality Management System (QMS) can be defined as a systematic set of operational procedures, policies, and objectives that are documented, maintained and controlled by an organization to achieve its quality objectives and continuous improvement across the organization. An organization's activities can be better coordinated and directed with the use of QMS, which also helps it to continuously increase its effectiveness and efficiency while adhering to customer and regulatory

standards. According to the International Organization for Standardization (ISO), the adoption of a QMS is a strategic decision for an organization that can help to improve its overall performance and provide a sound basis for sustainable development initiatives.

The Noguchi Memorial Institute for Medical Research has developed and is implementing a QMS and is working towards the ISO 9001:2015 requirements for management processes and ISO 15189:2022 requirements for quality and competence in medical laboratories. The Management team of the NMIMR with the support from various partners has undertaken to establish and maintain a system that will continue to assure all its partners and stakeholders of sustained quality across all its management and technical processes and outputs. The Institute has established QMS that works across all Departments and Units. This QMS provides a framework to enable our organization to document and enhance our procedures to better meet the needs and expectations of our clients, stakeholders, and interested parties. Our QMS employs the Plan, Do, Check and Act principle for process planning and execution with careful adherence to the core principles of Quality (Leadership, Customer Focus, Engagement of People, Process Approach, Improvement, Evidence-Based Decision Making, and

Relationship Management). Our QMS targets and supports our plans to offer specialized diagnostic services and carry out disease-related research in Ghana and across the African continent.

With the support of the Japan International Cooperation Agency (JICA), through a technical aid program, the Institute has taken a significant step towards the accreditation of many of its processes, to the requirements of ISO 15189:2022 by 2024. It is also working towards certification of all its management and research support processes to obtain ISO 9001:2015. In this light, the Institute's Management, through the Quality Office, is working tirelessly to keep all Departments abreast with QMS, its principles, its implementation, and monitoring of the progress of implementation. Quality Manuals, a road map to accreditation and a strategic plan built around the five thematic areas (Leadership & Governance, Quality Infrastructure, Technology, Equipment and Customer satisfaction) have been developed. The Quality Policy which fulfills standard requirements is being implemented across the Institute to ensure customer satisfaction through process control.

To increase awareness of Quality across the Institute, a Quality Week was observed for the first time in March 2023. This was an initiative by the Institutional Quality Office, in collaboration with the Institute's administration and JICA. The week-long observation included activities such as an inter-departmental quiz among with the Department of Animal Experimentation emerging as the ultimate quiz champions after a very rigorous but entertaining competition. There was also the Face of Quality competition, to identify a Quality Ambassador who will propagate the Quality message throughout the Institute. Ms. Nana Aba Ennuson of the Epidemiology Department emerged as the winner. . The Quality Week was a huge success and provided staff with a good learning experience through the various educational lectures, quizzes and spot audits.

As a leading research, diagnostic and training institution on the African continent, it is imperative to be recognized for quality by ensuring that all our processes have been internationally certified and accredited. Attaining accreditation will give the Institute a competitive advantage in executing its core mandate and also assure its collaborators and sponsors that work done at the Institute meets globally-accepted standards. We therefore call on the staff of the Institute to always "Think Research, Think Quality, and Think Noguchi!"



RESEARCH HIGHLIGHTS



Assessment of toxicity and anti-plasmodial activities of chloroform fractions of *Carapa procera* and *Alchornea cordifolia* in murine models

Ayisha Mahama¹, Mary Anti Chama², Emelia Oppong Bekoe³, George Awuku Asare⁴, Richard Obeng-Kyeremeh⁵, Daniel Amoah⁵, Constance Agbemelo-Tsomafo^{1,5}, Linda Eva Amoah⁶, Isaac Joe Erskine⁷, Kwadwo Asamoah Kusi⁶ and Samuel Adjei^{5*}

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⁷Department of Pathology, Korle Bu Teaching Hospital, Accra, Ghana

Plants have recently become more widely used as a source of medicine due to their natural origins, accessibility in local communities, affordability, ease of use, and value as an alternative treatment for severe side effects and medication resistance. Yet, using herbal remedies can potentially cause temporary or permanent organ damage or dysfunction in the host. In this work, we

verified the potential side effect and anti-malarial properties of chloroform fractions of the leaves of two medicinal plants, *Alchornea cordifolia* (known in Asante-Twi dialect in Ghana as “agyama”) and *Carapa procera* (called “crabwood” in English, and “Kwaebese” in the Ghanaian Akan language), in the laboratory rats and mice.

Using standard guidelines to check the potential side effects, one-time administration (at 2000 mg/kg body weight) and 28 days continuous administration (at 100, 300, and 1000 mg/kg body weight) to the laboratory rats. To check the anti-malarial effect, the laboratory mouse was infected with the mouse malaria parasite and the infected mouse was given the extracts which were observed over a period.

For the different doses that were given to the rats to check for side effects, none of the fractions affected organs, general well-being, or body weight. There was no appreciable rise in the liver and kidney biomedical parameters. Regarding the antimalarial effect, one of the extracts, CPL100%, caused an increase in anti-malarial parasite activity with a dose increase, ranging from 16% to 26.67%. ACL100%, however, showed a reduction in anti-malarial parasite effectiveness from 21.1% to 15.1% in its chloroform fraction.

These preliminary results show that chloroform fractions of the leaves of *Alchornea cordifolia* and *Carapa procera* may be secure agents for treating malaria, indicating the need for further drug discovery studies.

In vivo modulation of rat liver microsomal cytochrome P450 activity by antimalarial, anti-HIV and antituberculosis plant medicines

Regina Appiah-Opong^{1*}, Isaac Tuffour¹, Ebenezer Ofori-Attah¹, Abigail Aning¹, Philip Atchoglo¹, Eunice Ampem Danso¹, Believe Ahedor², Samuel Adjei², and Alexander K. Nyarko³

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Drug interactions refer to a change in the way a drug acts in the body when taken with certain other drugs, herbals, or foods. Drug interactions are key reasons for adverse drug reactions and attrition from the market. Major infectious diseases causing morbidity/mortality in Ghana are malaria, tuberculosis, and HIV/AIDS. In this study, plant medicines commonly used to treat/ manage these diseases in Ghana were investigated for their potential to alter rat cytochrome P450 (CYP) enzyme activities. These enzymes are important for the effectiveness of several drugs on the market. Fluorescence and high-performance liquid chromatography-based assays were used to assess the effects of commonly used antimalarial plant medicines, Fever (FEV), Mal-TF (MAL), and Kantinka terric (KT); anti-TB medicines, Chestico (CHES), CA + ST Pains + HWNT (TF), and Kantinka herbatic (KHB); and anti-HIV/AIDS medicines, Wabco (WAB), AD p T/AD (LIV) and Kantinka BA (KBA) on rat liver microsomal cytochrome P450 enzyme activities. Effects of the medicines on rat biochemical and hematological parameters

were also assessed. Generally, the medicines altered the activities of the enzymes, CYP1A1/1A2, CYP2B1/2B2, CYP2C9, and CYP2D6. Only KHB elicited a significant increase in CYP1A1/1A2 activity. FEV, MAL, CHES, WAB, and LIV strongly inhibited the enzyme activity. All the medicines significantly inhibited CYP2C9 activity. CYP2D6 activity increased after treatment with MAL, KBA, LIV, and TF. Also, MAL, WAB, LIV, KHB, and CHES increased CYP2B1/2B2 activity, while KT decrease the activity. Generally, the medicines altered rat liver function. Cholesterol levels declined significantly after KBA treatment. White and red blood cell counts, hemoglobin and hematocrit levels were significantly reduced in KT- and KBA-treated rats. Our results suggest that the use of the medicines could have implications for drug interactions and safety, particularly if the medicines are administered with other drugs that interact with these enzymes over prolonged periods. Further investigations are imperative to establish the clinical relevance of these results.

Aetiology and incidence of diarrhoea requiring hospitalisation in children under 5 years of age in 28 low-income and middle-income countries: findings from the Global Pediatric Diarrhea Surveillance network

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Diarrhoea remains a leading cause of child illness and death. Systematically collected and analysed data on the causes of hospitalised diarrhoea in low-income and middle-income countries are needed to prioritise interventions.

We established the Global Pediatric Diarrhoea Surveillance network, in which children under 5 years hospitalised with diarrhoea were enrolled at 33 sentinel surveillance hospitals in 28 low-income and middle-income countries. Randomly selected stool specimens were tested by quantitative PCR for 16 pathogens that cause diarrhoea.

We estimated the burden of diarrhoeal hospitalisations and deaths that could be attributed to specific pathogens. We incorporated country-level incidence to estimate the number of deaths associated with a specific pathogen on a global scale.

During 2017–2018, samples from 5465 of the 29 502 diarrhoea hospitalization cases enrolled were randomly selected and tested. Rotavirus was by far the leading cause of diarrhoea requiring hospitalisation,

being attributed to one-third (33.3%) of cases, followed by *Shigella* (9.7%), norovirus (6.5%) and adenovirus 40/41 (5.5%). Rotavirus was the leading cause of hospitalized diarrhoea in all regions except Central and South America, where the leading causes were *Shigella* (19.2%) and norovirus (22.2%), respectively. The proportion of hospitalisations attributable to rotavirus was approximately 50% lower in sites that had introduced rotavirus vaccine (20.8%) compared with sites that had not (42.1%). Globally, we estimated 208 009 annual rotavirus-attributable deaths, 62 853 *Shigella*-attributable deaths, 36 922 adenovirus 40/41-attributable deaths and 35 914 norovirus-attributable deaths.

Even though the introduction of rotavirus vaccines has produced a substantial impact, rotavirus remained by far the leading cause of diarrhoea hospitalisations in children. Improving the efficacy and coverage of rotavirus vaccination and prioritising interventions against *Shigella*, norovirus and adenovirus could further reduce childhood diarrhoeal illness and death.

SPECIAL RESEARCH HIGHLIGHT



Title: FCGR gene polymorphisms and reservoir size in HIV patients in Ghana

Helena Lamptey¹, Alexander O. Pasternak⁴, Evelyn Y. Bonney¹, James O. Aboagye¹, Anthony T. Boateng^{1,2}, Christopher Z-Y. Abana^{1,2}, Philipp Adams⁴, Aurelija Cicilionyte⁴, Ben Berkhout⁴, Bright Adu¹, George B. Kyei^{1,3}

Affiliation: 1: Noguchi Memorial Institute for Medical Research, College of Health Sciences, University of Ghana, Legon. ²West African Centre for Cell Biology of Infectious Pathogens (WACCBIP), University of Ghana 3: Department of Medicine, Washington University School of Medicine in St Louis, MO, USA.4: Laboratory of Experimental Virology, Amsterdam UMC, Amsterdam, The Netherlands.

During HIV infection the immune system of the host produces antibodies that work together with the immune cells to fight the virus. Depending on receptor type, Fc Gamma Receptors (FcγR) can regulate immunity by causing the host cells to stimulate or prevent the infection. There are differences in the way HIV infection will progress or different patients responds to treatment. One of the factors assumed to be the cause of these differences is FCGR polymorphisms or mutations. Genetic differences that occur in FCGR genes such as Copy Number Variations (CNV) and Single Nucleotide Polymorphisms (SNPs) have been shown to affect how the Fc portion of the antibody is expressed and binds to antigens to induce immune responses. This further results in enhancing antigen presentation and T-cell activation which would lead to the modulation of immune responses to fight infected cells.

Although the burden of HIV in Africa is high, data is lacking on the effect of FCGR polymorphisms on HIV disease progression and antiretroviral therapy (ART) response in African populations. Therefore, it is important to determine the relationships between different FCGR gene polymorphisms and HIV infection progression and the potential impact on reservoir size in the Ghanaian population.

In this pilot study, we used Sanger sequencing to determine the SNPs in FcγRIIIa, FcγRIIa, and FcγRIIb genes in 50 HIV-infected who are ART suppressed. HIV reservoir size was determined by quantifying total HIV DNA (vDNA) and cell-associated unspliced (US) HIV RNA by RT qPCR. Association analysis was performed using three coding SNPs, one per gene (FcγRIIIa-rs396991, FcγRIIa-rs1801274, and FcγRIIb-rs1050501).

We found that the median reservoir size as estimated by total HIV DNA copy number was relatively large, 116 (range, 1 - 5798) copies/million cells. We observed that the median reservoir size was almost 3 times larger in males compared to females who are suppressed. However, we found no significant associations between the FcγR SNPs and reservoir size. Further studies in larger cohorts would be necessary to explore associations between FcγR polymorphisms and HIV reservoir, since the HIV reservoir is a great barrier to HIV cure.

This project was funded by EDCTP-AREF preparatory fellowship supported by the European Union (FCGR-HIV TMA2018PF-2535).



PERSONALITY PROFILE

PROFESSOR JULIANA YARTEY ENOS, MPhil. MPH, DrPH.



Professor Juliana Yartey Enos is an Associate Professor of Public Health in the Department of Epidemiology at NMIMR, and the Department of Population, Family and Reproductive Health at the School of Public Health, the University of Ghana.

Prof. Enos joined the Institute in 1985 as a Research Assistant (on National Service) and was appointed as a regular staff of the Department of Nutrition in 1987, after obtaining her first degree at the University of Ghana and her Secondary education at the Holy Child School, Cape Coast.

In 1988, she was sponsored by the Japan International Cooperation Agency (JICA) to undergo research training at the University of Ryukyus School of Medicine in Okinawa, Japan where she completed her research towards the award of a Master of Philosophy degree in Nutrition at the University of Ghana. She was subsequently appointed as a Research Fellow after obtaining an M. Phil. Degree in Nutrition.

In 1995, she was awarded a scholarship to pursue postgraduate studies at the Johns Hopkins University School of Public Health in Baltimore, Maryland, USA, where she acquired a Master of Public Health (MPH) degree in International Health in 1996, and a Doctor of Public Health (DrPH) degree in International Health in 2002, graduating with honors, and was inducted into the Delta Omega Public Health Honors Society.

Prof. Enos has extensive experience in public health research, policy and practice with progressive responsibility working in academia and with United Nations Agencies (The World Bank, World Health Organization and UNICEF) on reproductive and child and health issues and their interactions with malaria, HIV/AIDS and health systems, providing leadership, policy and programmatic guidance to countries, capacity development and support to UN coordination and joint programming activities.

At the World Bank in Washington DC, she worked with the Health, Nutrition and Population (HNP) Division as a Public Health Specialist and Consultant. During this period,

she had the opportunity of working with the Western Pacific Region on the Samoa Health Systems Strengthening Project of the World Bank; and the Africa Region on their Regional Reproductive Health Strategy. She also conducted an analysis of the Public Health situation in the Middle East and North Africa Region, which served as the background document for the first Regional Public Health Conference in MENA, culminating in a publication titled *Public Health in the Middle East and North Africa: Meeting the Challenges of the 21st Century*, which further culminated in a Regional Public Health Strategy.

In 2003, she joined the Global Malaria Program (GMP) and the Department of Reproductive Health and Research (RHR) of the World Health Organization (WHO) in Geneva, Switzerland and served as the focal point for Malaria in Pregnancy, as well as HIV in Pregnancy, primarily the Prevention of mother-to-child-transmission of HIV, within the Making Pregnancy Safer Department of WHO. In 2008, she served as a Senior Advisor for Health with responsibility for Maternal and Newborn Health within the

Health Section, and also worked with the Adolescent Development and Participation unit of the Policy and Strategy Division of the United Nations Children's Fund (UNICEF) in New York, USA.

Prof Enos has served on several national, regional and global committees and initiatives, notable among which are her roles in the United Nations H4+ (WHO, UNICEF, UNFPA, UNAIDS, World Bank) initiative, aimed at improving the harmonization of UN Agencies and Partners' efforts at improving reproductive and child health, towards the achievement of the Millennium Development Goals. She also served as the Chair of the Roll Back Malaria Partnership Working Group for Malaria in Pregnancy; was an Executive Committee member of the Malaria in Pregnancy Research Consortium and Chair of the Policy Liaison Working group for translating research to policy. At the national level, she has served as a Board Member of the Cape Coast Teaching Hospital in the Central Region of Ghana.

Prof. Enos is currently engaged in research, teaching and support to national and international public health efforts. Her professional and research interests include health systems strengthening and capacity development for improving effectiveness and uptake of public health interventions towards improved health outcomes. She is engaged in the WHO Human Reproduction Program (HRP) Research Capacity Strengthening Program for Sexual and Reproductive Health and Rights (SRHR) in Low- and middle-income countries; and an innovative joint University of Ghana (UG) and London School of Hygiene and Tropical Medicine (LSHTM) Master of Science (MSc.) program for Sexual and Reproductive Health and Rights, both of which have strong Leadership and Mentorship components. She is committed to the development of the next generation of Public Health Professionals and Scientists in Africa and beyond



SPECIAL AWARD FEATURE

NMIMR RECEIVES A 'PRESIDENTIAL AWARD OF HONOUR FOR DISTINGUISHED SERVICE DURING THE COVID-19 PANDEMIC



The Institute, on Tuesday, March 14, 2023, received a Presidential award of 'Honour for Distinguished Service' at the National Honours and Awards 2023 held at the Accra International Conference Centre (AICC).

The award was to recognize the Institute's good works and distinguished output, and the key role played both locally and internationally in the management and control of the novel coronavirus pandemic.

Prof. Dorothy Yeboah-Manu, Director of the Institute received the award on behalf of staff. We dedicate this award to all staff and stakeholders of the Institute for their selfless contribution towards the fight against the COVID-19 virus.

Other Presidential Awards received at the National Honours and Awards, March 14, 2023



From left Mr. Theodore Ahuno, Prof. Dorothy Yeboah-Manu and Dr. John Odoom receiving award on behalf of the Institute



Prof. William K. Ampofo received “Order of the Volta – Companion” award at the National Honours and Awards 2023 in recognition of his outstanding contribution to the fight against COVID-19 as a member of the National COVID-19 Taskforce.



Mr. Jacob Arthur-Quarm received a “Private Sector Fund” award at the National Honours and Awards 2023.

The award was in recognition of his good work as a Laboratory Consultant at the Ga East Infectious Diseases Centre during the COVID-19 pandemic.



HIGHLIGHT OF EVENTS

Introduction to Bacterial Genomics Informatics Workshop - January 23, 2023

NMIMR collaborated with the Department of Veterinary Medicine - University of Cambridge with support from the Africa Research Excellence Fund (AREF) and the Cambridge-Africa ALBORADA Research fund and organized a 5-day intensive training on the introduction to bacterial genomics bioinformatics.



General Fire Training for Departments and Units - January 27, 2023

In collaboration with the Ghana National Fire Service, University of Ghana Station, the Institute organized a 4-day General Fire Training for all staff.

The training was sponsored by the JICA QMS Project and coordinated by the Safety Office and team of the Institute.



NMIMR marked World NTDs Day under the theme, “Investing in NTDs to beat NTDs” on January 30, 2023.

The Institute’s NTDs Research Group of the Department of Parasitology marked World NTDs Day. This group is actively involved in NTD studies in the areas of epidemiology, transmission assessment and control, development and evaluation of diagnostic tools, drug discovery, disease management and surveillance.



Principal and Vice-Chancellor of University of Dundee and his team visited NMIMR on February 6, 2023

Prof. Iain Gillespie, Principal and Vice-Chancellor of the University of Dundee together with a team from Bill & Melinda Gates Foundation, Wellcome Centre, LifeArc and Lgenia visited the Institute to discuss collaborative partnership in the area of Drug Discovery Research.



Lecture Series on Antimicrobial Resistance: The Silent Pandemic and the Urgent Need for New Drugs February 6, 2023

We collaborated with the University of Dundee and the University of Ghana to organize a lecture on the topic “Antimicrobial Resistance: The Silent Pandemic the Urgent Need for New Drugs” to tackle Antimicrobial Resistance.



Mr. Hiroyuki Mase, Director, First Africa Division, Japan Ministry of Foreign Affairs and delegation visit NMIMR – February 13, 2023

A Delegation from the Japan Ministry of Foreign Affairs led by Mr. Hiroyuki Mase, Director, First Africa Division.



Training workshop on Manuscript Writing, February 17, 2023



The National Influenza Center (NIC) at the Institute held a 3-day training workshop on Manuscript Writing.

The objective of the training workshop was to develop draft manuscripts from data generated under the influenza surveillance program.

Special Lecture by Prof. Hideki Hasegawa, Director, WHO Collaborating Centre for Reference and Research on Influenza March 1, 2023



As part of activities marking our Quality Week, Prof. Hideki Hasegawa, gave a detailed presentation on “Development of Influenza and COVID-19 Vaccines” as our Special Lecture.

NMIMR, IFPRI, and Japanese experts collaborate to strengthen School Feeding Program, March 1, 2023



The Noguchi Memorial Institute for Medical Research, in collaboration with the International Food Policy Research Institute (IFPRI) and experts from Japan, on February 28, 2023 launched a project to enhance the nation's school feeding program.

The project, “Protecting vulnerable children from exacerbated food

insecurity crisis through Japan's expertise on school lunch: Intervention in Ghana” with funding from the Government of Japan seeks to protect vulnerable children from the escalating food insecurity through Japan's expertise.



Prof. Hiroshi Kato, Vice President, International University of Japan and a delegation visit NMIMR, March 16, 2023



Prof. Hiroshi Kato, Vice-President, International University of Japan & former Senior Vice President of JICA.

Prof. Kato was accompanied by Mr. Araki Yasumichi, Chief Representative, JICA and Mr. Shizume Takuya, Health Representative, JICA Ghana.

NMIMR welcomes Ms. Suzuki Momoko, the new Chief Representative, JICA March 21, 2023



We welcome Ms. Suzuki Momoko, the new Chief Representative, JICA who has a wealth of experience working with foreign partners.

Yes! We Can End TB: NMIMR Celebrates World TB Day 2023, March 24, 2023



We marked World TB Day in collaboration with the Korle-Bu Teaching Hospital with support from Ussher and Mamprobi Hospitals with tuberculosis (TB) and diabetes screening for residents at Chorkor, Tea Garden and educational outreach at the Evangelical Presbyterian Church School, Mamprobi.

This year's theme "Yes! We Can End TB" aimed to inspire hope and encourage high-level leadership, increased investments, faster uptake of new World Health Organization (WHO) recommendations, and adoption of innovations, accelerated action and multi-sectoral collaboration to combat the TB epidemic.

NMIMR participates in the 6th IAST Exhibition March 29, 2023



The Institute participated in the 6th Industry-Academia Exhibition organized by the Institute of Applied Science and Technology in collaboration with the College of Basic and Applied Sciences at the University of Ghana Recreational Quadrangle to showcase some of our research activities.

The 3-day exhibition formed part of the College of Basic and Applied Sciences Biennial Science and Development Conference which aimed at providing an opportunity to showcase research work and to engage stakeholders for national development.



Time to Deliver Zero Malaria: Invest, Innovate, Implement - NMIMR Celebrates World Malaria Day 2023, April 25, 2023



The Institute hosted World Malaria Day Webinar Series on April 25, 2023



The Webinar Series was on the Topic: “The threat of the new *Anopheles stephensi* in Ghana: What does it mean for our malaria elimination efforts?”

His Excellency Fumio Kishida, Prime Minister of Japan, Visits NMIMR – May 1, 2023





Prof. William K. Ampofo Inaugurated as Board Member and CEO of the National Vaccine Institute – May 12, 2023



Training workshop on Strengthening Microbial Risk Assessment for Food Safety and AMR held at NMIMR – May 25, 2023



Research and Public Health Scientists were trained on Malaria Genomic Epidemiology and Data Analytics – June 5 - 9, 2023



NMIMR-Morehouse School of Medicine launches Mentorship Workshop – June 15, 2023



Prof. Kwadwo Asamoah Kusi presented on ‘Research and Innovation Agenda’, on-air show by Radio Unvers and the Office of Research, Innovation and Development, ORID – June 21, 2023

"RESEARCH AND INNOVATION AGENDA" ON RADIO UNVERS

The Office of Research Innovation and Development (ORID) in collaboration with Radio Unvers present a research dissemination programme dubbed "RESEARCH AND INNOVATION AGENDA" to communicate evidence-based scientific research outcomes to stakeholders (donors, corporate organizations, government, policy makers, the public, communities).

Wednesday, 21st June, 2023
4:00-5:00pm
 Live on Radio Unvers 105.7fm
 MytuneIn.com, Online Radio box, and Radio Garden

Dr. Abubakari Sidick Ahmed
Host

Professor Felix Ankomah Asante
Pro VC - Research, Innovation and Development

Professor Kwadwo Asamoah Kusi
Associate Professor of Immunology, NMIMR

@univers1057fm www.univers.ug.edu.gh Live On:105.7 MHZ

Special Institutional Seminar
 Estee Torok, Senior Program Officer, Surveillance, Date and Epidemiology in Malaria/Global Health, Bill and Melinda Gates Foundation speaks at NMIMR Institutional Seminar – June 26, 2023



PUBLICATIONS

1. Labbé, F., He, Q., Zhan, Q., Tiedje, K.E., Argyropoulos, D.C., Tan, M.H., **Ghansah, A.**, Day, K.P. & Pascual, M. (2023). Neutral vs. non-neutral genetic footprints of *Plasmodium falciparum* multiclonal infections. *PLOS Computational Biology*, 19(1): e1010816. <https://doi.org/10.1371/journal.pcbi.1010816>
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