



**UNIVERSITY
OF GHANA**

**Noguchi Memorial Institute
for Medical Research**
College of Health Sciences

NMIMR NEWSLETTER

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Message from the Chairperson of the

EDITORIAL COMMITTEE



Prof. Regina Appiah-Opong, Chairperson

I am pleased to welcome you to the June 2021 Edition of the NMIMR Newsletter, the official newsletter of the Noguchi Memorial Institute for Medical Research University of Ghana, College of Health Sciences. The Newsletter is intended to provide the general public and our stakeholders' glimpses of the biomedical research that the Institute conducts.

The Institute is committed to contributing to improving the health and well-being of Ghanaians by carrying out focused and important high-quality biomedical research. In this edition, we have chronicled some of NMIMR's contributions

to the national effort in combating COVID-19. We congratulate all the gallant Scientists who have worked tirelessly in testing for the virus, identifying the different types of viruses circulating within the country as well as those who are working hard to identify anti-SARS-CoV-2 natural products and vaccines.

This edition includes research highlights from three (out of nine) departments of the Institute: Bacteriology, Clinical Pathology and Parasitology. Publications of Researchers for the first half of the year 2021 have also been included.

We captured for our Personality profile section, Madam Beatrice Dansoah Krah, the longest serving Administrator who will be retiring from work at the end of the 2020/2021 Academic year. Ayekoo to all 2020/2021 Academic year retirees. May God richly bless you.



Dr. Kwadwo Asamoah Kusi



Dr. Gloria Ivy Mensah



Dr. Charles Quaye



Mrs. Dorcas Opai-Tetteh



Rev. Mrs. Gloria Obeng-Benefo

Editorial

Over the past one and a half years, the phrase ‘COVID-19 pandemic’ has become an integral part of every conversation, planning and action at all levels of human society: individuals, families, communities, organizations, countries, etc. The pandemic continues to plague many nations with the most recent being the devastating infection and death rates presented by the Delta variant, originally identified in India. The national reserves of many nations have been depleted. This includes recognized economically strong nations and many more are on their way into recession or already wading through severe economic woes. The medical and scientific world also continues to struggle with finding and implementing COVID-19 control and prevention measures.

The COVID-19 pandemic has challenged the Noguchi Memorial Institute for Medical Research (NMIMR) in the exercise of all its mandates: Medical Research, Support for Health Services and Training. NMIMR by its strategic setup became the hub for Ghana and West Africa for PCR-testing for COVID-19, training personnel and coordinating the setting up of other testing centers in the integrated laboratory networks under the Ghana COVID-19 response strategy. Consequently, the Institute managed to set up a massive testing platform that is, to date, supporting efforts to control the pandemic.

Amid all these activities, the core focus of the Institute was not lost but rather strengthened. Researchers in the Institute continued to conduct cross-cutting research into various aspects of the COVID-19 pandemic and other infections. COVID-19-related research conducted in the various Departments of NMIMR has led to many publications, reports and conference presentations. In collaboration with colleagues and partners from other institutions in Ghana, West Africa and globally, the NMIMR has published research in the underlisted broad areas of COVID-19:

- Control Programme Challenges in Ghana and Africa
- Epidemiology/Modelling the Spread of the Infection
- Genetics and Molecular Biology
- Efficacy of Chemotherapy
- Computational Drug Development
- Co-morbidities and COVID-19
- Diagnosis of the infection / Rapid Test Kit Development

At the onset of the pandemic and prior to the first SARS-CoV-2 infection case detection in Ghana (confirmation of case performed at the NMIMR), NMIMR researchers had been involved in monitoring global trends and spread of the infection and measures being employed by the various countries to decrease the rate of spread, especially in the African context. These were the periods of lockdowns globally. The findings and recommendations were shared on various platforms including publications in high-impact research information outlets. Some publications on the epidemiology and countrywide management of COVID-19 include:

- Epidemiology of COVID-19 outbreak in Ghana
- Lockdown measures in response to COVID-19 in nine sub-Saharan African Countries

- COVID-19 pandemic: Ten research questions Africa must answer for itself
- Responding to the COVID-19 pandemic in Ghana
- Mathematical modeling of COVID-19 infection dynamics in Ghana: Impact evaluation of integrated government and individual-level interventions

Other areas the NMIMR has been interested in are the effect of COVID-19 and its management on other infections and health challenges such as Antimicrobial Resistance (AMR), HIV, Tuberculosis and Neglected Tropical Diseases (NTDs). Some publications shared with the scientific community, policy makers and programme managers include:

- Minimizing the impact of the triple burden of COVID-19, Tuberculosis and HIV
- Treatment of COVID-19 with Chloroquine: Implications for Malaria chemotherapy using ACTS in disease endemic communities
- Diagnosis of neglected tropical diseases during and after the COVID-19 pandemic.

NMIMR houses one of the most advanced genetic sequencing and bioinformatics platforms in Ghana. Researchers of the Institute have since the initial detection of COVID-19 in Ghana, monitored circulating strains in the country. This monitoring has further been necessitated by the introduction/evolution of new and more virulent strains in many regions of the world. The first such data was shared with the international community in a scientific publication; “Genomic analysis of SARS-CoV-2 reveals local viral evolution in Ghana”. The Institute continues to be the reference laboratory for COVID-19 testing across the country and facilitates the collation and monitoring of strains circulating within the country and those entering through the borders. The Institute has also been involved in research aimed at exploiting active compounds from mainly plant sources for therapeutic purposes, and the use of computational methods and cheminformatics-based identification of potential novel anti-SARS-CoV-2 natural compounds of African origin.

In addition to testing and research on COVID-19, researchers at NMIMR have been engaged in education of different sections of the public on COVID-19 infection management, prevention and vaccination. NMIMR Researchers have had the opportunity to share their opinions on COVID-19 research and vaccines at different scientific fora via radio, television and social media platforms. There have also been opportunities to educate specific groups of the general public including churches, financial institutions and government agencies that have requested for these services, in an effort to get their members to accept vaccines and to help address myths regarding COVID-19 and vaccination that are a serious threat to ending the COVID-19 pandemic.

NMIMR, therefore, continues to play its flagship role as a leader in generating information for national and regional public health activities. On this occasion, we congratulate all researchers and staff who have invested time and effort into research, testing and public engagement on COVID-19.



RESEARCH HIGHLIGHTS

Ethanollic extract of *Nymphaea lotus* L. (Nymphaeaceae) leaves exhibits *in vitro* antioxidant, *in vivo* anti-inflammatory and cytotoxic activities on Jurkat and MCF-7 cancer cell lines

Benoit Banga N'guessan¹, Adwoa Dede Asiamah¹, Nana Kwame Arthur¹, Samuel Frimpong-Manso², Patrick Amoateng¹, Seth Kwabena Amponsah¹, Kennedy Edem Kukuia¹, Joseph Adusei Sarkodie³, Kwabena Frimpong-Manso Opuni², Isaac Julius Asiedu-Gyekye¹ and Regina Appiah-Opong⁴

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Non-communicable diseases (NCDs) including heart diseases, diabetes, chronic respiratory diseases and cancer are increasingly becoming diseases of public health concern that frequently cause mortality and morbidity worldwide. Within sub-Saharan Africa, NCDs account for a significant number of deaths and disabilities. The mechanisms by which NCDs start and develop within the body include heredity, swellings and various sources of stress. Understanding these mechanisms is imperative in discovering new compounds for the management of NCDs such as cancer. Cancer is considered the second leading cause of death worldwide and accounted for about 9.6 million deaths in 2018. About 70% of cancer-related deaths happen in low- and middle-income countries. Breast cancer and leukaemia are common examples of cancers in Ghana.

Nymphaea lotus L. (*N. lotus*) is an aquatic plant that is used traditionally to manage cancer. Nonetheless, there is limited scientific data on the cytotoxic (anticancer), antioxidant and anti-inflammatory properties of the plant. Thus, we investigated the cytotoxic, antioxidant and anti-inflammatory properties of the hydro-ethanolic leaf extract of *N. lotus* (NLE), and its phenolic, flavonoid and elemental constituents. The antioxidant property of NLE was evaluated using the DPPH free radical scavenging, lipid peroxidation, reducing power, total phenolic and flavonoid assays. The anti-inflammatory activity was determined by paw oedema and skin prick tests in Sprague Dawley rats. Erythrocyte sedimentation rate (ESR) was assessed by Westergren method. The X-ray fluorescence method was used to test for macro/micro-elements content, whilst the tetrazolium-based colorimetric (MTT) assay was used to determine cytotoxicity of NLE towards breast (MCF-7) and leukemia (Jurkat) cells.

Appreciable levels of phenolic and flavonoids compounds were present in NLE which were two-fold more potent in scavenging DPPH radicals than butylated hydroxytoluene (BHT). On the other hand, NLE was three- and six-fold less potent in reducing ferric and ferrous ions than ascorbic acid and BHT, respectively. NLE showed a six-fold more potent inhibition of lipid peroxidation than gallic acid. The extract caused a dose-dependent decrease in rat paw oedema sizes and a significant decrease in wheel diameters and ESR. The elemental analysis showed relevant concentrations of magnesium, phosphorus, sulfur, potassium,

manganese, iron, copper, zinc and cadmium ions. The extract was cytotoxic to both the breast cancer and leukaemia cells, with higher selectivity for leukaemia cells. This study has provided evidence that NLE has cancer-cell-specific cytotoxic, antioxidant and anti-inflammatory properties. The phenolic, flavonoid and elemental constituents could partly account for the bioactivities.

Whole Genome Sequencing and Antimicrobial Resistance of *Staphylococcus aureus* from Surgical Site Infections in Ghana

Beverly Egyir¹, Jeannette Bentum^{1,2}, Naiki Attram², Anne Fox², Noah Obeng-Nkrumah³, Labi Appiah-Korang⁴, Eric Behene², Selassie Kumordjie², Clara Yeboah², Bright Agbodzi², Ronald Essah Bentil², Rhodalyn Tagoe¹, Blessing Kofi Adu Tabi¹, Felicia Owusu^{1,2}, Nicholas T. K. D. Dayie⁵, Eric S. Donkor⁵, Josephine Nsaful⁶, Kwaku Asah-Opoku⁷, Edward Nyarko⁸, Edward Asumanu⁸, Anders Rhod Larsen⁹, David M. Wolfe² and Andrew G. Letizia²

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The germ known as *Staphylococcus aureus* (*S. aureus*) is the common cause of infections at portions of the body where surgical operations are performed (surgical site infections, SSI). A variant of this germ is resistant to several antibiotics (multi-drug resistance), and it is known as methicillin resistant *Staphylococcus aureus* (MRSA). This special variant is associated with prolonged hospitalization and subsequently high health care cost; because patients infected with such germs have limited antibiotic options for treatment. Despite the importance of *S. aureus*, information on its occurrence in SSI, and its susceptibility to various antibiotics, is scarce in sub-Saharan Africa. It is important to screen patients with SSI to detect the causative germs and their susceptibility profiles; to help in the selection of suitable treatment.

In this study, we used molecular methods and standard antimicrobial susceptibility testing (AST) to investigate the *S. aureus* germ. Wound swabs or aspirate samples were collected from patients with SSI. The germ was identified by matrix-assisted laser desorption ionization–time of flight mass spectrometry (MALDI-TOF-MS); AST was performed by Kirby-Bauer disk diffusion, and results were interpreted according to the Clinical and Laboratory Standards Institute’s international guideline (2018). Detection of the molecular characteristics (*spa*, *mecA*, and *pvl* genes) was performed by polymerase chain reaction (PCR) and by sequencing the genome of the germ.

In this study, 112 patients with SSI were recruited; *S. aureus* was detected in 13 patients. The isolates were sensitive to co-trimoxazole (92%), clindamycin (77%), and erythromycin (54%) suggesting that these antibiotics are still useful in staphylococcal treatment in Ghana. Multi-drug resistance was detected in 5 (38%) isolates, 4 (31%) of which were MRSA. Of the 13 isolates, 8 (62%) were Panton-Valentine leukocidin (*pvl*)-positive; a toxin which is associated with enhanced virulence.

This study reports, for the first time, a *pvl*-positive ST152-t355 MRSA clone from SSI in Ghana. PVL-positive ST152-MRSA is a pandemic clone that has been associated with community-acquired MRSA in Central Europe and the Balkans. This variant is associated with significant infections in patients without any risk factors and this is of concern and could inform the prognosis of SSI in Ghana.

This study provides insights into the characteristics of the *S. aureus* germ and its multi-drug resistant variant (MRSA) among patients with SSI. The use of whole genome sequencing provided extensive information on the germ. The finding of multi-drug-resistant *S. aureus* clones, including the pandemic pvl-positive ST152-t355 MRSA suggests that continuous surveillance is required to monitor the spread and resistance trends of these and other clones in hospital settings in Ghana, and within the West African region.

Species composition and risk of transmission of some *Aedes*-borne arboviruses in some sites in Northern Ghana.

Joannitta Joannides^{1,2}, Mawuli Dzodzomenyo², Faustus Azerigyik¹, Eudocia Esinam Agbosu³, Deborah Pratt³, Joseph Harold Nyarko Osei¹, Rebecca Pwalia¹, Godwin Kwame Amlalo¹, Maxwell Appawu¹, Hayashi Takashi^{1,4}, Shiroh Iwanaga⁵, Andrea Buchwald⁶, Rosemary Rochford⁷, Daniel Boakye¹, Kwadwo Koram⁸, Kofi Bonney³, Samuel Dadzie¹

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Aedes-borne viral diseases, mainly Yellow Fever (YF), Dengue (DEN), Zika (ZIK) and Chikungunya (CHK), have contributed to many deaths in the world especially in Africa. There have been major outbreaks of these diseases in West Africa. Although, YF outbreaks have occurred in Ghana over the years, no outbreak of DEN, ZIK and CHK has been recorded. However, the risk of outbreak is high due to its proximity to West African countries where outbreaks have been recently recorded. This study surveyed the mosquito fauna to assess the risk of transmission of Yellow fever (YFV), Dengue (DENV), Chikungunya (CHKV) and Zika (ZIKV) viruses in Larabanga and Mole Game Reserve areas in Northern Ghana. The immature and adult stages of *Aedes* mosquitoes were collected from Larabanga and Mole Game Reserve area. A total of 1,930 *Aedes* mosquitoes were collected during the rainy season and morphologically identified. Of these, 1,915 (99.22%) were *Aedes aegypti* and 15 (0.22%) were *Aedes vittatus*. During the dry season, 27 *Ae. aegypti* mosquitoes were collected. A total of 415 *Ae. aegypti* mosquitoes were molecularly identified to subspecies level, of which *Ae. (Ae) aegypti aegypti* was the predominant subspecies. Both *Ae. aegypti aegypti* and *Ae. aegypti formosus* exist in sympatry in the area. All *Aedes* pools (75) were negative for DENV, ZIKV and CHKV when examined by RT-PCR. Three Larval indices, namely House Index, HI (percentage of houses positive for *Aedes* larvae or pupae), Container Index, CI (the percentage of containers positive for *Aedes* larvae or pupae) and Breteau Index, BI (number of positive containers per 100 houses inspected) were assessed as a measure for risk of transmission in the study area. The HI, CI and BI for both sites were as follows; Mole Game Reserve (HI, 42.1%, CI, 23.5% and BI, 100 for rainy season and 0 for all indices for dry season) and Larabanga (39%, 15.5% and 61 for rainy season and 2.3%, 1.3% and 2.3 for dry season). The spatial distribution of *Aedes* breeding sites in both areas indicated that *Aedes* larvae were breeding in areas with proximity to humans. Lorry tires were the main source of *Aedes* larvae in all the study areas. Information about the species composition and the potential role of *Aedes* mosquitoes in future outbreaks of the diseases that they transmit is needed to design efficient surveillance and vector control tools.

PERSONALITY PROFILE



Madam Beatrice Dansoah Krah

Madam Beatrice Dansoah Krah is currently the Chief Administrative Assistant at NMIMR. Ms. Krah started working in the Archaeology Department of the University of Ghana, Legon as a Grade 1 Clerk and later joined the NMIMR in the Year 1989. Over the past thirty-nine years Madam Krah progressed steadily in her career rising to a Chief Administrative Assistant position.

She got her middle school certificate in the year 1975, enrolled in the National Vocational Training Institute in 1981, and later got her GCE O Level certificate in December 1990. In June 2000, she enrolled at the National Coordinating Committee for Technical and Vocational Education and Training. She obtained a National Higher Diploma in Management Studies from the Accra Polytechnic in November 2006. She later acquired certificates in Events Management and Customer Care respectively, in December 2009 from the Institute of Journalism, Accra. In June 2008, she graduated with a BSc Administration in Management Studies from the Central University College. After graduation she undertook certificate courses in Public Relations ,Advertising and Marketing, Sponsorship, Events Management and Customer Care at Institute of Journalism, Accra in 2009.

Madam Beatrice Krah directs and oversees the general running and management of the NMIMR administration. She heads the Registry Office that handles the maintenance and custody of all current and non-current records, handles all mails and processes all documents coming to the administration. She is also in charge of supervising and training staff. In the absence of the Institute Administrator, Madam Krah acts in his stead.

Madam Krah, fondly called Aunty Bea by all, has played a significant role in the growth of NMIMR and has made several immense contributions. These include, being at the forefront of the team that appealed to the Ministry of Energy for a permit to get a solar panel installed for the Institute. She is always at the forefront during fundraising and seeking of sponsorships for various events of the Institute. She is in charge of planning, organizing and coordinating events and seminars at the Institute. Aunty Bea has been very instrumental in the national fight against COVID-19. She assisted in getting staff of the Ministries, Ghana Police Service, Ghana National Fire Service, Parliamentarians and the Ghana Prison Service for sampling and testing for COVID-19. Her hard work and dedication have earned her several certificates of participation and appreciation and have also helped shape and instil good work ethics and set many of her trainees on the path of hard work and discipline.



Madam Beatrice Krah

AWARDS SEDGMENT



Dr. Prince Asare from the Bacteriology Department won the Vice Chancellor's (VC) Award for the Outstanding Doctoral Dissertation in the Sciences on 23rd April 2021. The award which was given during the University of Ghana VC's Academic Prizes ceremony, was to recognize outstanding students at the University in various categories during the 2019/2020 Academic year.

Dr. Asare was enrolled into a PhD programme at the Department of Biochemistry, Cell and Molecular Biology as part of the second cohort of PhD students in the West African Centre for Cell Biology of Infectious Pathogens (WACCBIP) programme in 2015. He completed, submitted and defended his thesis title "Molecular Epidemiology of Mycobacterium tuberculosis complex in Ghana: understanding transmission dynamics" during the 2019/2020 academic year. and He has produced four (4) peer-reviewed publications from his thesis. Dr. Asare performed his research work at the Institute with some support from SwissTPH.

Special Commendation



Mr. Justice Kumi (MPhil), a Chief Research Assistant at the Department of Clinical Pathology was commended as a member of the COVID-19 testing team at the NMIMR by the General Manager of FanMilk Ghana & West Africa. According to the Manager, his attention was drawn to Mr. Kumi because he demonstrated a high sense of professionalism, passion, hard work, patience and thoroughness in the execution of his work.

Grant for research on “Genomics of host-pathogen interactions underlying *Streptococcus pneumoniae* infection in the Ghanaian elderly population”

- Investigators: Augustina Frimpong, Beverly Egyir, Eliza Mari Kwesi-Maliepaard, Kwadwo Asamoah Kusi
- Funder: Prevent Antimicrobial Resistance (PAR) foundation
- Link to award: <https://parfoundation.org/grantees-2021-funding-for-projects-in-ghana-portugal-and-sweden/>

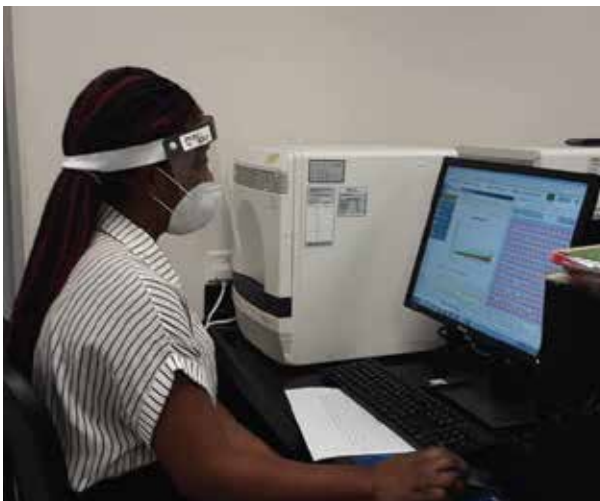


DONATIONS

Nippon Paint Holdings Co. Ltd Donates to Noguchi

Nippon Paint Holdings Co., Ltd. has donated 500 Face Shields to the Institute to support its COVID-19 testing and research activities. The items were received at the Noguchi Stores by Dr. Gloria Ivy Mensah and Ms. Comfort Apotchie, and are already in use at the Advanced Research laboratories of NMIMR.

Nippon paint has since 2020 been collaborating with NMIMR on testing for the bactericidal and virucidal activity of its Water-based Paint with photocatalytic properties developed to inactivate bacteria and viruses (including SARS-CoV-2) on Coated Surfaces.



Ghana Red Cross Society supports the Institute with PPEs

The Ghana Red Cross Society, in partnership with Supreme Master Ching Hai International, donated PPEs which consisted of nose masks, hand sanitizers and liquid soaps to the Institute and the University. The donations, according to Mr. Ernest P. Nyame-Annan, who is the National Primary Care Officer for the Society, is to support the Institute in the fight against COVID-19.

Mr. William Morton, the Ghana contact person for Supreme Master Ching Hai International, also said that the donation is to show their love for the society in which they operate especially in a difficult time like this. He further encouraged members of the society to stand in solidarity and help support the fight against the COVID-19.

Professor Abraham Anang, Director of the Institute who received the donation on behalf of the Institute, thanked them for their generosity and partnership with the Institute in the fight against the pandemic.

The Director said that “Today’s world can only be successful when certain things that humanity already know become a reality”. He added that their gesture was in line with the Sustainable Development Goal number 17, which is “Partnership for the goals”.



Healthcare Federation of Ghana installs SchuyLab LIS system at NMIMR

The Healthcare Federation of Ghana (‘HFG’) successfully installed the SchuyLab digital Laboratory Information System (LIS) at the Department of Virology Laboratories of the Institute on Tuesday 15th February 2021. The SchuyLab LIS will help expand COVID-19 testing capacity at Noguchi by over 30% and increase the speed of delivering test results. The new LIS will also strengthen the traceability, efficiency, confidentiality, archiving and retrieval of results.

The installation at the Noguchi Virology Laboratories is the first phase of the “LIS for Ghana” project, and is planned to be followed this year (2021) by a similar installation at the National Public Health Reference Laboratory, Accra (‘NPHRL’). The “LIS for Ghana” project come with a total cost of over GHS 600,000 (over US\$100,000).

Dr. Rosemary Keatley, Managing Director of Medlab Services Ghana Ltd is the lead for the project. Her desire isto ensure that there are no more delays in getting results from the testing centres in order to control the pandemic. She said that the project will have a major multiplier effect by building sustainable capacity to manage the COVID-19 pandemic on behalf of the people of Ghana.

SchuyLab was developed by the US software developer Schuyler House Inc, a CompuGroup Medical company, based in California, and has been installed in over 1,000 laboratories worldwide, including the US, Canada, the Caribbean, East Asia and Africa. The system has been in use at Synlab Ghana Ltd (formerly Medlab Ghana Ltd) since 2011.

The LIS project was supported by Private donors which included the Ghana COVID-19 Private Sector Fund, Fidelity Bank Ghana Ltd, Sir Sam Jonah, the Leibinger family of Germany, Medlab Services Ghana Ltd, Schuyler House Inc. and some anonymous donors in Switzerland.



The Chief Justice and Delegation from the funders together with some staff of the Institute

The Department of Clinical Pathology receives an IKA RV8 Rotary evaporator



Director of NMIMR (left) and Professor Regina Appiah-Opong, Head Department of Clinical Pathology (right)

The Department of Clinical Pathology received an IKA RV8 Rotary evaporator with an Ecochyll S chiller from Mr. George M. Adjabeng, co-founder and CEO of Ecodysd (Maryland, USA), producer of the chiller. This was a donation in support of anti-COVID-19 and other drug discovery efforts of the Institute. The Director received the equipment on behalf of the Institute and expressed his appreciation to Mr. Adjabeng and his company for the kind donation.

The KH Medical Co Ltd, Republic of Korea, donated a RADI PCR 96 real-time PCR instrument, RADI PREP PLUS automated nucleic acid extractor with proprietary extraction kits, RADI COVID-19 qPCR Detection kits, and RADI COVID Antigen rapid test kits to the Department of Electron Microscopy and Histopathology on February 4, 2021. The Items were received by the Director of the Institute, who thanked the company for the kind gesture.



L-R: Mr. Kwabena Adu (Country Rep, KH Medical), Mr. Frederick Asamoah (staff), Prof. Abraham Anang (Director, NMIMR), Mr. Collins Kissi Bamfo (staff), Dr. Susan Damanka (Head of Department) and Prof. George Armah.

Other Donations

- Dr. Peter Ntiamoah, a member of CANCER GENOME PROJECT GHANA CONSORTIUM on February 9, 2021 donated a refurbished microtome to the Institute.
- JICA: donated the following items: 20 universal viral transport combo kits 3ml each in a pack of 50, 20 microtube screw cap 20ml, 50 FFP3 face mask, 32 surgical non-sterile disposable gowns, 20 Microamp optical tubes and caps
- NILEX Co Ltd donated the following items: 4 Veri-Q RNA extractors, 1 Genolution RNA extractor

EVENTS

IN PICTURES

Workshop on Writing of Standard Operating Procedures and Presentation of Research Articles



Reaching The Zero Malaria Target - Celebrating World Malaria Day



The event was organized by the Immunology Department with support from Epidemiology and Parasitology Departments

TB research teams within the Department of Bacteriology funded by Afrique one-ASPIRE and EDCTP in collaboration with the National TB Control Program(NTP) organised a series of activities to raise awareness about TB . This was to commemorate the World TB day 2021.



The Director for Finance Directorate, University of Ghana, Mrs. Bernice B. Agudu paid a courtesy call on the Director and Staff of the Institute.



NMIMR collaborated with the African Society for Laboratory Medicine QWArS team



The workshop was a 10-day (14-25th June 2021) theoretical and hands-on training for microbiology laboratory staff from Ghana Health Service and the Veterinary Services Directorate.



Conferences and Seminars Attended

Conferences and Seminars

- Professor Regina Appiah-Opong participated in Systematics effects of cancer: Cancer genome and beyond courses held online and made an oral presentation on the topic “Xenobiotic metabolism and carcinogenesis” on April 6, 2021. January – April 2021.
- Professor Regina Appiah-Opong participated in an online Scientific manuscript writing workshop organized by the Ghana Science Association and served as a Facilitator. March 30, 2021.
- Professor Regina Appiah-Opong, Dr. Kwabena Owusu Danquah, Ms. Abigail Aning and Mr. Ebenezer Ofori-Attah participated in the China-Ghana Seminars and training on the research and development of medicinal plants organized by Tianjin University for Traditional Chinese Medicine and University of Ghana. The meetings were held online. May 26- 27, 2021.
- Dr. Beverly Egyir attended a Sequencing and Bioinformatics workshop under the theme, “Introduction to sequencing technologies” in Accra 20th May, 2021

NMIMR PUBLICATIONS - 2021

1. The Incidence, Intensity, and Risk Factors for Soil Transmissible Helminthes Infections among Waste Handlers in a Large Coastal Periurban Settlement in Southern Ghana. James-Paul Kretchy, Mawuli Dzodzomenyo, Irene Ayi, Duah Dwomoh, Kofi Agyabeng, Flemming Konradsen, Anders Dalsgaard. J Environ Public Health. 2021; 5205793. doi: 10.1155/2021/5205793 PMID: PMC7949191

2. *Plasmodium falciparum* Malaria Parasites in Ghana Show Signatures of Balancing Selection at Artemisinin Resistance Predisposing Background Genes. Kwesi Z Tandoh, Lucas Amenga-Etego, Neils B Quashie, Gordon Awandare, Michael Wilson, Nancy O Duah-Quashie. Evol Bioinform Online. 2021; 17: 1176934321999640. doi: 10.1177/1176934321999640 PMID: PMC7940735

3. Whole Genome Sequencing and Antimicrobial Resistance of *Staphylococcus aureus* from Surgical Site Infections in Ghana. Beverly Egyir, Jeannette Bentum, Naiki Attram, Anne Fox, Noah Obeng-Nkrumah, Labi Appiah-Korang, Eric Behene, Selassie Kumordjie, Clara Yeboah, Bright Agbodzi, Ronald Essah Bentil, Rhodalyn Tagoe, Blessing Kofi Adu Tabi, Felicia Owusu, Nicholas T. K. D. Dayie, Eric S. Donkor, Josephine Nsafu, Kwaku Asah-Opoku, Edward Nyarko, Edward Asumanu, Anders Rhod Larsen, David M. Wolfe, Andrew G. Letizia. Pathogens. 2021 10(2): 196. doi: 10.3390/pathogens10020196 PMID: PMC7918159

4. Ex vivo Sensitivity Profile of *Plasmodium falciparum* Clinical Isolates to a Panel of Antimalarial Drugs in Ghana 13 Years After National Policy Change. Michael Fokuo Ofori, Emma E Kploanyi, Benedicta A Mensah, Emmanuel K Dickson, Eric Kyei-Baafour, Sampson Gyabaa, Mary Tetteh, Kwadwo A Koram, Benjamin K Abuaku, Anita Ghansah. Infect Drug Resist. 2021; 14: 267–276. doi: 10.2147/IDR.S295277 PMID: PMC7850388

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