



Photo 1: Staff from NIPH visits Noguchi Memorial Institute of Medical Research, Photos 2-4: the training of trainers consisted of lectures, discussions groups and case study workshops.

Bridging the Gap: Applied Molecular Epidemiology of Infectious Diseases in Ghana

The University of Ghana's School of Public Health and NIPH have, together with governmental agencies in Ghana, joined forces to bridge the gap between molecular biology and field epidemiology in Ghana. The goal? To capitalise on the investments made in laboratory capacity in Ghana following the Covid-19 pandemic by building skills to better integrate molecular epidemiology into outbreak management and surveillance systems.

Translating ideas into action

NIPH has collaborated with partners in Ghana for a long time. In 2022, [when colleagues from Ghana Field Epidemiology and Laboratory Training Program \(GFELT\) visited NIPH](#), we came up with an exciting idea. Could it be possible to bring together the strands of molecular biology and field epidemiology in Ghana through a practical course in applied molecular epidemiology targeting public health officials and researchers? This idea has now evolved into an innovative project under the [Norad Building Stronger Public Health Systems and Institutions programme](#). Together with our partners, we are well underway to build Ghana's first ever permanent course in applied molecular epidemiology for infectious disease, which is scheduled to be launched this autumn.

Over the last few months, a team from NIPH's Department of Infection Control and Preparedness has, together with University of Ghana, worked to develop the content for the short course. In February, NIPH travelled to Ghana to deliver a week-long training-of-trainers (ToT) program to partners in Ghana, covering the following topics:

1. Introduction to Molecular Epidemiology
2. Genetic Variability and Emerging Infectious Diseases
3. Molecular Methods for Genotyping
4. Analysis and Interpretation of Genotypic Data
5. Application of Genotypic Data for Surveillance
6. Application of Genotypic Data in Outbreaks
7. Communication of Findings
8. Public Health Response and Actions
9. Case Study: Using Whole Genome Sequencing in a Foodborne Disease Outbreak
10. Case Study: Using Whole Genome Sequencing During a Respiratory Disease Outbreak

The road ahead: Integrating the short course into Ghana's Field Epidemiology and Laboratory Training Programme (GFELTP)

The ToT brought together key representatives from relevant institutions executing public health functions in Ghana and bridged participants' contextual knowledge with new practical skills. However, the participants will soon take on an even more critical role. In the next phase of the project, they will pilot the short course to current and in-training public health officers at district, regional, and national levels in Ghana before converting the course into an integrated module of Ghana's FELT.

Towards a stronger public health workforce

By training field epidemiologists, veterinary epidemiologists, and public health laboratory scientists, the project aims to strengthen Ghana's health system from within. The course will be a fusion of molecular biology and traditional epidemiology, grounded in practical and operational needs in Ghana, covering all the steps of outbreak management with an outlook towards future application to surveillance systems. The project allows for direct learning and knowledge exchange between the involved institutions and between Norway and Ghana. Together with our partners, we envision a workforce who applies integrated data in the surveillance, detection, and management of infectious diseases and contributes to regional and global networks to strengthen health security in Ghana and beyond.



Partners participating or contributing to the training og trainers programme for the short course in applied molecular epidemiology, March 2024. Institutions represented in the photo: University of Ghana School of Public Health, Ghana Health Service, Noguchi Memorial Institute of Medical Research, The National Public Health Reference Laboratory, West African Centre for Cell Biology of Infectious Pathogens, Accra Veterinary Laboratory and Norwegian Institute of Public Health

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