



Fogarty Global Health Training Program

A Consortium of Harvard University, Boston University, Northwestern University, and University of New Mexico

HBNU FOGARTY GLOBAL HEALTH TRAINING PROGRAM

Spring 2021 Newsletter

About the HBNU Fogarty Global Health Program

The HBNU Fogarty Global Health Training Program provides mentored research opportunities designed to train and prepare a new cadre of health professionals in the United States (U.S.) and low and middle-income countries (LMICs) for careers in research, health services, and academia. The Program aims to enhance the trainees' ability to independently plan, implement, and assess innovative clinical or operations research addressing major global health challenges. Fellows in the Program spend at least 11 months at one of HBNU's 22 collaborating research sites across 16 countries in Africa, Asia, and South America. For more information, please visit [the HBNU website](#).

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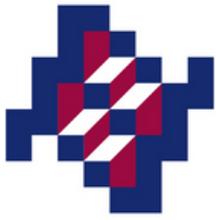
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2020-2021 Cohort Update



2020-2021 Cohort

The 2020-2021 cohort of HBNU trainees has made great progress on their research projects. This cohort has faced unprecedented challenges during their fellowship year due to the COVID-19 pandemic. The LMIC fellows are diligently pursuing their research, despite in-country challenges, while the majority of US trainees await confirmation of travel. Thus far, two US trainees have been able to travel to their sites in Zambia and Botswana. The remaining US trainees are working closely with their site partners to advance their research from afar. Despite the unpredictable restrictions casued by the COVID-19 pandemic, the trainees have adopted creative methods to advance their research projects.



Instituto Nacional
de Salud Pública

The HBNU Fogarty Fellowship Program is excited to introduce its newest partner site, Instituto Nacional de Salud Pública, in Mexico. Instituto Nacional de Salud Pública (INSP) is an academic institution whose central commitment to Mexican society is to offer research results to relevant public health problems to prevent and control diseases, and train health professionals to help promote healthy

living conditions among various groups of the population. As a leader in integral public health research and teaching in Latin America, the INSP strives to generate precise and current reference knowledge for the formulation, implementation and evaluation of health research policy on national and regional levels.

2020-2021 Fellow Spotlight

Megan Harper, MD/MPH Candidate

As an HBNU Fogarty fellow, I am working with Right to Care in Zambia and Boston University in the USA. My research is under the Zambia Infant Cohort Study (ZICS), a prospective observational birth cohort study seeking to determine the infectious morbidity and mortality in HIV-exposed uninfected infants compared to HIV-unexposed uninfected infants. Specifically, my project focuses on characterizing congenital cytomegalovirus (cCMV) and its common sequela, sensorineural hearing loss, in ZICS infants.

As with all of the Fogarty 2020-2021 cohort, my research was impacted by COVID-19. Due to travel restrictions, I was unable to go to Zambia for the first half of the program. Luckily, we work with an amazing and dedicated team, and while I was not in person, we continued to collect CMV status on ZICS infants and worked to construct a hearing screening protocol that we could implement once I arrived. With extended time in the US, I was able to focus on other areas within ZICS, including streamlining our process to obtain and record hospitalization instances and a preliminary exploration of the relationship between birth outcomes and HIV-exposure status in ZICS infants.



Current HBNU Fellow, Megan Harper



Two ZICS team members entering case report forms

With the help of my Boston University mentors and the HBNU team, I put together a COVID-19 travel plan in order to safely arrive and work in Zambia during the pandemic. Once in Zambia, we hit the ground running. Using otoacoustic emissions (OAE), newborns in the ZICS study are being screened for hearing loss, and infants who do not pass the screening will be referred for further audiologic evaluation. Though ENT and audiology services are limited in Zambia, the Ministry of Health has made recent investments in audiology training, school screening, and referral processes. Thus, I have been able to partner with Beit Cure Hospital and the University Teaching Hospital (UTH) Audiology Centre of Excellence to provide diagnostic and interventional services to ZICS infants who do not pass OAE screening. In Zambia the eventual goal is to set up a newborn hearing screening program for all infants born at UTH. With this work, I have learned a great deal about how to set up screening and referral services in resource-limited contexts through utilizing and strengthening existing programs. Despite the many challenges 2020 brought, I feel fortunate to have worked with devoted partners and team members and look forward to what the rest of the year will bring.

Kaelo Seatla, MBBS

Working at one of the best research institutions in Africa, the Botswana-Harvard AIDS Institute Partnership for Research and Education (BHP), has exposed me to brilliant, supportive mentors working on HIV-related research. Botswana has a high HIV prevalence of about 20% and has been a leader in responding to the epidemic. Botswana was the first country in Africa to provide free antiretroviral drugs (ARVs) to HIV diagnosed individuals, and the first country to introduce dolutegravir (DTG) based regimens to its HIV treatment programme. DTG is a potent anti-HIV drug with a high barrier to resistance and better safety profile and is recommended as the preferred first line anti-HIV anchor drug by the world health organisation (WHO). However, our group at BHP has shown that resistance to DTG can occur especially amongst treatment experienced patients experiencing virological failure. Furthermore, determining for resistance to DTG is very expensive and out-of-reach of many low- and middle-income countries (LMICs) such as Botswana.

As part of my PhD work, we have developed a low-cost home brew assay that determines for DTG drug resistance mutations. The in-house assay performs quite well, with similar performance characteristics as the commercial assays, but at about 75% less of the costs of the commercial assay. For my HBNU Fogarty fellowship, we aim to build on this work and perform a WHO validation of our assay to make it available for routine use in Botswana and other LMICs. We believe this work will increase access to low-cost drug resistance testing in LMICs and ensure that HIV diagnosed individuals are afforded a right to have drug resistance testing done if their virus is not suppressed while on DTG based regimens.

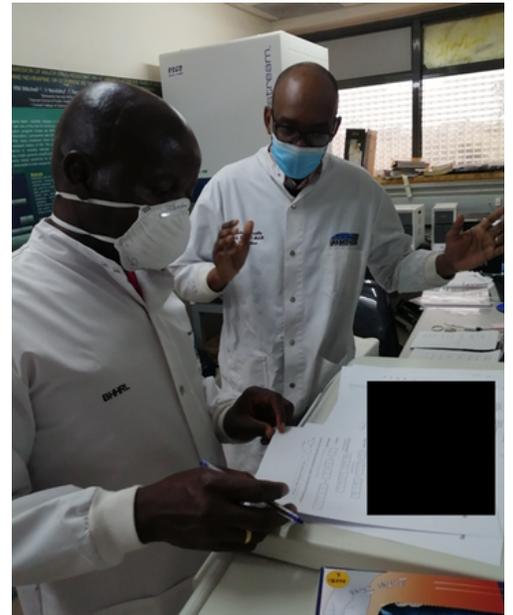


Figure 1. Dr Simani Gaseitsiwe supervising lab work



Figure 2. Dr Seatla at a field site after sensitizing stakeholders on his homebrew assay

We have obtained access to WHO recommended Virology Quality Assurance Program (VQA) plasma panels from Rush University representing various HIV subtypes and have begun experimental laboratory work, which is shown in Figure 1. We have also started field work by sensitizing stakeholders from the Botswana Ministry of Health and Wellness and various health facilities about the availability of our in-house assay, as shown in Figure 2.

Due to travel restrictions and the closure of borders related to the ongoing COVID-19 pandemic, we experienced a delay in receiving some of the laboratory reagents. This challenge has since been overcome with expert guidance from my mentors.

I am on track to successfully completing my fellowship and would like to express my sincere gratitude to my mentors, Drs. Simani Gaseitsiwe, Shahin Lockman, HBNU alumnus Sikhulile Moyo and my Supervisor at the University of Botswana-Prof Ishmael Kasvosve.

Samuel Anyona Bonuke, PhD, MSc

I completed my HBNU fellowship as part of the 2018-2019 cohort. I am currently a faculty member at the Department of Medical Biochemistry, School of Medicine, Maseno University, Maseno, Kenya and a post-doctoral fellow under the career development (K43) grant award. My research focuses on pediatric populations living under intense malaria transmission in western Kenya, a region holoendemic for *Plasmodium falciparum*. Previous studies over the last 18 years in immune-naïve children in this region, spearheaded by HBNU Co-PI Dr. Douglas J. Perkins, identified novel innate immunity pathways that mediate Severe Malaria Anemia (SMA; hemoglobin <5.0g/dL) pathogenesis.



As an HBNU fellow, I investigated a novel host immune response signaling pathway not previously explored in malaria: the Ubiquitin Proteasome System (UPS), a primary pathway for intracellular protein degradation and regulation of cellular processes (protein homeostasis) in both prokaryotes and eukaryotes. A series of experiments from these studies revealed that a proportion of UPS genes investigated were differentially regulated in children with SMA, suggesting an active involvement of the UPS in the pathogenesis of SMA.

The research conducted during the HBNU fellowship formed the foundation for my application of a competitive K43 grant, an Emerging Global Leader Award (Independent Clinical Trial Not Allowed). This NIH/FIC application was successful, and a 4-year (2020-2024) award was granted (PI: Anyona, 1K43TW011581-01). The K43 studies will investigate dysregulated Human UPS in Pediatric SMA (Hb<5.0g/dL), further building on the studies conducted under the HBNU consortium training.

My long-term goal is to be an independent investigator in pediatric infectious disease research, with a focus on *falciparum* malaria, as it causes overwhelming morbidity and mortality in holoendemic regions, including my home base in Kenya. My career progress so far has been made possible through the generous funding from the Fogarty International Center that supported my training with world-class investigators in a GID D43 Training Program and a fellowship in the HBNU Consortium. Furthermore, ongoing collaborations with world experts on genomics and bioinformatics from the Los Alamos National Laboratory (LANL) continue to build my knowledge base for supporting my career development. My ultimate goal is to submit an RO1 application to NIH, one of the key deliverables under the K43 grant training.

Andrew Kim, NIH Fogarty Profile

2019-2020 HBNU fellow, Andrew Kim, was recently featured in the NIH Fogarty International Center Newsletter for his work in South Africa. We congratulate Andrew for his outstanding work. An excerpt from the newsletter can be found below.

Profile: Dr Andrew Kim studies the impact of apartheid-based prenatal stress and COVID-19 in South Africa

During the first six weeks of South Africa's pandemic lockdown, Fogarty Fellow Dr. Andrew Kim and his research team surveyed 220 Soweto adults about the mental health impacts of COVID-19. Respondents who perceived themselves at high risk of contracting the new coronavirus experienced more severe symptoms of depression, while one in four reported increased anxiety, fear of infection or "thinking too much," the researchers found. [Continue reading here.](#)



Recent Publications from HBNU Fellows and Alumni

Agarwal A, Mohanan PP, Kondal D, et al. Effect of a quality improvement intervention for acute heart failure in South India: An interrupted time series study [published online ahead of print, 2020 Dec 24]. *Int J Cardiol.* 2020;S0167-5273(20)34296-0.

Negussie AS, **Tadesse AW**. Predictors of undesirable treatment outcomes of severe acute malnutrition among inpatient children in Addis Ababa, Ethiopia: a retrospective cohort study. *BMC Public Health.* 2020;20(1):1532. Published 2020 Oct 9.

Diakite B, Kassogue Y, Dolo G, et al. p.Arg72Pro polymorphism of P53 and breast cancer risk: a meta-analysis of case-control studies. *BMC Med Genet.* 2020;21(1):206. Published 2020 Oct 19.

Okunade KS, John-Olabode S, Akinsola OJ, Akinajo O, Akanmu SA, Kanki PJ. Effects of selenium supplementation on pregnancy outcome and disease progression in HIV-infected pregnant women in Lagos, Nigeria: Study protocol for a randomised, double-blind, placebo-controlled trial. *Medicine (Baltimore).* 2019;98(3):e12735.

Oladimeji O, Adepoju V, Anyiam FE, et al. Treatment outcomes of drug susceptible Tuberculosis in private health facilities in Lagos, South-West Nigeria. *PLoS One.* 2021;16(1):e0244581. Published 2021 Jan 20.

Reynolds RA, Bhebhe A, **Garcia RM**, et al. Pediatric hydrocephalus outcomes in Lusaka, Zambia [published online ahead of print, 2020 Sep 11]. *J Neurosurg Pediatr.* 2020;1-12.

Reynolds RA, Bhebhe A, **Garcia RM**, et al. Surgical Outcomes after Myelomeningocele Repair in Lusaka, Zambia. *World Neurosurg.* 2021;145:e332-e339.

Additional Articles:

Year 4 fellow, Parsa Erfani's work on COVID-19 and COVID-19 vaccinations was recently published in an article in Al Jazeera called "[A call for global vaccine justice](#)".

Niquen-Jimenez M, Wishart D, **Garcia RM**, et al. A Bibliographic Analysis of the Most Cited Articles in Global Neurosurgery. *World Neurosurg.* 2020;144:e195-e203.

Shlobin NA, Kedda J, Wishart D, **Garcia RM**, Rosseau G. Surgical Management of Chronic Subdural Hematoma in Older Adults: A Systematic Review [published online ahead of print, 2020 Nov 21]. *J Gerontol A Biol Sci Med Sci.* 2020;glaa293.

Blanc J, **Eugene D, Louis EF**, et al. Mental Health Among Children Older than 10 Years Exposed to the Haiti 2010 Earthquake: a Critical Review. *Curr Psychiatry Rep.* 2020;22(11):57. Published 2020 Sep 2.

Kim AW. Promoting mental health in community and research settings during COVID-19: Perspectives and experiences from Soweto, South Africa. *Am J Hum Biol.* 2020;32(5):e23509.

Kim AW, Nyengerai T, Mendenhall E. Evaluating the Mental Health Impacts of the COVID-19 Pandemic in Urban South Africa: Perceived Risk of COVID-19 Infection and Childhood Trauma Predict Adult Depressive Symptoms. Preprint. medRxiv. 2020;2020.06.13.20130120. Published 2020 Jun 16.

Chitneni P, Matthews LT. The Other U=U. Untested and Untreated genital tract inflammation in people living with and exposed to HIV [published online ahead of print, 2021 Feb 10]. *J Infect Dis.* 2021;jiab074.

Diehl TM, Abbott DE. Association of Medicaid Expansion with Diagnosis and Management of Colon Cancer. *J Am Coll Surg.* 2021;232(2):156-158.

Incoming Cohort Update

The HBNU Fogarty Global Health Program was fortunate to receive 45 applications for the 2021-2022 fellowship cohort. We have selected 17 candidates for our incoming cohort. It is composed of 10 US fellows and seven LMIC fellows, who proposed to conduct their research in the following countries: South Africa, Uganda, Peru, India, Mali, Tanzania, Nigeria, Mexico, Thailand, Rwanda, Ghana, Botswana and Zambia. Nine of the fellows' research projects are related to HIV/AIDS, two are related to mental health, and six are non-HIV related. We are also seeking additional funding to cover candidates from our alternate list to join the cohort. Please stay tuned for our Fall 2021 newsletter, in which we will be introducing our newest cohort.



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 <https://sites.sph.harvard.edu/global-health-research-partnership/>

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