

MHRP EXCHANGE

SPRING 2025

NEWS FROM THE U.S. MILITARY HIV RESEARCH PROGRAM
AT THE WALTER REED ARMY INSTITUTE OF RESEARCH

MHRP Launches First HIV Threat Assessment Study in Country of Georgia

MHRP has launched its first study in the Eastern European country of Georgia to characterize HIV risks, molecular epidemiology and related infections. As part of the study, MHRP is working closely with WRAIR's forward directorate in Tbilisi, WRAIR Europe-Middle East, and the Tengiz Tsertsvadze Infectious Diseases, AIDS and Clinical Immunology Research Center.

The molecular epidemiology of HIV in Georgia was most recently assessed from 2006-2008, and the recent influx of people displaced by regional conflicts could potentially impact the local HIV burden. This study will fill in public health knowledge gaps for the region and help inform prevention and treatment countermeasures. This research is also relevant to U.S. national security, as changes in HIV incidence and transmission can contribute to regional instability.

MHRP and partners aim to enroll 650 adult participants living with HIV. Researchers will assess various factors, including demographic and sociobehavioral variables, HIV viral load, subtype, and drug resistance data, and molecular sequencing. The study is anticipated to last two years.

WRAIR Europe-Middle East was established in Tbilisi in 2014 and works closely with regional partners to surveil infectious disease threats like acute febrile illness, respiratory infection and antimicrobial resistance. This will be the site's first HIV study.

"By partnering with local institutions and combining the expertise of our partners with MHRP's experience in HIV research, we aim to provide a clear picture of the HIV epidemic in this region," said MAJ Brennan Cebula, protocol chair of the study. "The knowledge gained from this study has the potential to affect public health in the region and guide HIV countermeasure development according to WRAIR's mission."



Health Affairs Delegation Visits Nigeria

A high-level delegation from the Office of the Assistant Secretary of Defense for Health Affairs traveled to Nigeria to engage with officials around planning long term sustainability of HIV service delivery in that country. The visit, conducted with senior leadership at the State Department's Bureau of Global Health Security and Diplomacy and other members of the interagency, addressed the future of collaborative HIV prevention, care and treatment services.

Dr. David J. Smith, the acting Deputy Assistant Secretary of Defense for Health Affairs, and CAPT Sean Cavanaugh, MHRP's chief of International HIV Prevention and Treatment, also toured clinic and laboratory sites that conduct countermeasure development research and provide critical HIV services and support, including the Clinical Research Centre and the Defense Reference Laboratory in Abuja. The longstanding collaboration between U.S. and Nigerian militaries facilitated the establishment of these facilities.



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New cryo-EM Tools Boost HIV Vaccine Design

WRAIR's structural biology team has established cryo-electron microscope (cryo-EM) capabilities that will allow MHRP to design HIV vaccine and antibody candidates based on insights into the minute structure of virus, antibodies and other particles.

The cryo-EM is a unique asset within the U.S. Department of Defense. It's a technique in which biological samples are frozen prior to analysis to preserve their integrity. The process then captures about one million 2-dimensional images of viruses, proteins, antibodies and drugs at near-atomic resolution and reconstructs the images as 3-dimensional models to reveal the samples' structure. This information can then be used to improve countermeasure design tailored to those structures.

This capability is being used in tandem with MHRP's novel multiple founder virus (MFV) vaccine design strategy to design broadly neutralizing HIV vaccine antigens. This process has already been used to help develop WRAIR's pancoronavirus and dengue vaccine candidates, and as part of a Marburg virus collaboration with USAMRIID.



MHRP World AIDS Day 2024: Accelerating HIV Research Progress Through International Partnerships

World AIDS Day, which is officially observed internationally on December 1 every year, is an opportunity to reflect on the progress made in the fight against HIV. This year's theme, Collective Action to Sustain and Accelerate Progress, aligns closely with WRAIR's mission to protect defense health and global health through international collaboration and innovation.

MHRP Director COL Julie Ake and Dr. Sandhya Vasan, director of the HJF component of MHRP, conducted a fireside chat with Dr. Lindsey Baden to share his perspectives on evolving opportunities and challenges in HIV research with an audience of clinicians, researchers, program staff and other stakeholders committed to ending the HIV epidemic. With a career spanning more than 30 years, Dr. Baden has been involved with HIV vaccine development for over 20 years, and he's currently professor of medicine at Harvard Medical School, the Vice President for Clinical Research at Brigham and Women's Hospital, and Director of Infectious Diseases at Dana-Farber Cancer Institute.

"To me, HIV was the entrée into understanding immune failure and its consequences, the ability to control it, and then actually stop it if we can get the drugs to the people who need it in a sustainable way," said Dr. Baden of the immunological discoveries stemming from HIV research that have informed other fields such as cancer immunotherapy and organ transplants.

Dr. Baden also called out the need for continuing collaboration, across both borders and scientific specialties. "Infectious disease is a global problem. It may manifest differently in different communities or different parts of the world, or different contexts of nutrition and other social factors, but a bug is a bug." As for the future, he's excited by the potential of recently emerging technologies, like mRNA platforms, saying, "its versatility and the ability to apply it to better health is left to us."



Engaging Communities in HIV Cure research

Community engagement is key to MHRP's research efforts around the world. By involving local populations in the research process, the findings become more relevant, ultimately leading to more effective solutions.

Udom Likhitwonnawut became involved with the first HIV community advisory board (CAB) in Thailand in 1998 while working for a HIV home-based care program implemented by an international aid agency. Today, he's a member of the CAB for the Martin Delaney Collaboratories for HIV Cure Research 14C (Immunotherapy for Cure) research program, which is developing immunologic strategies for HIV-1 remission and eradication. He shared his thoughts on the challenges and opportunities surrounding engagement in HIV cure research [responses edited and condensed].

Q. What are the key priorities or goals of community engagement in HIV research?

A. The key priorities of the first CAB are still the key priorities of the current CABs: providing input for recruitment, for example review and comment on informed consent forms, study brochures and pamphlets; and to help research teams to solve any problems that they had during the recruitment or retention phases of the studies.

Q. What are some of the misconceptions you've heard about HIV cure research, and how do you address them?

A. One misconception is that cure will be possible in a few years, or it can be scaled up. And that HIV cure research could most benefit people who acquired HIV recently and have been treated very early. How to address them: education, like presentations on HIV cure from various HIV conferences and annual meetings, one-on-one discussion, and translating HIV research news.

Q. How do you build trust with communities that may be hesitant to engage with HIV research? Do you have an example of a successful initiative or partnership?

A. This is a long process and depends on local context and culture. Honesty is important too. Often time, researchers don't want to reveal too much information, citing ongoing research or lack of local-specific details. These could be interpreted as hiding something or distrust community members. We should not be afraid of telling them that we don't know and will find out and give them correct information as soon as it is available, and following up on that promise.



WRAIR-Africa signs MOU with Narok County, Kenya, Government to Improve HIV Response

Walter Reed Army Institute of Research-Africa (WRAIR-Africa), led by COL Shannon Lacy, has signed a Memorandum of Understanding (MOU) with the Narok County Government to advance research and response to HIV within the county.

WRAIR-Africa and MHRP work with and partner research sites across sub-Saharan Africa and collaborates with host governments and communities to advance research on endemic diseases such as malaria and HIV. The MOU outlines three main priorities in shifting HIV response to local government: shifting from mostly donor funds to domestic ownership, improving access to Health Products and Technology (HPT) and response, and integrating the HIV program with country's Universal Health Care framework.

COL Lacy, WRAIR-Africa Director, acknowledged the importance of the MOU since it will provide guidance for HIV response going forward. "The MOU provides a framework for the future of HIV response in Narok County," he said. "This is more than a symbolic signature but a turning point in our partnership." COL Lacy went on to commend the dedication of health workers since they work in a unique and vast county to deliver the much-required last mile health response.

Adapted from text written by Kevin Majoni, HJFMRI Kenya

MHRP at HIV Research for Prevention

MHRP researchers and collaborators had a strong showing at the 2024 HIV Research for Prevention (HIVR4P) conference, held October 6-10 in Lima, Peru. MHRP's presentations highlighted recent findings and ongoing work to understand immune response to HIV and advance novel vaccine and antibody design, strategies and technology.

One conference highlight was an invited talk from Dr. Morgane Rolland, MHRP's chief of viral genomics and systems serology, stemming from her work on an HIV vaccine design mimicking multi-founder variant infection to induce broadly neutralizing antibodies. Specifically, her presentation touched on HIV envelope diversity and selection of antigens for vaccine candidates.

Another oral abstract session featured a presentation from Dr. Rasmi Thomas, MHRP's chief of integrative multiomics. Her team conducted single cell analyses to investigate how gene expression in acutely treated cohort study participants impacts the size of the HIV reservoir. These findings could help identify novel pathways to reduce the reservoir and have therapeutic implications for HIV cure strategies.

MHRP Director COL Julie Ake presented interim findings from clinical trial RV575, a Phase 1 double blinded dose optimization study of ALFQ adjuvant with an HIV envelope vaccine.

Other HIVR4P presentations:

Alexandra Schuetz (presented by Sandhya Vasan): "Early neutrophil recruitment after heterologous late boost with and without new adjuvant in RV546 potentially contributes to vaccine-specific antibody responses"

Eniko Akom: "Infrequent New HIV Acquisition among Returning Pre-Exposure Prophylaxis Clients in PEPFAR, 2021-2023"

Kawthat Machmach Leggat: "Association of innate cells activation and mucosal homing potential with HIV acquisition in Thai HIV exposed individuals"

Samantha Townsley: "The frequency of HIV-specific activated memory B cells associates with antibody durability following vaccination"

Elisavet Serti Chrisos: "Impact of Late Boost with IHV01 and A244 gp120 Proteins with Fractional Dosing and/or ALFQ on Immune Responses in Previously Vaccinated Volunteers"

Hongjun Bai: "A redesigned HIV-1 Env V1 Hypervariable loop renders CRF01_AE Env sensitive to 10-1074"

Sinmanus Vimopatranon: "Reduced abundance of colonic CD4+ tissue resident memory T cells despite early initiation of ART is linked to systemic inflammation and changes in microbiota composition"



Collaboration for AIDS Vaccine Discovery (CAVD) Annual Meeting



The Gates Foundation CAVD is an international network of scientists and experts dedicated to designing a variety of novel HIV vaccines and biologics, advancing the most promising candidates to clinical trials. Its annual meeting was held in February 2025 in Dar es Salaam, Tanzania. WRAIR researcher Paul Thomas won a young investigator scholarship to attend based on his structural biology research. Pictured above are other MHRP representatives and collaborators: [back, left to right] Prof. Said Aboud (Tanzania National Institute for Medical Research), Dr. Sandhya Vasan (MHRP), Dr. Jessica Cowden (International Vaccine Institute), Dr. Shelly Karuna (MHRP), Dr. Shelly Krebs (MHRP), Paul Thomas (WRAIR), Dr. Thembi Mdluli (MHRP), Dr. Wiston William from (Tanzania NIMR-MMRC); [front, left to right:] Dr. Rasmi Thomas (MHRP), Dr. Jerome Kim (IVI)

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