Towards
an HIV Cure
IAS

International AIDS Society

2023 Research-for-Cure Academy

15 – 19 June 2023

Wits Rural Facility,
Bushbuckridge, South Africa

In partnership with:

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

FACULTY OF
HEALTH SCIENCES

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Steering Committee

The steering committee comprises a group of experts in the HIV cure field. It is responsible for the development of the Research-for-Cure Academy programme, identification of key faculty, review of applications, and selection of fellows.

Steven Deeks
University of California San Francisco, United States

Sharon Lewin
The Peter Doherty Institute, University of Melbourne, Australia

Thumbi Ndung'u
Africa Health Research Institute, South Africa

Michaela Muller-Trutwin
Institut Pasteur, France

Maria Papathanasopoulos
University of the Witwatersrand, South Africa

Caroline Tiemessen
National Institute for Communicable Diseases, South Africa

Introduction

IAS Towards an HIV Cure programme

Accelerating global scientific research, advocacy and collaboration towards a cure for HIV is a major strategic priority for IAS – the International AIDS Society. In 2011, the IAS launched the Towards an HIV Cure programme. It focuses on advancing the HIV cure field in countries where resources for HIV cure research are limited and facilitating interaction between HIV and other biomedical research areas. It does so by:

- Promoting scientific exchange and collaboration and increased research literacy
- Growing capacity-building programmes for HIV researchers and community advocates in countries where resources for HIV cure research are limited
- Advocating for the prioritization of HIV cure in the global health agenda by supporting a well-informed, multidisciplinary network

2023 Research-for-Cure Academy

The Research-for-Cure Academy programme includes a faculty of internationally renowned scientists, including cure researchers and ethicists. The comprehensive programme uses a participative approach to deliver interactive classroom sessions on key topics related to HIV cure research. It is complemented by supporting activities in between in-person teaching and training sessions.

Objectives

- Provide training on state-of-the-art HIV cure research in line with recommendations from "Research priorities for an HIV cure: International AIDS Society Global Scientific Strategy 2021".
- Improve and reinforce practical tools and methodologies to pursue or engage in HIV remission research.
- Provide a unique opportunity for engagement with leaders in the HIV cure field to facilitate research collaborations in the search for an HIV cure or remission.

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MSD

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Schedule

Thursday, 15 June 2023

	Arrival of participants
19:00	**Dinner** **Welcome and introductions** **Steven Deeks**, University of California San Francisco, United States **Krista Dong**, iTeach, South Africa **Brad Jones**, Cornell University, United States **Thumbi Ndung'u**, Africa Health Research Institute, South Africa **Maria Papathanasopoulos**, University of the Witwatersrand, South Africa **Roger Tatoud**, Independent Consultant, France **Caroline Tiemessen**, National Institute for Communicable Diseases, South Africa **Fellows**

Friday, 16 June 2023

07:30 - 08:30	**Breakfast**
08:30 - 08:45	**Pre-training survey** Presenter: Roger Tatoud
08:45 - 09:30	**Presentation and Q&A: Understanding the reservoir** Presenter: Brad Jones
09:30 - 10:15	**Presentation and Q&A: Paediatric HIV cure, post-treatment controllers and elite controllers** Presenter: Caroline Tiemessen
10:15 - 10:45	**Break**
10:45 - 12:15	**Workshop: The research question – How to make a compelling case (part 1.1)** Focus: Introduction & exercises Presenter: Roger Tatoud
12:15 - 13:00	**Lunch**
13:00 - 14:30	**Workshop: The research question – How to make a compelling case (part 1.2)** Focus: Introduction & exercises Presenter: Roger Tatoud
14:30 - 15:30	**Workshop: The research question – How to make a compelling case (part 2.1)** Focus: Presentation of concept notes on research question (homework) 3 slides/3 min on research question + 5 min feedback

Schedule

Friday, 16 June 2023

15:30 - 15:45	**Break**
15:45 - 16:45	**Workshop: The research question – How to make a compelling case (part 2.2)** Focus: Presentation of concept notes on research question (homework) 3 slides/3 min on research question + 5 min feedback
16:45 - 17:30	**Presentation and Q&A: HIV cure today** Presenter: Steven Deeks
17:30 - 18:50	**Workshop: The research question – How to make a compelling case (part 2.2)** Focus: Presentation of concept notes on research question (homework) 3 slides/3 min on research question + 5 min feedback
19:00	**Dinner**

Saturday, 17 June 2023

07:30 - 08:30	**Breakfast**
08:30 - 09:15	**Presentation and Q&A: Immune mechanisms of viral control and relevance to cure** Presenter: Thumbi Ndung'u
09:15 - 10:00	**Presentation and Q&A: Considerations for HIV cure trials implementation** Presenter: Krista Dong
10:00 - 10:15	**Break**
10:15 - 10:45	**Day 1 recap and Q&A** Presenter: Roger Tatoud
10:45 - 11:30	**Workshop: Writing** Focus: Area of research – health problem
11:30 - 12:30	**Workshop: Writing** Focus: Research question – objectives
12:30 - 13:30	**Lunch**
13:30 - 14:45	**Workshop: Writing** Focus: Rational – research plan
14:45 - 16:00	**Workshop: Writing** Focus: Research plan – impact – title

Schedule

Saturday, 17 June 2023

16:00 - 16:30	**Break**
16:30 - 17:00	**Presentation and Q&A** Focus: Presenting for success Presenter: Roger Tatoud
17:00 - 18:30	**Workshop: Work on presentation** Fellows develop their presentation
19:00	**Dinner**

Sunday, 18 June 2023

07:30 – 08:30	**Breakfast**
08:30 – 10:00	**Presentation of revised concept notes & feedback (Part 1)** 5 minute/5 slides presentations/3 minutes feedback
10:00 – 10:15	**Break**
10:15 – 11:45	**Presentation of revised concept notes & feedback (Part 2)** 5 minute/5 slides presentations/3 minutes feedback
11:45 – 12:00	**Closing remarks**
12:00 – 13:00	**Lunch**
13:00 – 15:00	**Leisure time**
15:00 – 19:00	**Game drive**
19:00	**Dinner**

Monday, 19 June 2023

07:30 – 08:30	**Breakfast**
10:00	**Departure to Hoedspruit Airport**

Faculty

The workshop faculty comprises internationally renowned scientists who deliver presentations on key topics in the programme and support the fellows in the development of group projects.

Steven Deeks
University of California San Francisco, United States

Krista Dong
iTeach,South Africa

Brad Jones
Cornell University, United States

Thumbi Ndung'u
Africa Health Research Institute, South Africa

Maria Papathanasopoulos
University of the Witwatersrand, South Africa

Roger Tatoud
Independent consultant, France

Caroline Tiemessen
National Institute for Communicable Diseases, South Africa

Fellows

**Fellows' bios may be lightly edited for clarity and style consistency.*

Alejandro Czernikier

Instituto de Investigaciones Biomédicas en Retrovirus y Sida

Country of work: Argentina

What is your motivation to work in the HIV cure field?

I think that achieving the cure for HIV would represent one of the most outstanding accomplishments in the history of public health and would signify the end of suffering for millions. The understanding of the proviral landscape and the study of new immunotherapeutic strategies to achieve HIV remission are top priorities in the field of HIV cure. In this manner, these are the two main subjects on which I have focused my research efforts in the past years. However, it is widely known that the search for an HIV cure must have a multidimensional approach because there is no strategy that can alone overcome such a big challenge. Therefore, attending this academy allows me to expand my knowledge about the cutting-edge approaches that can be developed in my country to contribute to the search for a cure.

What is your current role and area of work?

I have been working as a researcher in the HIV field for the past six years. I started in 2017 as an undergraduate student, studying the viral reservoir composition and its relation to HIV-specific immunity in a cohort of people living with HIV in Argentina. This work allowed me to obtain my MSc degree from the University of Buenos Aires. Currently, due to the urgent need to achieve sustained ART-free HIV remission, I am focusing my doctoral project on studying an immunotherapy approach to enhance HIV-specific CD8+ T cell function for the clearance of latently HIV-infected cells. Additionally, I am collaborating on a project aimed at the profound characterization of the viral reservoir of an exceptional elite controller from my country known as the "Esperanza Patient". Finally, in recent years, I have participated in several communication campaigns and written articles in popular science magazines to disseminate the latest scientific advancements in HIV cure research and the U=U global campaign.

Fellows

Aude Christelle Ka'e

Chantal Biya International Reference Centre for Research on HIV/AIDS Prevention and Management

Country of work: Cameroon

What is your motivation to work in the HIV cure field?

I have been interested in HIV cure for three years. I am a PhD student in virology and my thesis focuses on the characterization of the viral reservoir in adolescents who acquired HIV non-B vertically and are receiving antiretroviral treatment in Yaoundé, Cameroon. I have also performed a local systematic review in Cameroon to evaluate the vertical transmission of HIV and reservoir profile. We have found that vertical transmission remains high in Cameroon and the variation in proviral loads in children living with HIV underlines the relevance of characterizing viral reservoirs for possible control of the epidemic in tropical settings. The first objective was to evaluate the genotypic profile of viral reservoirs in both viremic and non-viremic adolescents. After achieving this objective, we have found that despite the virological success observed, the majority of enrolled adolescents had archived drug resistance driven by a non-nucleoside reverse transcriptase inhibitor and low CD4 nadir (DOI: 0.1111/hiv.13459). The ongoing third objective is to quantify HIV DNA in this target population. Once all these objectives are achieved, we will know the profile of adolescents in whom HIV functional cure strategies can be applied in the context of central, eastern, southern and western Africa.

What is your current role and area of work?

I am conducting my PhD thesis in the virology laboratory of the Chantal Biya International Reference Centre for Research on HIV/AIDS Prevention and Management (CIRCB) with the collaboration of the University of Rome Tor Vergata in Italy. The topic is entitled "Characterization of viral reservoirs among HIV-1 vertically infected adolescents receiving antiretroviral therapy in Yaoundé Cameroon". Additionally, I am involved in routine drug resistance testing and I am working on the EDCTP-AVIR study, a research project of both the immunology and the virology laboratory of CIRCB. The project focuses on the characterization of the viral reservoir and the inflammatory profile of Cameroonian paediatric populations who vertically acquired HIV.

Fellows

Bakyayita Rachel Sarah Kyeyune

Joint Clinical Research Centre

Country of work: Uganda

What is your motivation to work in the HIV cure field?

My interest in the management of HIV spans over a decade when, as a medical student, I had the opportunity to have a placement at the Infectious Diseases Institute (IDI) in Kampala. IDI is a centre of excellence in provision of care and treatment of infectious diseases, research and capacity development. In this high-volume HIV treatment centre, I experienced first-hand how research informed the care and management of people living with HIV. The treatment options for HIV have significantly improved. At the Joint Clinical Research Centre, we are coordinating a trial of injectable cabotegravir/rilpivirine given every two months for the treatment of HIV in virally suppressed individuals across eight sites in Africa. We are also developing a protocol for funding for even longer-acting ART. Despite these treatment advancements, women in Uganda continue to bear a higher burden of HIV than men (7.2% prevalence versus 4.3%) translating into new paediatric HIV acquisitions for most of these women. My goal at this point is to be at the forefront of developing innovations in the diagnosis, care and treatment of HIV, including cure.

What is your current role and area of work?

As the Head of Research, I oversee the conducting of several research studies at the centre and provide technical, financial and project management support to the various research teams. I also lead efforts in development of new, innovative research concepts through to protocol development, sourcing of funding, and implementation. My prior background in regulation of clinical trials has equipped me to lead efforts in regulatory preparedness for the conducting of the first HIV cure clinical trial in Uganda and perhaps the region. I have coordinated meetings with regulatory bodies in Uganda, as well as with the ministries of Health and Science, Technology & Innovation. I have also coordinated engagements with the WHO country office and headquarters in Geneva. All these engagements have led to triggering the development of national guidelines for conducting and implementing gene therapy trials in Uganda. I am a member of the national task force reviewing guidelines for research on human subjects in Uganda and providing guidance in the area of clinical investigation of advanced therapies

Fellows

Christopher Abana

Noguchi Memorial Institute for Medical Research, University of Ghana

Country of work: Ghana

What is your motivation to work in the HIV cure field?

Africa bears the brunt of the HIV pandemic and also has different HIV subtypes co-circulating. As an African scientist with a passion for HIV cure, I feel strongly that I am well positioned to contribute to finding a cure to end the HIV pandemic. Specifically, I am interested in HIV basic and translational research with a special focus on viral latency and reactivation studies. This interest aligns perfectly with my current PhD research work where I am screening African herbal products and other compounds that could reactivate HIV from latency and/or block and lock HIV by causing it to go into deep latency. The skills and new techniques gained from my PhD will be used to improve work in my research team and train more people in HIV cure research.

What is your current role and area of work?

I am a chief research assistant in the Virology Department, Noguchi Memorial Institute for Medical Research, University of Ghana, Legon, Accra, and a member of the HIV Cure Research Infrastructure Study (H-CRIS) team. I am currently enrolled in a PhD programme in molecular cell biology of infectious diseases at the University of Ghana. My PhD research is focused on identifying novel agents for HIV cure or remission. I am screening epigenetic modifying compounds and herbal products for their ability to reactivate HIV-1 from latency. Working in the H-CRIS team and on my PhD research for the past three years has equipped me with useful laboratory skills in both cell and molecular biology. I have improved my skills in cell culture and molecular and functional assays, such as transfections, reactivation, infection, Western blot, qPCR and the Greene Model. These have augmented my interest in HIV cure research. I also coordinate the laboratory activities on the H-CRIS and other HIV projects, such as impact of HIV-TB co-infection and HIV-HBV co-infections on the reservoir size. I also train research assistants, technicians, students on internship and other newly employed staff on biosafety, biosecurity, good laboratory practices and assays used in the H-CRIS laboratory.

Fellows

Gabriela Cromhout

University of KwaZulu-Natal

Country of work: South Africa

What is your motivation to work in the HIV cure field?

The HIV epidemic in my country, South Africa, has been part of my life from as far back as I can remember. My interest in HIV grew as I became involved in local NGO work in the Eastern Cape province, South Africa, from as early as primary school. This passion and interest grew as I became a medical doctor in South Africa and began working with and treating people living with HIV. As much as I worked in the treatment of HIV, the cure thereof has forever been an area of interest and an area that I am incredibly passionate about. After understanding more about research and academia in my MSc, I have had the privilege of working in the paediatric HIV cure research space under the guidance of Professor Philip Goulder as the Clinical Coordinator and Research Clinician on the Baby Cure Study while maintaining my work on treatment thereof. I believe that this work has further increased my knowledge and understanding of the work being done towards cure and also brought up further questions regarding our journey towards it. I hope to play a role in the quest to achieve this in the future.

What is your current role and area of work?

I currently work as a research clinician and clinical coordinator for the University of KwaZulu-Natal–Oxford University Ucwaningo Lwabantwana ("Baby Cure") Study. In this role, I am responsible for the overall coordination of this cohort, which is made up of approximately 280 mother-child pairs living with HIV. The aim of this longitudinal study is to assess the impact of early diagnosis and antiretroviral therapy initiation at birth in children who acquired HIV vertically with a focus towards HIV cure and understanding potential mechanisms thereof. I also work as the research clinician for two of the Baby Cure sites, which involves the clinical care and support of our participants and their families. As research clinician for the University of KwaZulu-Natal-CAPRISA ORCHID Study (which looks at the pharmacokinetics of dolutegravir in children on rifampicin-based TB regimens in the weight band of 20-35kg), I am responsible for the care of children and adolescent participants living with HIV and TB and their follow up. These two roles complement my current work as a PhD candidate at the University of KwaZulu-Natal on the impact on the changing face of paediatric HIV in South Africa.

Fellows

Leonore Greybe

Stellenbosch University

Country of work: South Africa

What is your motivation to work in the HIV cure field?

My current area of research includes the long-term effects of HIV acquisition and long-term ART on adolescents living with HIV. There is no doubt that HIV cure will have a significant impact on this vulnerable population. The switch from protease inhibitors with potent metabolic side effects to integrase inhibitors has already positively impacted the metabolic health of adolescents living with HIV, and an HIV cure that will interrupt chronic inflammation will undoubtedly provide additional long-term health benefits. We have identified a high burden of co-morbid mental health issues and drug use resulting in poor academic performance and languishing. HIV cure will have a significant impact on the mental health and well-being of adolescents living with HIV. As a result, improved access to education and employment could additionally help improve the economic prospects of adolescents and ultimately will reduce poverty and inequality in the country. Additionally, the effect of HIV cure on the sexual and reproductive health of adolescents living with HIV will protect young women, especially, from HIV transmission and in turn interrupt the deleterious effects of HIV acquisition on the entire family unit.

What is your current role and area of work?

I am an infectious diseases specialist paediatrician employed by Stellenbosch University and based at Tygerberg Hospital in Cape Town, South Africa. As a sub-investigator of the cohort study investigating cardiometabolic risk factors in youth with perinatally acquired HIV in the ART era (grant number: 1D43TW010937-01A1), I am responsible for the administration, recruitment, data support and scientific writing of this ongoing research project. I am currently in the grant application process to continue this work as a principal investigator if my application is successful. My area of professional development includes enrolment in modules for clinical epidemiology and biostatistics at Stellenbosch University. Furthermore, I am a senior lecturer, involved in the delivery of high-quality educational content to medical students and postgraduate students, and a clinician providing guidance on clinical and non-clinical issues related to the care of paediatric patients admitted to Tygerberg Hospital. I provide support for all general consultant duties, including assisting with and providing oversight of junior research projects.

Fellows

Mqondisi Tshabalala

National Institute for Communicable Diseases

Country of work: South Africa

What is your motivation to work in the HIV cure field?

Despite the success of antiretroviral therapy, HIV reservoirs that are generally transcriptionally silent may trigger remission (detectable viral load) even in those individuals who control HIV replication. It is thus imperative to fully understand the immune and genetic signatures of viral control, which might predict functional cure and better inform strategies for sterile cure. We have a unique cohort of elite controllers and the "South African child" who show virologic control following treatment cessation. Certain HLA alleles/allele combinations and KIR genotypes have been associated with HIV control and susceptibility. My current studies are aimed at stratifying HLA alleles/haplotypes and HLA-KIR interactions among individuals with varying shades of HIV control. Additionally, my current work on systems serology, whose predictive models (relationships among antibody features, function and outcome) may better inform novel vaccine development, which drives the desired protective humoral immune responses. At single-cell level, my multi-omics approaches aim to understand transcriptomic, epigenetic and immunologic signatures of HIV control. This approach might better inform immunogen design, germline targeting and epigenetic markers of HIV control. Collectively, these approaches give insights into HIV functional cure by the host.

What is your current role and area of work?

I am currently a postdoctoral research fellow under Professor Caroline Tiemessen and previously held the same position under Professor Penny Moore (Centre for HIV and STIs: Cell Biology and HIV Virology sections, respectively). We have a unique sample repository of individuals (including a child) who seem to control HIV viral load over time without antiretroviral therapy and or with treatment interruptions. I focus on understanding B cell repertoires in HIV and SARS-CoV-2 using single-cell approaches, focusing mostly on antibody discovery. I developed and optimized assays to measure anti-HIV clinical trial therapeutic antibodies CAP256 and VRC07 from serum and dried blood spot samples. Currently, my role involves an in-depth understanding of HIV control among a unique group of controllers using single-cell multi-omics, B and T cell repertoire sequencing, immunogenetics (KIR and HLA) and systems serology. The goal is to elucidate the immune and genetic features driving HIV control in these individuals. These insights could better inform strategies for a functional cure of HIV through immunogen design, germline targeting and gene editing of immune cells.

Fellows

Mark Appeaning

University of Ghana, West African Centre for Cell Biology of Infectious Pathogens

Country of work: Ghana

What is your motivation to work in the HIV cure field?

In Ghana, approximately 10,000 adults died from AIDS-related conditions in 2021 alone. If this trend is not reversed, it will have a grave impact on the workforce of the country and the economy as a whole. The development of drug resistance and challenges with adherence to antiretroviral therapy make the search for an HIV cure an urgent health problem, especially for low-middle-income countries, including Ghana. My interest in HIV cure looks at exploring the therapeutic and vaccine applications of broadly neutralizing antibodies (bnAbs). To this end, I seek to understand the nature of viruses capable of inducing bnAbs by conducting whole genome sequencing of circulating HIV subtypes within our cohort. I also seek to explore and better understand HIV-specific B cells capable of producing bnAbs by using single-cell RNA sequencing. Understanding these aspects of HIV pathogenesis would help in the future engineering of such HIV-specific B cells to produce these antibodies on a large scale for HIV therapy and vaccine development.

What is your current role and area of work?

I currently hold a faculty position as a lecturer at Koforidua Technical University in Ghana. I'm also a PhD fellow at the West African Centre for Cell Biology of Infectious Pathogens at the University of Ghana. As a faculty member, I teach undergraduates and supervise research work on the immune response to HIV and viral hepatitis. As a PhD fellow, I have led the establishment of The WACCBIP Long-Term HIV Infection Cohort (The WHICH Study). With this work, we aim to understand the molecular dynamics of the circulating HIV variants and characterizing immune dynamics, as well as screening and characterizing broadly neutralizing antibodies within our cohort. I coordinate the participant recruitment and carry out various laboratory analyses of participants' samples.

Fellows

Masauso Phiri

University of Zambia, School of Medicine

Country of work: Zambia

What is your motivation to work in the HIV cure field?

As a lecturer at the University of Zambia, my research interests align with developing innovative health interventions, such as therapeutics, vaccines and diagnostics, that can combat disease burdens prevalent in the African region, including HIV. I have a strong background in clinical biochemistry and research in the use of nanotechnology in medicine, and I believe that my skills and expertise can contribute to advancing the field of HIV cure research. My experience as a vaccinology research fellow in the WHO-TDR Clinical Research and Development Fellowship has provided me with invaluable knowledge on research and development, including discovery of active agents or target particles, the early clinical development, and other cross-cutting projects aimed at accelerating and de-risking vaccine research and development. Moreover, as the founder and Director of Divax Biotechnology, my focus is on developing health interventions that are tailored to low- and middle-income countries in Africa. This work involves conducting research and development, translation, manufacturing and commercialization of vaccines in particular, but to be extended to drugs and rapid diagnostic tests.

What is your current role and area of work?

As a faculty member in the Department of Pathology and Microbiology, my focus is on teaching chemical pathology or clinical biochemistry to undergraduate and postgraduate medical students. Previously, I completed a Clinical and Research Development Fellowship at the European Vaccine Initiative, a programme sponsored by the World Health Organization's Special Programme for Research and Training in Tropical Diseases (TDR), and I am currently implementing my reintegration project as part of my work. During my fellowship, I contributed to various vaccine projects, and my reintegration project involves building capacity in early-career researchers with a focus on research and grant writing. Specifically, I aim to develop health interventions in Africa using nanoparticles in therapeutics, vaccinology and diagnostics.

Fellows

Romeo Brice Djounda Dieffouo

Centre for Research on Emerging and Reemerging Diseases

Country of work: Cameroon

What is your motivation to work in the HIV cure field?

Thanks to the advent of potent antiretrovirals (ARVs), most people living with HIV are relieved from symptoms directly related to HIV. Rather, they suffer from secondary disorders related to ARVs. There is a growing number of virally suppressed people living with HIV on ARVs who are exposed to the same health difficulties. There is an urge to bring in a definite solution that will permit people living with HIV to live healthily without ARVs. Latency-reversing agents in combination with other remission strategies, like broad neutralizing antibodies and gene therapy, will be a great amalgam of approaches to maintaining a state of viral suppression without depending on ARVs. In my current work, I aim to investigate ex vivo the impact of the timing of latency-reversing agent use on the amount of inducible viral reservoir from CD4 T cells isolated from virally suppressed women living with HIV of childbearing age under ART. This aims to enhance the activity of a class of latency-reversing agents called selective estrogen receptor modulators (SERMS).

What is your current role and area of work?

Since 2020, I have been working as a research assistant at the Center for Research on Emerging and Re-emerging Diseases (CREMER) on several projects. I worked on the HIV cure study from which my Master's research was derived (2020-2021): we studied the effects of viral suppression on hormonal levels in women living with HIV to harness their effects on potent latency-reversing agents. Next, I worked on a multicentric sero-surveillance study assessing the response to COVID-19 acquisition across several African countries (ARIACOV-2021). I am currently a research assistant in the MLK study, which aims to study the immune vaccine response in infants exposed to HIV during their first year of life. Most studies investigate T cell response in this group, but very little data are available on how B cell frequencies and populations, as well as functionality, are affected in infants exposed to HIV as has been shown in people with other viral infections, such as COVID-19. My PhD thesis will focus on this neglected but important aspect of vaccine response in infants exposed to HIV.

Fellows

Sherazaan Dineo Ismail

University of Cape Town

Country of work: South Africa

What is your motivation to work in the HIV cure field?

My interest in HIV cure started in 2016. I moved into the field to pursue my PhD. South Africa bears a large burden of HIV and millions of South Africans will one day require access to a cure intervention if it becomes available. Given the global diversity of HIV subtypes and the different conditions under which many Africans have initiated ART and had access to treatment, we would need to ensure that a cure is equitable. That is, we must ensure that the cure strategy can be applied in different settings: for people living with varied HIV-1 subtypes, in low-income settings, and in settings where the latent reservoir may be affected by the timing of ART initiation (viral diversity and size), to name a few criteria. As an African scientist, I would like to contribute to the growing body of knowledge on how the latent reservoir is formed and maintained, particularly in African cohorts. Currently, this ties into my work investigating the role of Nef (viral accessory protein) function in reservoir dynamics in a subtype C setting. This body of work will contribute to a larger collaboration investigating the same question in other viral subtypes that predominate globally (subtypes B, A and D).

What is your current role and area of work?

I am a postdoctoral fellow at the Institute of Infectious Disease and Molecular Medicine, University of Cape Town, South Africa. I started my research journey in HIV diversity and pathogenesis (during my Master's degree) looking at potential transmission bottlenecks in the CAPRISA 004 microbicide trial. Specifically, I looked at whether breakthrough infections in the microbicide-assigned participants differed in Envelope genotype and phenotype of transmitted founder populations. This is when I became interested in the HIV cure research field, a fairly novel research topic when I started my PhD. I have been working in HIV cure research ever since. My PhD investigated the role of T cell activation and inflammation on reservoir formation. My current project focuses on viral determinants of reservoir formation and maintenance, namely, Nef protein function in contributing to the latent reservoir of HIV-1.

Fellows

Sosthene Hillary Matabou Tene

Centre for Research on Emerging and Reemerging Diseases

Country of work: Cameroon

What is your motivation to work in the HIV cure field?

The number of virally suppressed people living with HIV receiving antiretroviral treatment (ART) in the world is increasing. In Cameroon, there are few HIV research centres, and researchers engaged in HIV cure research are few, despite the rising number of people on treatment. I am determined to reduce the deleterious effects of HIV and ART on people living with HIV, with a special focus on women, who are disproportionately affected by HIV and ART side effects. The strategy I am currently investigating is to reduce the size of the viral reservoirs in this group and limit exposure of people to HIV and possibly ART. Specifically, I am working on investigating ex vivo the impact of the timing of LRA use on the amount of inducible viral reservoir in CD4 T cells isolated from virally suppressed women living with HIV of childbearing age under ART and the association between Estradiol plasma levels and T cell ESR-1 expression levels in this same group.

What is your current role and area of work?

I've been a project assistant since July 2018 in the Immunology lab of the University of Yaoundé I Biotechnology Centre. I participated in the sample collection in 2020 as a member of the field team for the study entitled "Immune dysfunction and Susceptibility to Infections during the first year of Life of HIV-exposed and Uninfected Children at the Centre for Research on Emerging and Reemerging Diseases", where I currently work. I also worked as a lab assistant for the ongoing HIV Cure Research project, doing PBMC isolation, reproductive hormone testing and liver marker titration. I am actually a PhD student working on an HIV cure project entitled "The effect of timing of the use of LRAs on the reactivation of viral reservoir in CD4 T cells of ART-treated virally suppressed HIV-positive women of childbearing age with a special focus on women who are disproportionately affected by HIV". I am currently investigating how to reduce the size of the viral reservoirs in this group and limit exposure of women to HIV.

Fellows

Teresia Muhomah

Kenya AIDS Vaccine Initiative – Institute of Clinical Research

Country of work: Kenya

What is your motivation to work in the HIV cure field?

My long-term goal is to use basic and translational research to solve maternal, infant and young child health challenges resulting from HIV and AIDS. My community has suffered greatly from the AIDS epidemic and currently bears the highest burden of HIV in Kenya. Witnessing this as I grew up ignited a fire within me to better understand HIV. Medical interventions for affected family members included diet prescriptions. Consequently, I embarked on studying food science and, later, nutrition for my Bachelor's and Master's degrees in a bid to understand how to better manage people living with HIV. My PhD training gave me the opportunity to merge my knowledge of food science and introduced me to the world of mucosal immunology. My current position as a postdoctoral scientist in HIV basic science research is affording me the opportunity to begin to answer questions I have had since childhood. I am working on studies aimed at understanding the mucosal factors that influence HIV infectivity. By rigorously researching the various HIV versus host mucosal factors that exacerbate or slow down transmission, I hope to contribute to the multidisciplinary efforts in my organization aimed at developing prophylactic and HIV-suppressive therapies..

What is your current role and area of work?

I am involved in three projects in my current role. One is an NIH-funded study aimed at mapping out microbiota inhabiting various compartments in the female genital tract (FGT). We also aim to identify the different cytokines throughout the FGT. Participants are drawn from the Kenyan population. We hope to be able to define how the microbiome and degree of inflammation influence susceptibility of this population to acquiring HIV. The second project aims to investigate the influence of female contraceptives in acquisition of HIV. Using hormone-treated explants derived from human cervical tissues from Kenyan hysterectomy samples, we aim to define susceptibility to acquisition with HIV-1 TF variants. This study will contribute to understanding how this female contraceptive interacts with the host immunity and whether it increases the risk of HIV acquisition in Kenyan women. The third project aims to determine the efficacy and feasibility of use of ebNAbs for HIV prevention and treatment. We aim to: (1) delineate the mucosal immune response induced by mRNA-delivered broadly neutralizing antibodies in non-human primates, and (2) determine the degree of prevention of acquisition following SHIV challenge.

Fellows

Winnie Rotisch

Kingston University London

Country of work: Kenya

What is your motivation to work in the HIV cure field?

I am a practicing pharmacist working in a public hospital in Kericho County, Kenya. I manage and support the treatment of people living with HIV within the locality. I am also a PhD student currently finalizing my PhD studies at Kingston University, London, UK. My research was based on natural product biochemical research. I was evaluating the efficacy of a popular patented herbal remedy used in Kenya for the treatment of HIV. I had the privilege of collaborating with Jodrell Laboratory, Royal Botanical Gardens, Kew, London, where I carried out substantive phytochemical analysis of the herbal extracts and identified compounds that were efficacious against the HIV-1 reverse transcriptase and integrase enzymes. I also collaborated with the Kenya Medical Research Institute, Kenya, where I evaluated the antimicrobial activity of the compounds against infectious opportunistic pathogens associated with HIV and AIDS. With that, I have published two articles in reputable peer-reviewed journals as the main author: one collaborative study article in the Journal of Natural Products and one manuscript pending review with the Journal of Phytomedicine. I have also successfully submitted my PhD thesis to the university examination board.

What is your current role and area of work?

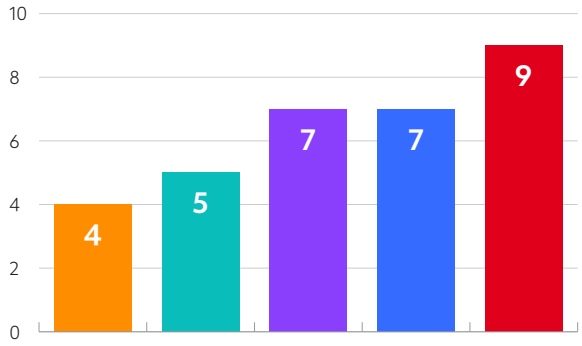
HIV cure research is essential because despite significant advances in HIV treatment, there is currently no cure. While antiretroviral therapy (ART) has transformed HIV into a chronic manageable condition, it still requires lifelong treatment and is associated with significant side effects. Moreover, ART is not accessible to everyone due to various factors, such as cost, geography and access to healthcare. The goal of HIV cure research is to develop a cure for HIV, which would eliminate the need for lifelong treatment and improve the quality of life of people living with HIV. Several approaches are being explored in HIV cure research, including gene therapy, immune-based therapies and combination therapies. Having conducted my PhD research around discovering a cure for HIV, it would be a good opportunity to develop new skills, have access to cutting-edge technology, interact with leading scientists, researchers and scholars, and discuss the latest research and breakthroughs in HIV cure research that may lead to groundbreaking discoveries and advances in the field.

Survey results

"The Research-for-Cure Academy 2023 has been a splendid experience for me as a young researcher. I was able to write an impactful research proposal, to present it in a simple and well understandable format, and to build self confidence for presentations.The academy helped me to engage into some conversations with HIV cure experts, which I hope will end up in great collaborations for the future. I also met other participants and we were able to forge links in a short space of time. This experience was unique and will last."

Survey respondent

What did you gain by attending this academy?



- **9** A better understanding of HIV science and new findings, especially in relation to HIV cure
- **7** It gave me new ideas on how the latest findings in HIV can be applied to local issues
- **7** It gave me new contacts in the field of HIV
- **5** It gave me opportunities for collaboration in order to improve HIV policies and programmes in my region
- **4** Ideas and solutions for challenges I face at work

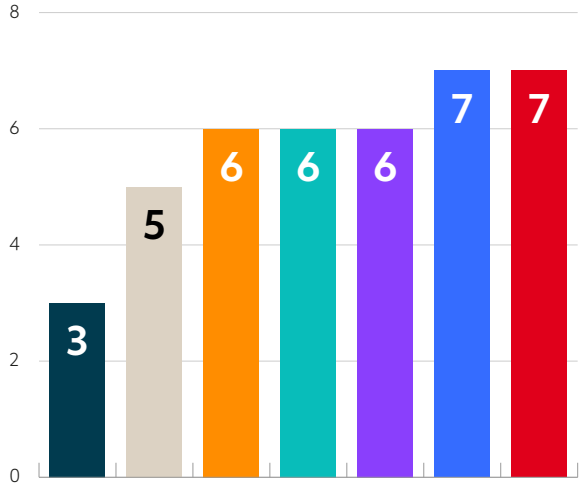
"This is a very necessary endeavour, and it was carried out excellently. Thank you for the wonderful learning and networking opportunity."

Survey respondent

"This was one of the most incredible experiences and I would not have missed it for the world! The facilitators, faculty and fellows were all wonderful and I learnt a huge amount from everyone. Overall - an incredibly inspiring experience! Thank you."

Survey respondent

After the academy, I now intend to



- **7** Develop new collaborations or strengthen existing ones (e.g., create a partnership/network)
- **7** Initiate a new project, activity and/or research or scale up existing projects/programmes
- **6** Use new knowledge gained to contribute to HIV science
- **6** Refine/improve existing work/research practice or methodology
- **6** Change the way I do my work/adapt my practices to the latest evidence
- **5** Improve my ability to engage in the HIV response
- **3** Improve my ability to engage communities living with or affected by HIV in my work