



CAPRISA

CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

Newsletter

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Our feature story this month highlights the opinion piece 'HIV—no time for complacency' by Professors Quarraisha and Salim Abdool Karim published in the journal *Science*.

On page 2 we report on an exciting advancement in structural biology made possible by a START grant awarded to Professors Lynn Morris and Penny Moore; CAPRISA's scientist Dr Pamela Gumbi and a PrEP participant engage at a UNAIDS-WHO meeting on PrEP in Geneva.

We report on the keynote address delivered at the inaugural AGM of UKZN's TIBA programme; we congratulate post doc Dr Gugu Mzobe on her research grant and report on Dr Felix Dakora's, President of the African Academy of Science, visit to CAPRISA on page 3.

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EDITORIAL



HIV—no time for complacency

Today, the global HIV epidemic is widely viewed as triumph over tragedy. This stands in stark contrast to the first two decades of the epidemic, when AIDS was synonymous with suffering and death. But have we turned the tide on HIV sufficiently to warrant directing its attention and investments elsewhere?

Highly effective treatment, through an array of about 30 new antiretroviral drugs, has given people living with HIV an almost normal life span and instilled hope in high-burden communities. Activism played a key role in ensuring global access to treatment. Simplified, low-cost, one-pill-a-day, three-drug combination regimens with minimal side effects are now widely available. The *Global Fund to Fight*

and discrimination that adversely affects their quality of life and undermines their human rights.

An even bigger challenge looms large: how to slow the spread of HIV. The steady decline in the number of new infections each year since the mid-1990s has almost stalled, with little change in the past 5 years. HIV continues to spread at unacceptable levels in several countries, especially in marginalized groups, such as men who have sex with men, sex workers, people who inject drugs,



and transgender individuals. Of particular concern is the state of the HIV epidemic in sub-Saharan Africa, where young women aged 15 to 24 years have the highest rates of new infections globally. Their sociobehavioral and biological risks—including age-disparate sexual



Quarraisha Abdool Karim (TOP) and Salim S. Abdool Karim (BOTTOM) are professors

In an opinion piece published in the journal *Science* on 14 June, Quarraisha and Salim Abdool Karim, CAPRISA's Associate Scientific Director and Director, argue that the AIDS response has now become a victim of the gains made.

The leading AIDS researchers warn that complacency regarding HIV is setting in stating that 'highly effective treatment, through an array of about 30 new antiretroviral drugs, has given people living with HIV an almost normal life span and instilled hope in high-burden communities. The Global Fund to Fight AIDS, Tuberculosis, and Malaria and the U.S. President's Emergency Plan for AIDS Relief support global access to life-saving treatment in poor countries and helped increase treat-

ment coverage from about 2 million people in 2005 to about 21 million in 2017.'

'As it eases the pain and suffering from AIDS, it creates the impression that the epidemic is no longer important or urgent. Commitment to HIV is slowly dissipating as the world's attention shifts elsewhere. Complacency is setting in.'

The opinion piece was published in issue 6394 of *Science*—Far from over, which also featured articles on the global HIV epidemic by *Science* staff writer and acclaimed science journalist, Jon Cohen.

For further reading see:
[HIV-No time for complacency](#) *Science* 2018; 360:1153.



CAPRISA participates at the UNAIDS-WHO meeting on PrEP



CAPRISA scientist, Dr Pamela Gumbi and a CAPRISA study participant, participated in the UNAIDS - WHO meeting on “Shaping PrEP: Modelling for high burden countries in sub Saharan Africa”, held on 6 – 8 June in Geneva. Gumbi stressed the importance of understanding both the behavioural and biological factors that drive the high rates of HIV infection in adolescent girls and young women.

The meeting, which examined service delivery models and capacity requirements for integrated PrEP provision, was hosted by Dr Rachel Baggaley Coordinator, (from Key Populations and Prevention, HIV Department, World Health Organization) and Dr Peter Ghys, Director (Strategic Information Department, UNAIDS).

Gumbi’s presentation titled, ‘Social network anal-

ysis in generalised epidemics to increase PrEP’s impact’, highlighted the use of networking data to improve the impact of PrEP with reference to the phylogenetics study on the cycle of transmission. In her presentation Gumbi stressed the importance of understanding both the behavioural and biological factors that drive the high rates of HIV infection in adolescent girls and young women. The participant in the CAPRISA PrEP Demonstration project (CAPRISA 084), shared her personal experience as a PrEP user living with an HIV positive partner and said she felt “empowered” on PrEP as an additional prevention intervention. Gumbi said the meeting took “stock of the types and sources of data available and how to strengthen and develop effective models to meet the needs of programme planners.”

Opening doors for structural biology in Africa



Photo: (L-R) Colleagues from the NICD— Prof. Penny Moore, Prof. Lynn Morris, Dr. Thandeka Moyo and Dr. Nigel Makoah

The HIV Virology Laboratory, headed by CAPRISA research associates Professors Lynn Morris and Penny Moore, at the National Institute for Communicable Diseases (NICD) re-

cently became part of the Synchrotron Techniques for African Research and Technology (START) grant which is a UK-Africa partnership that aims to strengthen structural biology in Africa.

The grant consists of structural biology laboratories across different South African institutions in partnership with the Diamond Light Source, UK. The first collaborators meeting took place in Cape Town at the beginning of June 2018. Among others, START aims to provide training to African structural biologists, mentorship and access to the various Diamond Light Source beamlines. African scientists will be able to screen and solve crystal and cryo-EM structures at the Diamond Light Source. Through this collaboration, Morris and Moore will have beamtime at the synchrotron in August this year to screen various HIV Fab-gp120 complex crystals that we have optimized.

PhD student wins Young Science Communicators competition

We congratulate PhD student, Simone Richardson from the NICD, who won the Young Science Communicators competition sponsored by the South African Agency for Science and Technology Advancement (SAASTA), a business unit of the National Research Foundation, which promotes the development of science communication skills. The competition runs every two years and aims to encourage young scientists under the age of 35 to develop skills to communicate their work through various channels. SAASTA will fund her registration fees to pursue an online science communicators course at Stellenbosch University.





Reducing HIV in young women — key to global epidemic control



Professor Salim Abdool Karim delivers the keynote address at the inaugural annual general meeting of TIBA launched early this year, TIBA is an Africa-led multi-disciplinary research programme, which explores and draws lessons from ways different African health systems tackle infectious diseases.

Reducing the high rates of HIV infection in young women is key to the control of the global epidemic. This was the message from Professor Salim Abdool Karim at the inaugural annual general meeting (AGM) of the multi-country research programme, Tackling Infections to Benefit Africa (TIBA) held in May. The University of KwaZulu-Natal (UKZN) is one of the partners in TIBA.

The keynote address was entitled, ‘A research journey to unravel why young women have the highest HIV rates in South Africa’, at the meeting attended by leading scientists, donors and government representatives on 29 May. He cautioned that there is no cure or an effective vaccine and therefore there remains a major gap in HIV prevention technologies especially for women, particularly young and adolescent women, who are unable to negotiate the current HIV prevention options – condoms, circumcision and oral PrEP.

CAPRISA post-doc Fellow to pursue antibody study

Dr Gugulethu Mzobe, a postdoctoral research fellow at CAPRISA, was awarded a research grant from the Poliomyelitis Research Foundation [PRF] for a three-year period.

Mzobe who is under the mentorship of CAPRISA scientist Dr Sinaye Ngcapu

in the Mucosal Immunology Laboratory will conduct research on the use of an *ex vivo* human cervical explant model to explore the HIV prevention capabilities of CAP256-VRC26.25LS on its own and in combination with VRC07-523LS or PGT121. This study could

help to explain the “key biological factors mediating effective antibody blocking of HIV-1 infection in human mucosal tissue,” explained Mzobe.

This may have important “implications for bNAbs as a viable alternative to ARV-based HIV prevention,” she said.



President of the African Academy of Sciences visits CAPRISA

Professor Felix Dapore Dakora, President of the African Academy of Sciences (AAS), visited CAPRISA on 31 May and met with Professors Salim and Quarraisha Abdool Karim to gain insights into CAPRISA’s research. He met with young investigators in the CAPRISA laboratory and held discussions with senior scientists. Dakora is professor of plant and soil biotechnology and is the South African Research Chair in Agrochemurgy and Plant Symbioses in the Department of Chemistry at the Tshwane University of Technology in South Africa. He is a recipient of the UNESCO-Equatorial Guinea International Prize for Research in the Life Sciences and the African Union Kwame Nkrumah Scientific Award; and is a Fellow of the Academy of Science of South Africa.



Professor Felix Dakora with Professor Salim Abdool Karim during his visit to the CAPRISA headquarters



Scientific papers published in 2018

- 37* **Garrett NJ, Osman F, Maharaj B, Naicker N, Gibbs A, Norman E, Samsunder N, Ngobese H, Mitchev N, Singh R, Abdool Karim SS, Kharsany ABM, Mlisana K, Rompalo A, Mindel A.** Beyond syndromic management: Opportunities for diagnosis-based treatment of sexually transmitted infections in low- and middle-income countries. *PLoS One* 2018; 13(4):e0196209.
- 38 **Naidoo K, Yende-Zuma N, Augustine S.** A retrospective cohort study of body mass index and survival in HIV infected patients with and without TB co-infection. *Infectious Diseases of Poverty* 2018; 7(1):35.
- 39 **Bionghi N, Daftary A, Maharaj B, Msibi Z, Amico KR, Friedland G, Orrell C, Padayatchi N, O'Donnell MR.** Pilot evaluation of a second-generation electronic pill box for adherence to Bedaquiline and antiretroviral therapy in drug-resistant TB/HIV co-infected patients in KwaZulu-Natal, South Africa. *BMC Infectious Diseases* 2018; 18(1): 171.
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- 41 **Hendricks M, Nair G, Staunton C, Pather M, Garrett N, Baatjies D, Kidd M, Moodley K.** Impact of an educational video as a consent tool on knowledge about cure research among patients and caregivers at HIV clinics in South Africa. *Journal of Virus Eradication* 2018; 4(2):103-107.
- 42 **Govender T, Naidoo S, Padayatchi N, Gwyther L.** Palliative care for drug-resistant tuberculosis: An urgent call to action. *South African Medical Journal* 2018; 108(5):360.
- 43 **Loveday M, Wallengren K, Reddy T, Besada D, Brust JC, Voce A, Desai H, Ngozo J, Radebe Z, Master I, Padayatchi N, Daviaud E.** MDR-TB patients in KwaZulu-Natal, South Africa: Cost-effectiveness of 5 models of care. *PloS One* 2018; 13(4): e0196003.
- 44 **Martin MP, Naranbhai V, Shea PR, Qi Y, Ramsuran V, Vince N, Gao X, Thomas R, Brumme ZL, Carlson JM, Wolinsky SM, Goedert JJ, Walker BD, Segal FP, Deeks SG, Haas DW, Migueles SA, Connors M, Michael N, Fellay J, Gostick E, Llewellyn-Lacey S, Price DA, Lafont BA, Pymm P, Saunders PM, Widjaja J, Wong SC, Vivian JP, Rossjohn J, Brooks AG, Carrington M.** Killer cell immunoglobulin-like receptor 3DL1 variation modifies HLA-B* 57 protection against HIV-1. *Journal of Clinical Investigation* 2018; 128(5):1903-1912.
- 45 **Abdool Karim Q, Abdool Karim SS.** HIV-No time for complacency. *Science* 2018; 360(6394):1153. DOI: 10.1126/science.aau2663.

Scientific Reviews

Abstracts submitted for review		Manuscripts submitted for review		Ancillary studies submitted for review	
Total#	Cumulative [^]	Total#	Cumulative [^]	Total#	Cumulative [^]
0	397	1	234	1	88

for month, [^] since committee initiation



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