



# CAPRISA

CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

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GLOBALLY RELEVANT  
AND LOCALLY RESPONSIVE  
RESEARCH



CAPRISA hosts a DSI-NRF Centre of Excellence in HIV Prevention



National Research Foundation



CAPRISA is the UNAIDS Collaborating Centre for HIV Research and Policy



GLOBAL VIRUS NETWORK



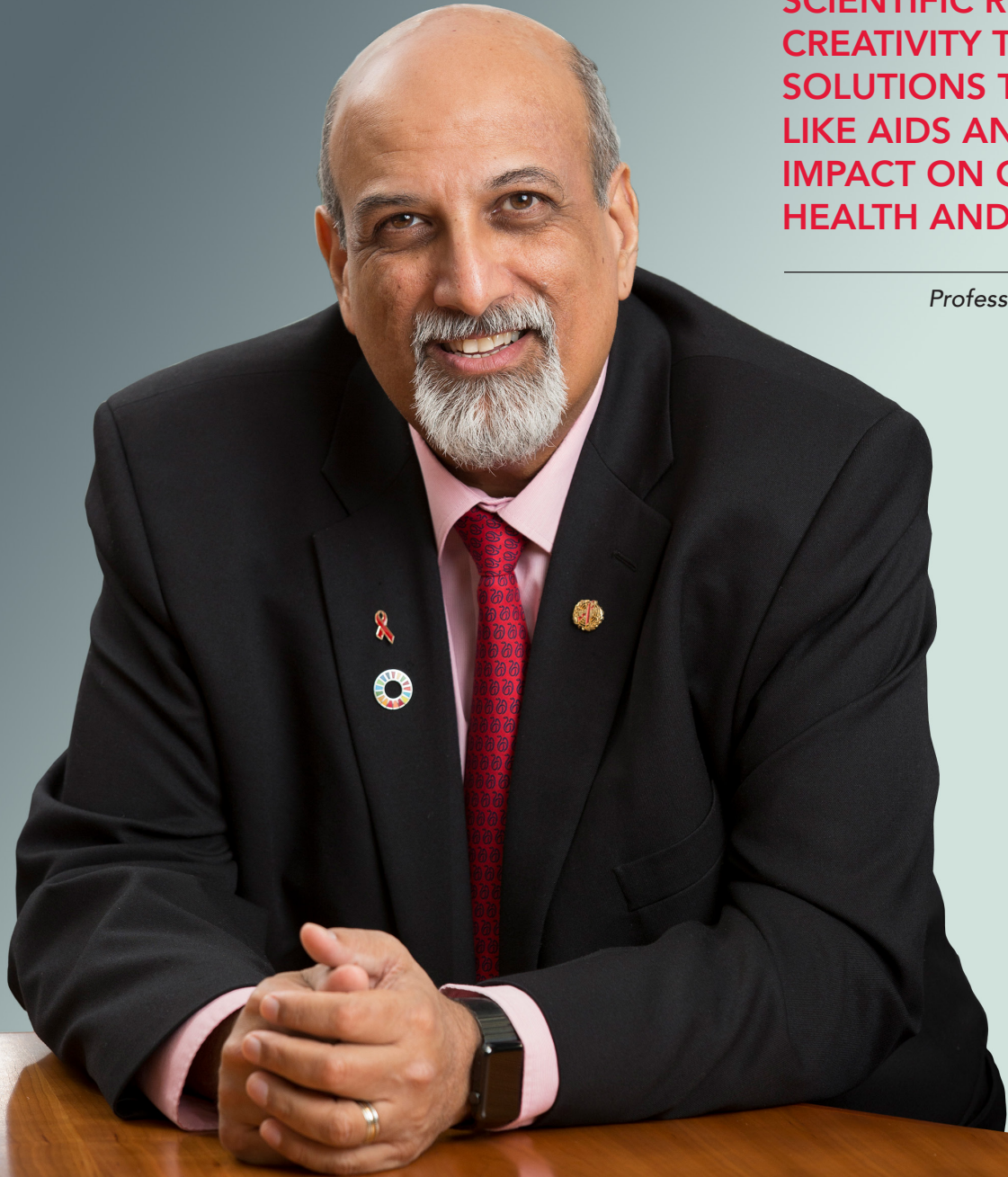
CAPRISA hosts a MRC HIV-TB Pathogenesis and Treatment Research Unit  
CAPRISA hosts a DoH-MRC Special Initiative for HIV Prevention Technology



Department of Health  
REPUBLIC OF SOUTH AFRICA

Partner Institutions:





“ CAPRISA COMBINES  
SCIENTIFIC RIGOUR WITH  
CREATIVITY TO FIND REAL  
SOLUTIONS TO PANDEMICS  
LIKE AIDS AND THEREBY  
IMPACT ON GLOBAL  
HEALTH AND WELL-BEING ”

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*Professor Salim Abdool Karim  
Director, CAPRISA*

## RESEARCH PROGRAMMES

### EPIDEMIOLOGY AND PREVENTION

The epidemiology and prevention programme priorities women and girls as this group accounted for 63% of all new HIV infections in the region in 2021. CAPRISA undertakes studies to monitor the evolving HIV epidemic, enhance understanding of transmission dynamics and identify socio-behavioural and biological factors that contribute to young women's increased vulnerability to HIV. Interventions are developed and tested, especially novel strategies to prevent HIV in young women such as long-acting pre-exposure prophylaxis and vaginal inserts to restore the vaginal microbiome.

### VACCINE AND PATHOGENESIS

The vaccine and pathogenesis programme aims to advance both passive immunization and vaccine strategies to reduce HIV incidence among young women in South Africa. CAPRISA has contributed to the understanding of early viral and immunological events in acute infection, factors driving disease progression and control, and is currently testing broadly neutralizing antibodies for HIV prevention. CAPRISA also participates in large multi-country HIV vaccine trials, contributing to the global HIV, tuberculosis and covid-19 vaccine effort.

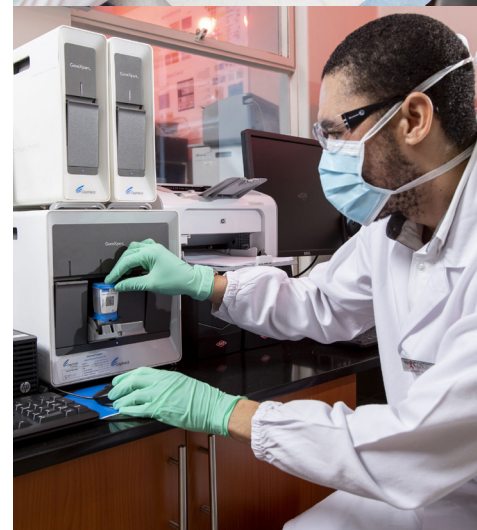
### HIV AND TB TREATMENT

The TB-HIV treatment programme undertakes clinical strategy studies aimed at reducing deaths in co-infected patients and laboratory studies to understand biological mechanisms underpinning tuberculosis risk and clinical outcomes. This programme has contributed to shaping international HIV-TB treatment guidelines. The focus of this programme is on gene-derived individualized treatment and other approaches to improve culture negative survival in drug-resistant TB and on treatment strategies to improve drug-resistant TB outcomes.

### MUCOSAL IMMUNOLOGY

The mucosal immunology laboratory undertakes basic and translational research related to HIV prevention and pathogenesis. The focus of the laboratory is on understand how the microbiome, genital inflammation and mucosal immunology play a role in HIV risk in women. This programme has contributed to understanding barriers to protection from topical and oral PrEP as well as passive immunity and vaccines. The research aims to inform the development of new technologies that can prevent HIV infection in women.

**CAPRISA hosts a DSI-NRF Centre of Excellence (CoE) in HIV Prevention, an MRC HIV-TB Pathogenesis and Treatment Research Unit and is a Centre of Excellence of the Global Virus Network (GVN).**



# AWARDS AND PRIZES TO CAPRISA RESEARCHERS

## 2011

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### Inaugural Olusegun Obasanjo Prize\*

- from the African Academy of Sciences

### President's Award for Outstanding Achievement in World Health\*

- from the DIA (Drug Information Association)

### Allan Rosenfield Alumni M.D. Alumni Award\*

- from the Columbia University Alumni Association

### NSTF - BHP Billiton Award\*

- from the National Science & Technology

### Distinguished Woman in Science Award in the Life, Natural and Engineering Sciences

- from the Department of Science and Technology

### Medicine Award: Fellowship in Art and Science of Medicine Gold Medal

- from the South African Medical Association

### Outstanding Senior African Scientist Award

- from the European and Developing Countries Clinical Trials Partnerships

### Chancellor's Calabash Award\*

- from the University of South Africa (UNISA)

## 2012

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### TWAS Prize in Medical Sciences\*

- from The World Academy of Sciences (TWAS)

### Minara Academic Excellence Award\*

- from the Minara Chamber of Commerce

### N'Galy-Mann Award\*

- from the Conference for Retroviruses and Opportunistic Infections

## 2013

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### John F. W. Herschel Medal\*

- from the Royal Society of South Africa

### The 2013 Scientific Prize

- from the International Union Against Tuberculosis and Lung Disease

### African Union Kwame Nkrumah Scientific Prize

- from the African Union

## 2014

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### Order of Mapungubwe

- from the Presidency of the Republic of South Africa

### Annual Service Excellence Award

- from the KwaZulu-Natal Department of Health

### The Mayor's Award for Excellence

- from the eThekweni Municipality

### Lifetime Achievement Award

- from the India HIV Congress 2014

### Science-for-Society Gold Medal\*

- from the Academy of Science of South Africa (ASSAf)

### US Science and Technology Pioneers Prize\*

- from the United States Agency for International Development

### TWAS Lenovo Science Prize

- from The World Academy of Science (TWAS)

### Gold Medal Scientific Achievement Award

- from the South African Medical Research Council

### Lifetime Achievement Award\*

- from the AIDS Society of India

## 2015

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### African Union Kwame Nkrumah Continental Scientific Award

- from the African Union

### eThekweni Living Legends Award

- from the eThekweni Municipality

### Platinum Lifetime Achievement Award

- from the South African Medical Research Council

## 2016

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### L'Oréal-UNESCO Women in Science Award

- from the L'Oréal Foundation and UNESCO

## 2017

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### Lifetime Achievement Awards\*

- from the Institute of Human Virology, United States

### Legends of South African Science\*

- from ASSAf

## 2018

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### Ward Cates Spirit Award

- from the HIV Prevention Trials Network

### Al Sumait Prize

- from the Kuwait Foundation for the Advancement of Science

### Silver Medal for Scientific Achievement

- from the South African Medical Research Council

## 2019

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### Royal Society Fellowship

- from the Royal Society, United Kingdom

### African Leadership Award

## 2020

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### John Dirks Canada Gairdner Global Health Award\*

- from the Gairdner Foundation

### Christophe Mérieux Award

- from the French Academy of Sciences



### 500 years of the Straits of Magellan Award\*

- from the Government of Chile

### John Maddox Prize for Standing up for Science

- from Sense about Science and Nature

## 2021

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### CPHIA Lifetime Achievement Award in Public Health

- from the Conference on Public Health in Africa by the Africa CDC and the African Union

## 2022

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### 4th Hideyo Noguchi Africa Prize in Medical Research\*

- from the Government of Japan

### VinFuture Special Prize for Developing Countries Innovators\*

- from the VinFuture Foundation, Vietnam

### Discovery Health Lifetime Leadership Award

- from the Discovery Health and the KwaZulu-Natal Doctors Healthcare Coalition

## 2023

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### Medical School Legends of Medicine\*

- from the University of KwaZulu-Natal Nelson Mandela Medical School

\* awarded to two or more CAPRISA researchers either as joint awards or as multiple awards on separate occasions.

# CAPRISA – IMPACTING THE AIDS AND COVID-19 PANDEMICS IN AFRICA

CAPRISA has focused on the two biggest AIDS challenges in Africa: reducing HIV-TB co-infection deaths and preventing new HIV infections in young women. Africa comprises 70% of the global HIV burden, where the highest rates are in young women, mostly teenage girls. HIV-TB co-infection is one of the leading causes of death in South Africa. During the Covid-19 pandemic, CAPRISA's scientists provided scientific leadership, compelling epidemiological analyses and articulate public education, in addition to undertaking research on new diagnostics, vaccines and variants. Research by CAPRISA scientists has saved lives by unravelling the reasons for high rates of HIV in young women in Africa, showing that antiretrovirals prevent sexual HIV transmission and showing that integrated TB-HIV treatment halves co-infection deaths.

## THE "CYCLE OF HIV TRANSMISSION" IN AFRICA

CAPRISA's research (AIDS 1992) provided the initial epidemiological insights into the central importance of age-disparate sex between young girls and older men in driving high HIV prevalence rates in Africa. Its large-scale community phylogenetic study (Lancet HIV 2016) provided empirical evidence of the "Cycle of HIV Transmission" where young girls are most often infected by older men. These findings were the basis of the 2016 UNAIDS Report on the "Life Cycle approach to HIV" that was used throughout Africa for national policymaking and planning. Breaking the cycle of transmission was listed as the number one objective in SA's National AIDS Plan.

## PREVENTING NEW HIV INFECTIONS IN YOUNG WOMEN IN AFRICA

The CAPRISA 004 clinical trial provided the first evidence that antiretrovirals prevent sexually acquired HIV infection in women (Science 2010), demonstrating that high tenofovir levels were essential (Lancet 2011) as a potential correlate of protection. Tenofovir gel also protected against genital herpes (NEJM, 2015). It was the first technology to empower women to protect

themselves from HIV, changed the global HIV prevention landscape with PrEP and was heralded by UNAIDS and WHO as among the most significant scientific breakthroughs in the fight against AIDS. These findings contributed, together with several important studies on oral tenofovir, to the WHO's 2015 recommendation on PrEP as a standard HIV prevention tool.

## INTEGRATED TB-ART TREATMENT STRATEGY REDUCES DEATHS IN CO-INFECTED PATIENTS

The CAPRISA 003 clinical trial showed that antiretroviral therapy initiation during TB treatment halved deaths from co-infection (NEJM 2010). The study showed that early ART initiation was key to improved survival (NEJM 2011). Shortly thereafter, the WHO released updated guidance on the treatment of HIV-TB co-infection, drawing upon these findings. Today, most country-level guidelines for HIV-TB treatment draw upon the findings. PEPFAR's decision to implement this approach throughout Africa has prevented >100,000 deaths annually. In addition, the South African HIV-TB treatment guidelines were changed following the results, halving the number of deaths from co-infection over 5 years.

## LEADING THE RESPONSE TO PANDEMICS: COVID-19

In 2020, CAPRISA rapidly pivoted its HIV research capabilities to respond to the Covid-19 epidemic by establishing PCR testing well before the first case was identified in South Africa. Several Covid-19 studies were initiated to study viral transmission, re-infection, viral variants, interactions between Covid-19 and HIV, and novel rapid antigen assays. CAPRISA has been part of conducting three SARS-CoV-2 vaccine trials and played a leading role in the Sisonke Programme to vaccinate healthcare workers in the South Africa's vaccine roll out. CAPRISA Covid-19 scientific contributions in 2020/1 include over 50 papers, about half in the four highest impact journals (NEJM, Lancet, Nature and Science). Early in the Covid-19 pandemic, CAPRISA published seminal contributions on how COVID-19 affects HIV and tuberculosis in Science and on clinical, public health and vaccine implications of SARS-CoV-2 variants in the NEJM. CAPRISA provided the initial epidemiological evidence, within days of omicron's first announcement, for the higher transmissibility and lower clinical severity of omicron compared to the beta and delta variants (Lancet 2021).



**Dr Nigel Garrett**

*CAPRISA Head of Vaccine and Pathogenesis Research*

## CAPRISA EXECUTIVE



Salim Abdool Karim  
Director



Quarraisha Abdool Karim  
Associate Scientific Director



Kogie Naidoo  
Deputy Director

## CAPRISA ARTICLES AND CITATIONS

(2010 - 2022)

### > 2000

- Number of times the CAPRISA 004 article in *Science* has been cited (actual number of times cited 2032)

### > 1250

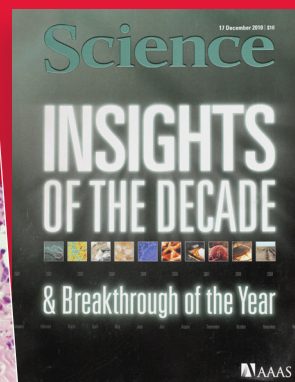
- Number of publications since 2010 (actual number of publications between 2010-2022: 1277)

### > 40%

- The proportion of CAPRISA articles in journals with an impact factor >5



The CAPRISA 004 Trial was ranked among the **Top 10 scientific breakthroughs** in 2010 by the journal **Science**



## RESEARCH CLINICS



The **eThekweni CAPRISA Research Clinic** adjoins the Prince Cyril Zulu Communicable Disease Centre, which is the largest government outpatient TB and sexually transmitted diseases treatment facility in Durban. The Clinic is in the Durban City Centre transport hub next to the main train station, bus rank and taxi station.



The **Springfield CAPRISA Research Clinic** at the King Dinuzulu Hospital, which is the largest TB referral hospital in the province of KwaZulu-Natal. As several hundred patients with drug resistant TB are treated at this hospital each year, CAPRISA's research here focuses on clinical studies on MDR-TB and XDR-TB.



The **Vulindlela CAPRISA Research Clinic** adjoins the Mafakatini Primary Health Care Clinic in the rural Vulindlela district in KwaZulu-Natal. This research facility, which hosts an adolescent friendly clinic, has a close working relationship with the local community to study new approaches to HIV prevention and treatment.

## COMMUNITY PROGRAMMES



CAPRISA actively engages and partners with communities involved in its research as knowledgeable and informed communities are critical to the successful and ethical conduct of the research. Community outreach and education teams work with communities and Community Advisory Boards. The CAPRISA Community Engagement Team has two decades of experience, having worked with communities and sharing their experiences locally, nationally and globally.



**Patrick Mdletshe**  
*CAPRISA Head of  
Community  
Programmes*



CAPRISA was established in 2002 as a multi-institutional collaboration, incorporated as an independent non-profit AIDS Research Organisation. The five major partner institutions are: University of KwaZulu-Natal, University of Cape Town, University of the Western Cape, National Institute for Communicable Diseases and Columbia University in New York. CAPRISA has diverse expertise including epidemiology, biostatistics, virology, immunology, diagnostics, infectious disease medicine, pharmacy, vaccinology, health communication and health policy. CAPRISA is an official research institute of the University of KwaZulu-Natal and Columbia University.

## CAPRISA GOALS

To undertake globally relevant and locally responsive research that contributes to understanding HIV and TB epidemiology, pathogenesis, prevention and treatment, as well as contributing to pandemic intelligence, preparedness and response.



**Bongive Ntuli**

*Chair: CAPRISA Board of Control, Chief Executive Officer of the Foschini Group*



**Professor Françoise Barré-Sinoussi, Nobel Laureate**

*Chair: CAPRISA Scientific Advisory Board, Emeritus Professor, Institut Pasteur and Emeritus Director of Research, Inserm*

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