



CAPRISA

CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

Newsletter

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In this Issue

Our feature story this month on pages 1 & 2 highlights the prestigious Vin Future Prize awarded to Profs Salim And Quarraisha Abdool Karim for their research in HIV prevention. We cover the spectacular awards ceremony.

On page 3 we highlight the study "Transient association between semen exposure and biomarkers of genital inflammation in South African women at risk of HIV infection", published in the *Journal of the International AIDS Society*,

On page 4 we report on the visit of the Singapore's High Commissioner to South Africa to CAPRISA and we congratulate Prof Penny Moore on her appointment as a Full Professor at the University of Witwatersrand.

Also on page 4 we report on Dr Simone Richardson's study entitled "SARS-CoV-2 Beta and Delta variants trigger Fc effector function with increased cross-reactivity" in *Cell Reports Medicine*.

Abdool Karims receive Vietnam VinFuture Special Prize

"The VinFuture Prize celebrates the power of science and technology to solve global problems" - Professor Sir Richard Friend, VinFuture Prize Council



Photo at Hanoi Opera House in Vietnam: (L-R) Mr Do Van Chien, Chairman of the Central Committee of the Vietnam Fatherland Front presents the Prize to Prof Quarraisha Abdool Karim, CAPRISA Associate Scientific Director; Prof Salim Abdool Karim, CAPRISA Director receives the Prize from Dr Tran Tuan Anh, Head of the Central Economic Commission, Vietnam

CAPRISA's Professors Salim and Quarraisha Abdool Karim, Director and Associate Scientific Director were awarded the prestigious inaugural VinFuture Special Prize for Innovators from Developing Countries, in recognition of their ground-breaking research on HIV prevention by the VinFuture Foundation in Vietnam.

of US\$500 000 each, were awarded on Thursday 20th January at the Hanoi Opera House in Hanoi, Vietnam.

The Abdool Karims joined world-renowned scientists who gathered in Vietnam to take part in the VinFuture Sci-Tech Week's activities that included the "Science for life" Symposium; the inaugural VinFuture Award Ceremony; and the Scientific Dialogue with the in-

The inaugural global sci-tech VinFuture Prizes: the VinFuture Grand Prize of US \$3million and three Special Prizes

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Vietnam VinFuture Prize continued...

inaugural VinFuture Prize Laureates. Eminent guests included Mr. Pham Minh Chinh, Prime Minister of Vietnam and the Founders of the VinFuture prizes Mr. Phạm Nhật Vượng and his wife Mrs. Phạm Thu Hương.

The VinFuture Grand Prize was awarded to Dr Katalin Kariko; Professor Drew Weissmen and Professor Pieter R Cullis the inventors of the core mRNA vaccine technology; The Special Prize, for Female Innovators was awarded to Professor Zhenan Bao (USA) for her work on developing flexible electronics with the sensing properties of human skin; and the Special Prize for Innovators with Outstanding Achievements in Emerging Fields, was awarded to Professor Omar Yaghi (USA) for his work on discovering metal-organic frameworks.

The Abdool Karims have ‘tirelessly championed the importance of science in defining the HIV and Covid-19 response,’ said Ms Bongwiwe Ntuli, Chair of the CAPRISA Board, ‘South Africa is blessed to have such world-class scientists whose research is making the world a better place.’

Almost 600 nominations across 60 countries were received for the Prizes. Of these nominations, nearly 100 came from the world’s top 2% most-cited scientists, many of whom are themselves laureates of distinguished awards, such as the Nobel Prize, Japan Prize and Tang Prize. Professor Sir Richard Friend, VinFuture Prize Council Chair, said ‘The VinFuture Prize recognizes truly outstanding scientific work that has made and will make, a positive impact on the lives of millions, or even billions, of people around the world. The VinFuture Prize celebrates the power of science and technology to solve global problems.’

‘The 2022 VinFuture prize for scientists in developing countries is a beacon of hope and recognition for the many scientists in the developing world who toil away



Photo: Top: A scientific dialogue was held with the VinFuture Laureates. Photo: Bottom: The VinFuture Prize ceremony was held in the grand Opera House in Hanoi, Vietnam.

each day in their laboratories, clinics, and libraries - that scientific excellence is achievable in the midst of adversity,” said the Abdool Karims. “While we serve as its recipients, this prize is recognition for the dedication and commitment to excellence by a team of over 200 researchers in South Africa, with collaborators from 4 continents across the globe, and thousands of volunteers who have participated in our studies over the last 33 years.”

The Abdool Karims described the Vinfuture Award ceremony “like a Broadway theatre production with the full Hanoi orchestra, a contribution by Vietnam’s top pianist and a special guest appearance by John Legend.”

To watch the ceremony: [Click here](#)



Study shows transient association between semen exposure and biomarkers of genital inflammation in South African women at risk of HIV infection

In an article entitled, “Transient association between semen exposure and biomarkers of genital inflammation in South African women at risk of HIV infection”, published in the *Journal of the International AIDS Society*, researchers investigated the contribution of recent semen exposure on biomarkers of genital inflammation in women at high HIV risk.

Stored vaginal specimens from the CAPRISA 008 trial were screened for prostate-specific antigen (PSA) and Y-chromosome DNA (YcDNA), representing semen exposure within 48 hours (PSA+YcDNA+) and within 3-15 days of genital sampling (PSA-YcDNA+). Soluble protein concentrations were measured in vaginal fluid by multiplexed ELISA assay. T-cell frequencies were assessed in cytobrushes by flow-cytometry, and vulvo-vaginal swabs were used to detect common vaginal microbes by PCR.

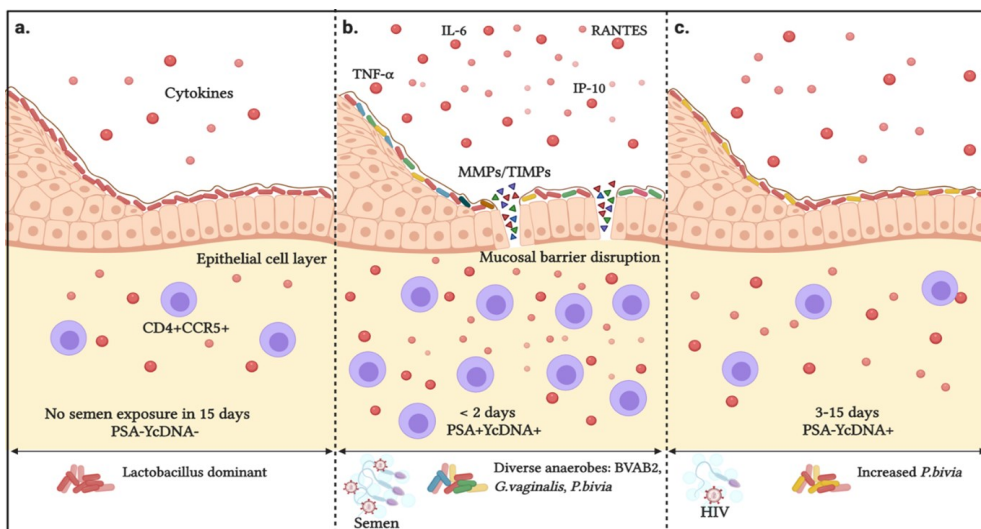
The authors demonstrated that semen exposure was associated with how often women saw their partners, the frequency of vaginal sex in the past month, HSV-2

antibody detection, current gonorrhoea infection, and Nugent Score. Recent semen exposure predicted significant increases in several pro-inflammatory cytokines (including IL-6, TNF- α , IP-10, and RANTES), barrier-related proteins (MMP-2, TIMP-1, and TIMP-4), and activated CD4 T cells. PSA detection was also associated with the detection of BVAB2, *Prevotella bivia*, and *Gardnerella vaginalis* in vaginal specimens.

This study demonstrated that recent semen exposure induces transient pro-inflammatory immune responses at the female genital tract (FGT) which may impact HIV risk in women.

These findings further emphasize the need for studies of genital mucosal immunity to consider the contribution of semen exposure to the FGT microenvironments, preferably using a biomarker of recent semen exposure.

Janine Jewanraj PhD



Jewanraj J, Ngcapu S, Osman F, Ramsuran V, Fish M, Mtshali A, Singh R, Mansoor LE, Abdool Karim SS, Abdool Karim Q, Passmore J-A S, Liebenberg LP. Transient association between semen exposure and biomarkers of genital inflammation in South African women at risk of HIV infection. *Journal of the International AIDS Society* 2021 June; 24:e25766. doi: 10.1002/jia2.25766 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223121/>

Graphical representation of semen-associated alterations at the female genital mucosa. (a) An optimal vaginal environment in the absence of semen exposure. Here, the vaginal microbiome is dominated by *Lactobacillus*, few cytokines, and immune cells are present at the FGT, and the vaginal epithelial barrier is intact. (b) In this study, recent semen exposure <2 days before genital sampling and higher YcDNA concentrations were associated with elevated concentrations of several cytokines, MMPs/TIMPs, BV-associated microbes, and HIV target cell recruitment at the female genital mucosa. (c) In comparison, semen exposure within 3-15 days was only associated with moderate alterations in cervicovaginal cytokine concentrations and increased detection of *P. bivia* compared to no semen exposure within 15 days.



Singapore's High Commissioner to South Africa visits CAPRISA



Photo (L-R): Mr Han Wei Lam Second Secretary; Prof Quarraisha Abdool Karim Associate Scientific Director, CAPRISA; Madam Jennifer Cheng; Mr Zainal Arif Mantaha Singapore's High Commissioner to South Africa; Professor Salim Abdool Karim Director CAPRISA.

On 10th January CAPRISA hosted Singapore's High Commissioner to South Africa, Mr Zainal Arif Mantaha who was accompanied by his wife Madam Jennifer Cheng and the second secretary, Mr Han Wei Lam. The High Commissioner held discussions with Professors Salim and Quarraisha Abdool Karim to gain insight into CAPRISA's core research studies in HIV, TB and Covid-19.

The visit included a tour of the CAPRISA eThekweni Research clinic led by Dr Nigel Garrett, Head: Vaccines & Pathogenesis Research.

Congratulations Professor Penny Moore!



We warmly congratulate Professor Penny Moore (*in the photo*) who was promoted to Full Research Professor at the University of the Witwatersrand, Johannesburg.

SARS-CoV-2 Beta and Delta variants trigger Fc effector function with increased cross-reactivity

Dr Simone Richardson of the NICD recently published a study entitled "SARS-CoV-2 Beta and Delta variants trigger Fc effector function with increased cross-reactivity" in *Cell Reports Medicine*.

Beyond neutralization, antibodies trigger other cytotoxic functions associated with SARS-CoV-2 vaccine protection. Simone, Nelia Manamela and PhD student, Boitumelo Motsoeneng, developed several new assays to measure these functions in SARS-CoV-2 vaccination and infection.

This study shows that these functions are retained against SARS-CoV-2 VOC and that infection by VOCs triggers cross-reactive cytotoxic antibodies.

This suggests that SARS-CoV-2 VOC could be used as the basis of vaccines triggering enhanced immune breadth beyond neutralization alone.

For further reading: <https://bit.ly/3sh3em6>

NICD contributes to the 27th South African Society of Biochemistry and Molecular Biology conference

The 27th South African Society of Biochemistry and Molecular Biology (SASBMB) Conference held on 23-26 January was a virtual event. Dr Thandeka Moyo-Gwete's (*in the photo*) talk on the "The antibody response to SARS-CoV-2 – What have we



learned in the last 2 years of this pandemic?" focused on how the Moore laboratory transferred the skills developed in the HIV vaccine research field to tackle questions in the SARS-CoV-2 antibody responses. Prof. Lynn Morris delivered a plenary talk entitled "How basic science research beat COVID". Her talk focused on how the COVID-19 pandemic has shaped the research sphere with novel approaches leading to faster data sharing and research being implemented into public health policy at an exceptionally fast rate. She highlighted the major contributions made by South African scientists in understanding SARS-CoV-2 virology and immunology.



A selection of scientific papers published in 2021

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