



CAPRISA

CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

Newsletter

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Study shows vaginal microbiomes are not affected by oral PrEP

In this Issue

On page 1 we feature the study that investigated the impact of PrEP on the vaginal microbiome in South African women.

On page 2 we congratulate Prof Kogie Naidoo CAPRISA Deputy Director on her membership to ASSAf. We report on Naidoo's keynote address to UKZN's top 100 female STEM students and on CAPRISA's participation at the 2022 Grand Challenge held in Belgium.

Page 3 features Profs Salim & Quarraisha Abdool Karim at NAM's annual meeting and at the Gairdner Science week in Canada. We also highlight the feature on Prof Tulio de Oliveira in the journal *Science*.

On page 4 we report on visits from the universities Columbia, Denver and Makerere; and community engagement with high school learners in Mafakathini, KwaZulu-Natal.

On page 5 we feature the first cross sectional study on the mental health of pharmacists in South Africa during the Covid-19 pandemic.

CONTACT DETAILS

CAPRISA
Doris Duke Medical
Research Institute (DDMRI)
2nd Floor
University of KwaZulu-Natal
Private Bag X7, Congella 4013
South Africa



T: +27-31-260 4555
F: +27-31-260 4566

A CAPRISA-led study, "Vaginal microbial shifts are unaffected by oral pre-exposure prophylaxis in South African women", provided reassuring results that oral PrEP in women does not have a negative impact on the vaginal microbiome.

This retrospective study within the CAPRISA 082 and CAPRISA 084 studies, published in the open access journal, *Scientific Reports* investigated the impact of daily oral tenofovir disoproxil fumarate in combination with emtricitabine (TDF-FTC) for PrEP on the vaginal microbiota in South African women.

Researchers characterised the vaginal microbial communities of 64 PrEP and 36 non-PrEP group using the V4 region of the 16S rRNA sequencing in women enrolled in the CAPRISA 082 and CAPRISA 084 daily PrEP projects. Samples were selected at baseline, 3 months and 6 months.

At baseline, *Lactobacillus iners* or *Gardnerella vaginalis* dominant vaginal

communities were observed in the majority of participants. In cross sectional analysis, vaginal microbiota were not affected by the initiation and use of oral PrEP.

Longitudinal analysis revealed that *L. crispatus*-dominant "cervicotypes 1 (CT1)" communities had high probability of remaining stable in PrEP group, but had a higher probability of transitioning to *L. iners*-dominant CT2 communities in non-PrEP group. *L. iners*-dominant communities were more likely to transition to communities associated with bacterial vaginosis (BV), irrespective of PrEP or antibiotic use. BV-linked CTs had a higher probability of transitioning to *L. iners* than *L. crispatus* dominant CTs and this shift was not associated with oral PrEP use.

The researchers recommend regular screening for STIs and BV during PrEP care particularly in regions with high rates of HIV infection.

For more reading see: Mazibuko-Motau N et al. *Scientific Reports* 2022. doi: 10.1038/s41598-022-20486-z. <https://www.ncbi.nlm.nih.gov/pmc/articles/>

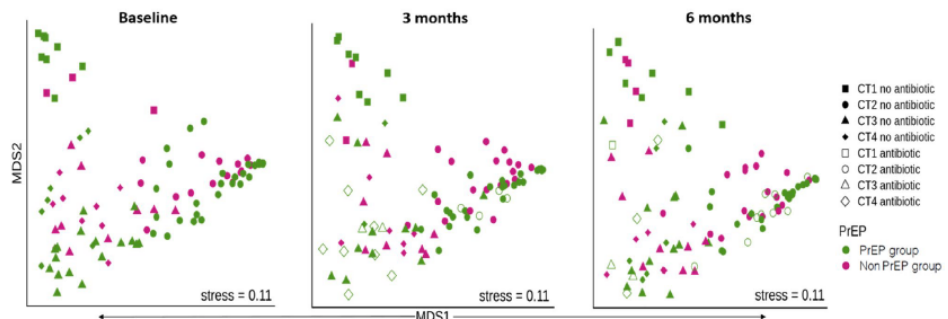


Figure 3. Non-metric Multidimensional scaling (NMDS) of Bray-Curtis showing no clustering dissimilarity of species level relative abundances in PrEP and non-PrEP groups at baseline, 3 months and 6 months. The pink colour represents non-PrEP group and green colour represents PrEP group. Open shape represents participants on antibiotics.



Professor Kogie Naidoo is elected to the Academy of Science of South Africa



Professor Kogie Naidoo Deputy Director CAPRISA was inaugurated a newly elected Member of the Academy of Science of South Africa (ASSAf) at the Annual Awards Ceremony held on 19th October in Pretoria. New members are elected for 'significant achievement

in the pursuit, advancement or application of science'. 'As the official Academy of South Africa, ASSAf has as its core function to honour the country's most outstanding scholars by electing them to the Membership of the Academy'.

Naidoo's contribution to HIV and TB treatment spans two decades. She was a lead investigator in several Phase II and III TB-HIV and drug resistant -TB treatment trials and was the lead investigator in CAPRISA's clinical studies aimed at optimizing treatment strategies for TB-HIV co-infected patients. Most notably she led the CAPRISA SAPiT trial, which served as

the basis for TB-HIV treatment integration guidance incorporated into several international and in-country guidelines including WHO guidelines.

According to ASSAf, Members are the core asset of the Academy and give of their time and expertise voluntarily in the service of society.

Celebrating Women in STEM

Professor Naidoo was the keynote speaker at a High Tea celebrating Women in STEM hosted by the College of Agriculture, Engineering and Science (CAES) at the University of KwaZulu-Natal on 14 October. The event aimed at inspiring and motivating UKZN's top 100 female STEM students to stay and thrive in their chosen STEM careers. Naidoo related the story of her own personal and professional journey in STEM, from humble beginnings to leading a global hub for HIV and TB treatment and prevention. She encouraged the girls to overcome obstacles, follow their passion and commit to studying towards a career that they loved and that would enthrall them for the rest of their lives. The event was sponsored by Johnson & Johnson under the WiSTEM2D initiative.



Photo top: (L-R) Prof Jonathan Jansen President of ASSAf presents the membership certificate to Prof Kogie Naidoo at the Awards ceremony.

Photo bottom left: (far right) Prof Kogie Naidoo and Prof Christina Trois, Professor in Environmental Engineering, with UKZN 's top 100 female STEM students at the UNITE building on the UKZN campus.

A focus on innovation for women prevention interventions at the 2022 Grand Challenges meeting

Dr Disebo Potloane, Site Director at CAPRISA Vulindlela Research site and Dr Ishana Harkoo Research Clinician at the CAPRISA eThekweni Research site participated in the 2022 Grand Challenges Annual Meeting held in Brussels, Belgium from 23-26 October.

Potloane presentation on: "VMRC 001: Phase I Trial of Live Biotherapeutic Product for the Prevention of Bacterial Vaginosis" was delivered in the Microbiome-directed Discovery and Intervention track; and Harkoo presented on: "Young Women in KwaZulu-Natal Perspectives on Contraceptive use" in the Innovations in Non-Hormonal Contraceptives Research & Development Scientific Track - Understanding end-user preferences.

The meeting is co-hosted by the Global Grand Challenges network of partners, and aims to catalyze collaboration among researchers, funders, and other partners to accelerate innovation for impact in solving the world's most urgent global health and development problems.



Photo (L-R): Snr Scientists Dr Sinaye Ngcapu & Leila Mansoor with Drs Disebo Potloane & Ishana Harkoo in Belgium



Abdool Karims join global health leaders at NAM and Gairdner Science Week

Professor Salim and Quarraisha Abdool Karim, Director & Associate Director, CAPRISA attended the hybrid scientific symposium hosted by the National Academy of Medicine (NAM) Interest Group on Global Health and Infectious Diseases at the NAM annual meeting titled, "Revolutionizing the Biomedical and Health Sciences" on October 17 (photo top right). The meeting attended by NAM members was held at the National Academy of Sciences Building in Washington, DC. 'Election to the Academy is considered one of the highest honors in the fields of health and medicine and recognizes individuals who have demonstrated outstanding professional achievement and commitment to service'.



The Abdool Karims were invited as Gairdner laureates to deliver presentations at the Gairdner Science Week 2022 (photo bottom right) convened for global health leaders and Gairdner laureates. The symposia were held in Canada from 23rd October to Monday 1st November.



During the Science Week they delivered Faculty lectures at the University of Montreal hosted by the Dean of Medicine Dr Patrick Cossette, titled: "HIV in Africa: Trials & Tribulations and The Covid-19 pandemic: Lesson learnt"; and a lecture titled: "Research Excellence in Africa".

In the spotlight – the journal Science features Professor Tulio de Oliveira

FEATURES

Coronavirus: detective Tulio de Oliveira outside his institute's offices in Stellenbosch, South Africa, last month.

AN ADVOCATE FOR AFRICA

With rigorous science and good-humored braggadocio, Tulio de Oliveira champions coronavirus research from the Global South

By Meredith Wadman

As Americans began to stir in the early morning hours of Monday, Oct. 4, 2021, a rapid response was

of concern. That same day, the United Kingdom and European Union ban travelers from South Africa, triggering 1.5 million cancellations in the \$1.5-billion tourism industry in

The feature titled 'An Advocate for Africa' published in the journal *Science* on 6th October captures Professor Tulio de Oliveira's extraordinary journey as a Bioinformatician and his central scientific role during the Covid-19 pandemic.

Dr Meredith Wadman's narrative details Oliveira's passion to nurture and develop Africa's scientific young scientists, his expertise in genomics surveillance and sequencing data in 'real-world power of tracking viral evolution' and more recently his coronavirus genomic sequencing work that led to the global understanding of variants and mutations. "The world owes Dr Tulio de Oliveira a debt of gratitude for his genomic sequencing work ... and for sharing his research," said WHO Director-General Tedros Adhanom Ghebreyesus.

"My dream is to show the world that the global South - Africa, Latin America, and Southeast Asia are the best place in the world to identify new pathogens and control them," says Oliveira. He leads the Centre for Epidemic Response and Innovation (CERI) at the University of Stellenbosch (SU) and is Professor of Bioinformatics at SU's School for Data Science and Computational Thinking.

Click on the link to read the article:
<https://pubmed.ncbi.nlm.nih.gov/36201592/>



Officials from Columbia, Makerere and Denver universities collaborate

CAPRISA hosted officials from the universities of Columbia, Makerere and Denver aimed at strengthening partnerships and future research collaborations.



Prof Barun Mathema, Professor of Public Health at Columbia University, New York visited CAPRISA in September and was hosted by Prof Kogie Naidoo, Deputy Director of CAPRISA. Mathema (TARGET TB Principal Investigator) and Naidoo (TARGET TB co-Principal Investigator) undertook a visit to the TARGET TB study site in Tongaat, KwaZulu-Natal. Mathema also held discussions with Dr Rubeshan Perumal, CAPRISA Senior Scientist and Pulmonologist.

Photo (L-R) Prof Barun Mathema, Dr Rubeshan Perumal, Ms Pinky Motsomi (Study Coordinator) and Prof Kogie Naidoo



Dr David Meya, Associate Professor in the School of Medicine at the College of Health Sciences, Makerere University, Uganda visited CAPRISA on 7th October and held discussions with Professor Kogie Naidoo, Dr Bernadett Gosnell and Dr Richard Lessells to gain insight into CAPRISA's core research studies in TB-HIV Treatment,

Photo (L-R): Dr Bernadett Gosnell, Principal Medical Officer at the Department of Infectious Disease UKZN; Dr Richard Lessells, Clinical Infectious Diseases Specialist at KRISP; Professor Kogie Naidoo, CAPRISA Deputy Director and Dr David Meya



Dr Corinne Lengsfeld, Senior Vice Provost for Research and Graduate Education at Denver University visited CAPRISA on 19th October and met with Dr Tanuja Gengiah, Head of Pharmacy, Dr Nonhlanhla Yende-Zuma, Head of Statistics and Dr Lenine Liebenberg, Senior Scientist.

Gengiah led the discussions on CAPRISA's TB-HIV prevention, treatment and Covid-19 research. A highlight of her visit was a tour of CAPRISA's main laboratory by Mrs Natasha Samsunder, Director Laboratories.

Photo (L-R): Dr Lenine Liebenberg, Dr Tanuja Gengiah, Dr Corinne Lengsfeld, Mrs Natasha Samsunder and Dr Nonhlanhla Yende-Zuma

Educational and information outreach with high school Learners

Mr Patrick Mdletshe CAPRISA's Head of Community Programme addressed high school learners at the Sibanesihle High School in the Mafakathini in the district of UMgungundlovu on 26th October as part of CAPRISA's educational and information outreach into communities.

Joined by CAPRISA Fellows and staff Mdletshe raised four important issues affecting young girls and women: the high rate of teenage pregnancies, gender-based violence, HIV-TB prevention and sexually transmitted diseases.

He urged learners to remain steadfast in completing their high school education for self-empowerment. "Always believe in yourself - you are meant for great things," he said.

"Progress in HIV prevention is only possible when there are platforms for dialogue like this one to facilitate learners' knowledge in making informed decisions," said the Principal Mr Ngobese.



Photo: Mr Patrick Mdletshe addresses some 200 high school learners at the Sibanesihle High School.



First cross-sectional study examines the mental health of Pharmacists during the Covid-19 pandemic

The study entitled, 'Mental health outcomes and workplace quality of life among South African pharmacists during the COVID-19 pandemic: a cross-sectional study' showed that the COVID-19 pandemic had a significant negative impact on the mental health of South African pharmacists.

The CAPRISA study published in the Journal of Pharmaceutical Policy and Practice, highlights a need for appropriate, well-designed interventions to support the psychological well-being and improve the quality of working lives of pharmacists in South Africa to strengthen this health care sector during a pandemic response.

Using structured and validated tools, the study examined online survey responses of 953 pharmacists (38% response rate from 2454 who were approached), and found that the prevalence of anxiety was 66.1%, depression was 62.9%, stress was 73.8% and low quality -of- working life (QoWL) was 51.3% amongst South

African pharmacists.

The researchers found: living apart from family, female gender, ethnicity and a history of mental illness were primary indicators that contributed to poor mental health.

Lead author and CAPRISA Vulindlela Research Pharmacist Mrs Sherishka Dhindayal supervised by Dr Tanuja Gengiah Head of Pharmacy undertook this first cross-sectional study for her Masters in Pharmacy Practice degree, providing valuable information on the negative impact on the mental health of South African pharmacists during the height of the COVID-19 pandemic.

For more reading see: Dhindayal S, et al. *Journal of Pharmaceutical Policy and Practice* 2022;15(1):66. doi: 10.1186/s40545-022-00463-7 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9578222/>

Table 4 The median score and prevalence of mental health outcomes

Scale	Mental health outcome	Median score [IQR]	Number of pharmacists (total respondents)	Prevalence (%)* [95% CI]
GAD-7	Generalized Anxiety	12 [8–16]	605 (919)	66.1 [62.85,69.26]
PHQ-9	Depression	12 [6–17]	561 (898)	62.9 [59.58,66.17]
PSS-10	Perceived Stress	20 [14–24]	642 (868)	73.8 [70.68,76.82]
WRQoL	Low QoWL	71 [61–83]	409 (801)	51.3 [47.67,54.93]

* applied to the weighted population

PhD Fellow Thando Maseko presents at the 9th South African Immunology Society conference

CAPRISA's PhD Research Fellow Ms Thando Maseko (*at the podium*) was selected to deliver an oral abstract presentation at the 9th South African Immunology Society Conference, themed 'Immunology rediscovered: Breakthroughs in Immunology' held from 2nd – 4th October held in Muldersdrift, Gauteng.

Ms Maseko's abstract titled "Changes in NK cell phenotypes in TB/HIV coinfection" assessed the changes in systemic natural killer cell populations concerning active disease, treatment completion and disease severity in TB and TB-HIV co-infected individuals. Ms Maseko is supervised by CAPRISA Senior Scientist, Dr Aida Sivro.





A selection of scientific papers published in 2022

- 107 **Mazibuko-Motau N***, **Sobia P***, Xu J, Elsherbini JA, San JE, **Lewis L**, **Mtshali A**, **Mzobe G**, **Ntuli L**, **Abdool Karim SS**, **Mansoor LE**, **Abdool Karim Q**, Kwon DS, **Archary D**, **Ngcapu S**. Vaginal microbial shifts are unaffected by oral pre-exposure prophylaxis in South African women. *Scientific Reports* 2022;12(1):16187. doi: 10.1038/s41598-022-20486-z.
- 108 **Dhundayal S**, **Letsoalo MP**, **Gengiah TN**. Mental health outcomes and workplace quality of life among South African pharmacists during the COVID-19 pandemic: a cross-sectional study. *Journal of Pharmaceutical Policy and Practice* 2022; 15(1):66. doi: 10.1186/s40545-022-00463-7
- 109 **Zondo NM**, **Sobia P**, **Sivro A**, **Ngcapu S**, **Ramsuran V**, **Archary D**. Pharmacogenomics of drug transporters for antiretroviral long-acting pre-exposure prophylaxis for HIV. *Frontiers in Genetics* 2022; 13(13):940661 doi: 10.3389/fgene.2022.940661.
- 110 **Asare K**, Andine T, **Naicker N**, **Dorward J**, Singh N, Spooner E, Andriesen J, **Osman F**, **Ngcapu S**, Vandormael A, **Mindel A**, **Abdool Karim SS**, Bekker LG, Gray G, Corey L, Tomita A, **Garrett N**. Impact of point-of-care testing on the management of sexually transmitted infections in South Africa: Evidence from the HVTN702 HIV vaccine trial. *Clinical Infectious Diseases* 2022 October. doi: 10.1093/cid/ciac824.
- 111 Mvelase NR, Singh R, Swe Swe-Han K, **Mlisana KP**. Pyrazinamide resistance in rifampicin discordant tuberculosis. *PLoS One* 2022;17(9):e0274688. doi: 10.1371/journal.pone.0274688.
- 112 Gordhan BG, Sewcharran A, **Letsoalo M**, **Chinappa T**, **Yende-Zuma N**, **Padayatchi N**, **Naidoo K**, Kana BD. Detection of differentially culturable tubercle bacteria in sputum from drug-resistant tuberculosis patients. *Frontiers in Cellular and Infection Microbiology* 2022;12:949370. doi: 10.3389/fcimb.2022.949370.
- 113 Moyo-Gwete T, Madzivhandila M, Mkhize NN, Kgagudi P, Ayres F, Lambson BE, Manamela NP, Richardson SI, Makhado Z, van der Mescht MA, de Beer Z, de Villiers TR, Burgers WA, Ntusi NAB, Rossouw T, Ueckermann V, Boswell MT, **Moore PL**. Shared N417-Dependent Epitope on the SARS-CoV-2 Omicron, Beta, and Delta Plus Variants. *Journal of Virology* 2022; 96(15):e0055822.
- 114 Gilbert PB*, Huang Y*, deCamp AC, Karuna S, Zhang Y, Magaret CA, Giorgi EE, Korber B, Edlefsen PT, Rossenkhan R, Juraska M, Rudnicki E, Kochar N, Huang Y, Carpp LN, Barouch DH, Mkhize NN, Hermanus T, Kgagudi P, Bekker V, Kaldine H, Mapengo RE, Eaton A, Domin E, West C, Feng W, Tang H, Seaton KE, Heptinstall J, Brackett C, Chiong K, Tomaras GD, Andrew P, Mayer BT, Reeves DB, Sobieszczyk ME, **Garrett N**, Sanchez J, Gay C, Makhema J, Williamson C, Mullins JI, Hural J, Cohen MS, Corey L, Montefiori DC, **Morris L**. Neutralization titer biomarker for antibody-mediated prevention of HIV-1 acquisition. *Nature Medicine* 2022; 28(9):1924-1932.
- 115 Moyo-Gwete T, Scheepers C, Makhado Z, Kgagudi P, Mzindle NB, Ziki R, Madzorera S, Manamela NP, Ayres F, Lambson BE, Richardson SI, **Morris L**, **Moore PL**. Enhanced neutralization potency of an identical HIV neutralizing antibody expressed as different isotypes is achieved through genetically distinct mechanisms. *Scientific Reports* 2022; 12(1):16473. doi: 10.1038/s41598-022-20141-7.
- 116 Tanko RF, Bunjun R, Dabee S, Jaumdally SZ, Onono M, Nair G, Palanee-Phillips T, Harryparsad R, Happel AU, Gamielien H, Qumbelo Y, Sinkala M, Scoville CW, Heller K, Baeten JM, Bosinger SE, Burgener A, Heffron R, Jaspan HB, **Passmore JS**. The Effect Of Contraception On Genital Cytokines In Women Randomized To Copper Intrauterine Device, Intramuscular Depot Medroxyprogesterone Acetate Or Levonorgestrel Implant. *Journal of Infectious Diseases* 2022; 226(5):907-919.
- 117 **Loveday M**, Furin J, Hlangu S, Mthethwa T, Naidoo T. 'If I am playing football, I forget that I have this virus': the challenges and coping strategies of adolescents with perinatally acquired HIV in KwaZulu-Natal, South Africa. *BMC Infectious Diseases* 2022; 22(1):796.



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