



# CAPRISA

CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

## Newsletter

### In this Issue

On page 1, we present research on the evolution of SARS-CoV-2 variants. On page 2, we read about Professor Salim Abdool Karim being awarded the Michael Faraday Prize and the MATRIX Investigator's Meeting.

Page 3 offers highlights on the Matrix-001 Appreciation Event and how eThekweni CRS pharmacists receive external recognition by study sponsors. On page 4, we read about how Women of Impact Magazine honours Prof. Quarraisha Abdool Karim and other trailblazing women in science, as well as how VinUniversity students visit CAPRISA.



Page 5 features stories on Bio Africa Convention 2024: Advancing health security through innovation, and the Tongaat stakeholder engagement. Finally, peer-reviewed publications are presented.

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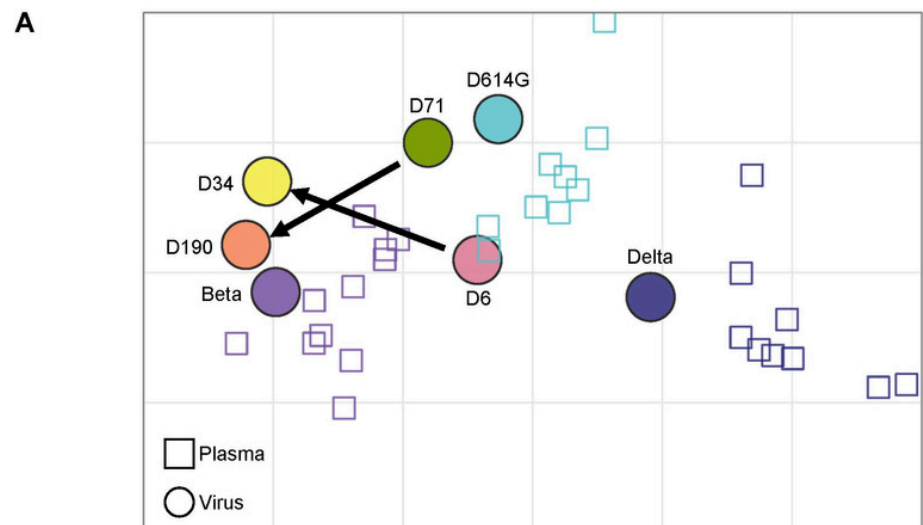
## The Evolution of SARS-CoV-2 Variants in Prolonged Infection

The recent COVID-19 pandemic has been characterised by many variants that have emerged over time. Some of these variants have been more pathogenic, such as the Beta variant, and some more highly transmissible, such as the Delta variant. Multiple mechanisms have been postulated that facilitate the evolution of such variants. One of the more prominent mechanisms is evolution during long-term infection in immunosuppressed individuals. South Africa has a high burden of human immunodeficiency virus (HIV) infection with an estimated two million ARV-naive HIV-infected individuals, leading to the high number of immunosuppressed individuals in the country.

To understand the viral phenotypes that evolve during such infection, SARS-CoV-2 viruses' evolution was assessed from an ancestral B.1 lineage infection lasting over 190 days post-diagnosis in an advanced HIV disease immunosuppressed individual. Sequence and phylogenetic analysis showed two evolving sub-lineages. Each sub-lineage independently evolved escape from neutralising antibodies. The day 190 isolate of the second lineage also evolved higher cell-cell fusion and faster viral replication and caused more cell death relative to the virus isolated soon after diagnosis.

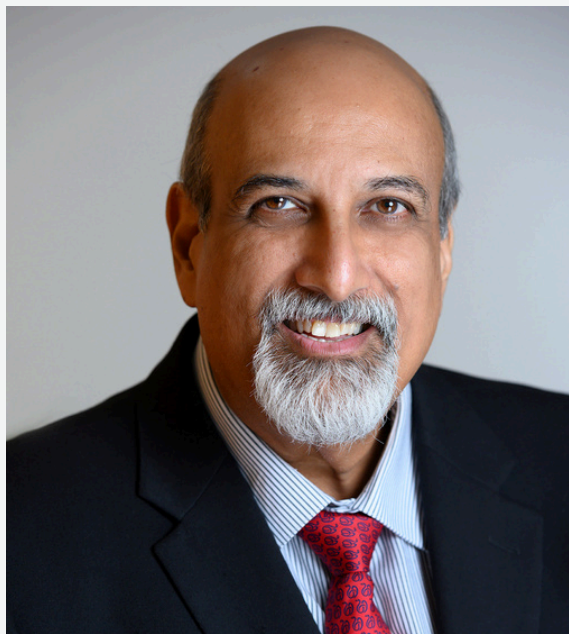
The data show that SARS-CoV-2 strains in prolonged infection in a single individual can follow independent evolutionary trajectories that lead to neutralisation escape and other changes in viral properties. Additionally, these results highlight that variants that emerge in the future may not necessarily be less pathogenic, hence the importance for constant surveillance.

For further reading: <https://doi.org/10.1093/ve/vead075>



**Figure 1:** Evolution of escape from neutralising antibodies. (A) Antigenic cartography using the Racmacs package. Input was neutralisation of D614G, Beta, Delta, and the D6, D34, D71, and D190 isolated viruses from the long-term infection, with neutralising sera from participants infected with ancestral virus (n = 9), Beta (n = 11), and Delta (n = 9) variants. Grid shows antigenic units (AU), where each antigenic unit represents a 2-fold change in the plasma concentration required for 50 per cent neutralisation. Squares represent sera from individual participants, and circles represent viruses. Arrow represents shift in antigenicity from D6 to D34 and D71 to D190.

# CAPRISA Director Awarded the Royal Society's Michael Faraday Prize



On the 28th August, CAPRISA's Founding Director, Professor Salim Abdool Karim, was awarded the Michael Faraday Prize and Lecture. The award was for his exceptional contributions to science, public health, and education during the tumultuous COVID-19 pandemic.

Upon his selection, Prof. Karim expressed his deep gratitude, emphasising the critical need for transparent communication and combatting disinformation during the pandemic. "I am deeply honoured to receive the Michael Faraday Prize.

As we witness a rise in disinformation and attacks on science that have reached new heights during the Covid-19 pandemic, effective and transparent communication of science has become even more important," he remarked.

## MATRIX Investigator's Meeting



MATRIX (Microbicide R&D to Advance HIV Prevention Technologies through Responsive Innovation and eXcellence) is a five-year USAID collaborative that aims to advance the research and development of innovative HIV prevention products for women. The group's activities focus on the early research and development of products, which involve pre-clinical research and first-in-human clinical trials. In addition to investigating the safety and efficacy of products, MATRIX assesses whether products will be acceptable, affordable, scalable, and deliverable in the settings where they are needed most.



Led by Dr Leila Mansoor, CAPRISA is part of the MATRIX Consortium. From 26-30 August 2024, MATRIX held its 3rd annual Investigator's Meeting in Nairobi, Kenya, with CAPRISA staff from eThekweni and Vulindlela sites attending. Dr Mansoor presented a plenary talk on "MATRIX-001—Obstacles and Opportunities: Feasibility of Conducting a Phase I IND Study in the Global South," while Dr Cecilia Milford spoke on "What are we learning from social behavioural research (SBR) in the clinical trials?". Other staff shared trial experiences, SBR, and laboratory practices in breakout sessions, earning eight awards, including first-to-finish study, best lab team, study co-ordinator awards, best SBR team, and best protocol co-chair. The MATRIX-001 eThekweni team also received the "Efficiency in Clinical Trial" award during the main awards ceremony.

# MATRIX-001 Appreciation Event



On 16 August 2024, the eThekweni Clinical Research Site MATRIX team hosted a MATRIX-001 participant appreciation event to acknowledge the participants and their commitment and dedication to the MATRIX-001 study. Not only was it a celebration of having 100% retention in the study, but it also provided an opportunity to explore participants' experiences of being in the study. Of note, the Community Advisory Board (CAB) Chair, Pinky Myaka, shared an inspirational message and explained the role of the CAB in the study to the participants.

## eThekweni CRS Pharmacists Receive Recognition for Lenacapavir Trial

The ECRS Pharmacy team received a CAPRISA Achievement award after being honoured with recognition from both ICON and Gilead Sciences for their outstanding innovation, teamwork, efficiency, and perseverance in managing the return of Blinded Investigational Product (IP) at the end of the blinded phase of the landmark Purpose-1 trial.

Written acknowledgements from the study sponsor highlighted the team's exceptional efforts. The innovative approach led by the study pharmacist, Rorisang Mofokeng (front row), in the ECRS pharmacy team proved to be highly efficient, significantly improving the process efficiency at the end of the blinded phase. This recognition underscores the team's commitment to excellence and their ability to overcome significant challenges, ensuring the successful management of IP in the clinical trials they support.



# Honour from Women of Impact Magazine

In recognition of Women's Month, Prof. Quarraisha Abdool Karim has been celebrated as a trailblazer in the Women of Impact magazine. This edition pays tribute to the remarkable contributions of women in science across the African continent and their significant impact on the field.

Prof. Quarraisha will be joined by distinguished figures like NASA astronaut Mae Jemison and the renowned mathematician Evelyn Boyd Granville. This special feature acknowledges their enduring legacies and leadership, presenting them as role models for future scientists.

The magazine honours their resilience, empowerment, and leadership, showcasing their impact on science and their ability to overcome challenges.

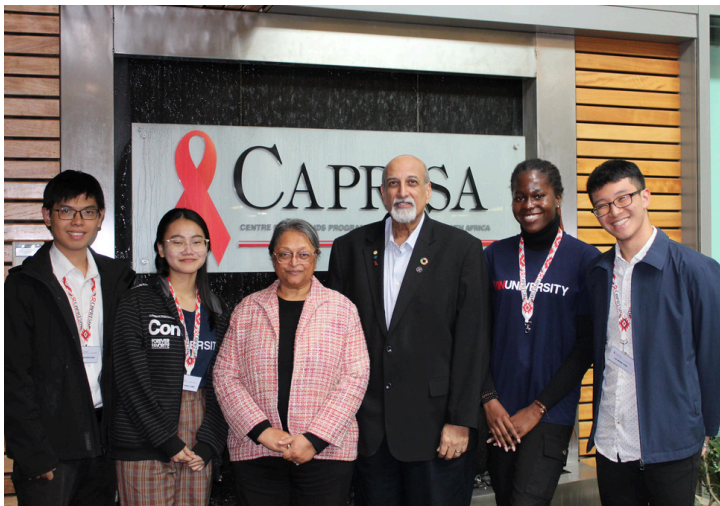
To access the full feature and learn more about the exceptional women in the Women of Impact magazine, click here: [\[https://www.womeninscience.africa/wp-content/uploads/2024/08/WIS\\_AUG-24-1.pdf\]](https://www.womeninscience.africa/wp-content/uploads/2024/08/WIS_AUG-24-1.pdf).



## VinUniversity Students Visit CAPRISA

In 2022, CAPRISA and the College of Health Sciences at VinUniversity in Hanoi entered into an agreement for an academic student exchange programme to train and expose students to clinical research in HIV/TB, both in urban and rural settings.

In 2024, CAPRISA hosted the third cohort of medical students from VinUniversity, including:  
Ms Susan Chinenye Ekwebelem – 3rd year nursing student  
Ms Tran Thuy Linh – 4th year medical student  
Mr Dang Ngoc Khoi – 4th year medical student  
Mr Le Minh Tien – 4th year medical student



The students toured four of CAPRISA's Clinical Research Sites, including the head office, and met with CAPRISA's leadership, division heads, clinicians, scientists, and fellows. The students also engaged with the local Durban community and visited hospitals and the University of KwaZulu-Natal Medical School.



# BIO Africa Convention 2024: Advancing Health Security Through Innovation

The 7th Annual BIO Africa Convention took place in KwaZulu-Natal from the 24th to 27th of August 2024. Dr Sharana Mahomed stated, “The event, themed Ensuring Health Security through Investing in Health Products Innovation and Manufacturing, brought together leading minds in biotechnology and health innovation to explore and advance the future of health security in Africa.”

This year's event, organised with the Department of Science and Innovation, University of KwaZulu-Natal, The Innovation Hub, and eThekweni City, highlighted Africa's growing biotechnology potential. The convention featured a dynamic four-day programme with multiple tracks, plenary sessions, and workshops, offering a key platform for networking and collaboration among international and African stakeholders. A standout feature of the convention was the BIO Africa Academy, an intensive two-day training programme held at the University of KwaZulu-Natal. The academy provided valuable learning opportunities for scientists and students, reinforcing the convention's commitment to advancing education and innovation in biotechnology. Participants attended high-calibre workshops and sessions on biological and biosimilar medicines by Dr Natasa Skoko, local biotechnology reagent manufacturing by Dr Jenny Molloy, and antiviral development clinical research by Professor George Painter from Emory University.

The 2024 BIO Africa Convention provided a unique platform for knowledge exchange, networking, and collaboration in biotechnology, advancing Africa's leadership in global health security through strategic investments in innovation and manufacturing.



## Tongaat Stakeholder Engagement

On the 28th of August 2024, the Tongaat team convened a stakeholder engagement meeting with key organisations, including the AURUM Institute, TBHIV Care, municipal councillors, local community groups, and four medical students from Vietnam. The meeting aimed to provide updates on CAPRISA studies conducted in Tongaat and strengthen stakeholder relationships and collaboration. During the meeting, Mr Patrick Mdletshe, the Head of CAPRISA's Community Programme, delivered a comprehensive overview of CAPRISA and its vital role within the Tongaat community. Stakeholders engaged in meaningful discussions, expressing significant concerns about the high rate of TB treatment default in Tongaat and the escalating issue of drug abuse among youth, which increases their vulnerability to contracting HIV.

In response to these pressing challenges, the Council's office requested CAPRISA's assistance in facilitating dialogues with young people to address these critical issues. This effort aims to create targeted interventions and community-driven solutions to reduce TB treatment defaults and drug abuse among youth in Tongaat. Through collaboration and collective expertise, CAPRISA and its partners are committed to creating sustainable solutions for the health and prosperity of the Tongaat community.

# A Selection of Published Scientific Papers

- 47 Lazarus JV, White TM, Wyka K, Ratzan SC, Rabin K, Larson HJ, Martinon-Torres F, Kuchar E, **Abdool Karim SS**, Giles-Vernick T, Müller S, Batista C, Myburgh N, Kampmann B, El-Mohandes A. Influence of COVID-19 on trust in routine immunization, health information sources and pandemic preparedness in 23 countries in 2023. *Nature Medicine*. 2024 Jun;30(6):1559-1563. doi: 10.1038/s41591-024-02939-2. PMID: 38684861; PMCID: PMC11186753.
- 48 **Chang CC**, Harrison TS, Bicanic TA, Chayakulkeeree M, Sorrell TC, Warris A, Hagen F, Spec A, Oladele R, Govender NP, Chen SC, Mody CH, Groll AH, Chen YC, Lionakis MS, Alanio A, Castañeda E, Lizarazo J, Vidal JE, Takazono T, Hoenigl M, Alffenaar JW, Gangneux JP, Soman R, Zhu LP, Bonifaz A, Jarvis JN, Day JN, Klimko N, Salmanton-García J, Jouvion G, Meya DB, Lawrence D, Rahn S, Bongomin F, McMullan BJ, Sprute R, Nyazika TK, Beardsley J, Carlesse F, Heath CH, Ayanlowo OO, Mashedi OM, Queiroz-Telles Filho F, Hosseini-pour MC, Patel AK, Temfack E, Singh N, Cornely OA, Boulware DR, Lortholary O, Pappas PG, Perfect JR. Global guideline for the diagnosis and management of cryptococcosis: an initiative of the ECMM and ISHAM in cooperation with the ASM. *Lancet Infect Dis*. 2024 Aug;24(8):e495-e512. doi: 10.1016/S1473-3099(23)00731-4. Epub 2024 Feb 9. Erratum in: *Lancet Infect Dis*. 2024 Aug;24(8):e485. doi: 10.1016/S1473-3099(24)00426-2. PMID: 38346436.
- 49 **Mahomed S**. Broadly neutralizing antibodies for HIV prevention: a comprehensive review and future perspectives. *Clinical Microbiology Reviews*. 2024 Jun 13;37(2):e0015222. doi: 10.1128/cmr.00152-22. PMID: 38687039.
- 50 Motsoeneng BM, Bhiman JN, Richardson SI, **Moore PL**. SARS-CoV-2 humoral immunity in people living with HIV-1. *Trends Immunol*. 2024 Jul;45(7):511-522. doi: 10.1016/j.it.2024.05.005. Epub 2024 Jun 17. PMID: 38890026.
- 51 Morgan H, Ndjeka N, Hasan T, Gegia M, Mirzayev F, Nguyen LN, Schumacher S, Schlub TE, **Naidoo K**, Fox GJ. Treatment of Multidrug-resistant or Rifampicin-resistant Tuberculosis With an All-oral 9-month Regimen Containing Linezolid or Ethionamide in South Africa: A Retrospective Cohort Study. *Clinical Infectious Diseases*. 2024 Jun 14;78(6):1698-1706. doi: 10.1093/cid/ciae145. PMID: 38525535; PMCID: PMC11175697.
- 52 Chihana R, Jin Kee J, Moodie Z, Huang Y, Janes H, Dadabhai S, Roxby AC, Allen M, Kassim S, Naicker V, Innes C, **Naicker N**, Dubula T, Grunenberg N, Malahleha M, Kublin JG, Bekker LG, Gray G, Kumwenda J, Laher F. Factors associated with reactogenicity to an investigational HIV vaccine regimen in HIV vaccine trials network 702. *Vaccine*. 2024 Aug 13;42(20):125991. doi: 10.1016/j.vaccine.2024.05.039. Epub 2024 May 21. PMID: 38772835.
- 53 **Milford C**, Cavanagh T, Bosman S, Wilson M, Smit J, Zanoni B. Access to and acceptability of sexual and reproductive health, harm reduction and other essential health services among people who inject drugs in Durban, South Africa. *Harm Reduct J*. 2024 Jun 26;21(1):123. doi: 10.1186/s12954-024-01042-6. PMID: 38926755; PMCID: PMC11200820.
- 54 **Sobia P, Mahomed S, Sivro A, Paul S, Osman F, Harkoo I, Garrett N, Karim QA, Karim SSA, Archary D**. Circulating immunoglobulins and transient lymphocytopenia in a sub-study of CAPRISA 012B, testing HIV monoclonal antibodies in a phase 1 trial. *Scientific Reports*. 2024 Jun 12;14(1):13499. doi: 10.1038/s41598-024-63902-2. PMID: 38866888; PMCID: PMC11169379.
- 55 Moyo-Gwete T, Ayres F, Mzindle NB, Makhado Z, Manamela NP, Richardson SI, Kitchin D, van Graan S, van Heerden J, Parbhoo N, Chege GK, **Moore PL**. Evaluating the antibody response elicited by diverse HIV envelope immunogens in the African green monkey (Vervet) model. *Scientific Reports*. 2024 Jun 10;14(1):13311. doi: 10.1038/s41598-024-63703-7. PMID: 38858452; PMCID: PMC11164991.
- 56 Violette LR, Thomas KK, **Dorward J**, Quame-Amaglo J, **Garrett N**, Drain PK. Early HIV viral suppression associated with subsequent 12-month treatment success among people living with HIV in South Africa. *HIV Medicine*. 2024 Jun;25(6):759-765. doi: 10.1111/hiv.13633. PMID: 38488308.

\* continuation from previous newsletter

For the complete list of publications see here: <http://bit.ly/3IRvjZd>



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