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1918 - 2018

forward together • saam vorentoe • masiye phambili



Collaboration in South Africa to lead the world on the discovery
and characterisation of SARS-CoV-2 variants

Prof. Tulio de Oliveira, Faculty of Medicine and Health Sciences
(FMHS), School for Data Science and Computational Thinking, Faculty of
Science, Stellenbosch University and KRISP at UKZN.

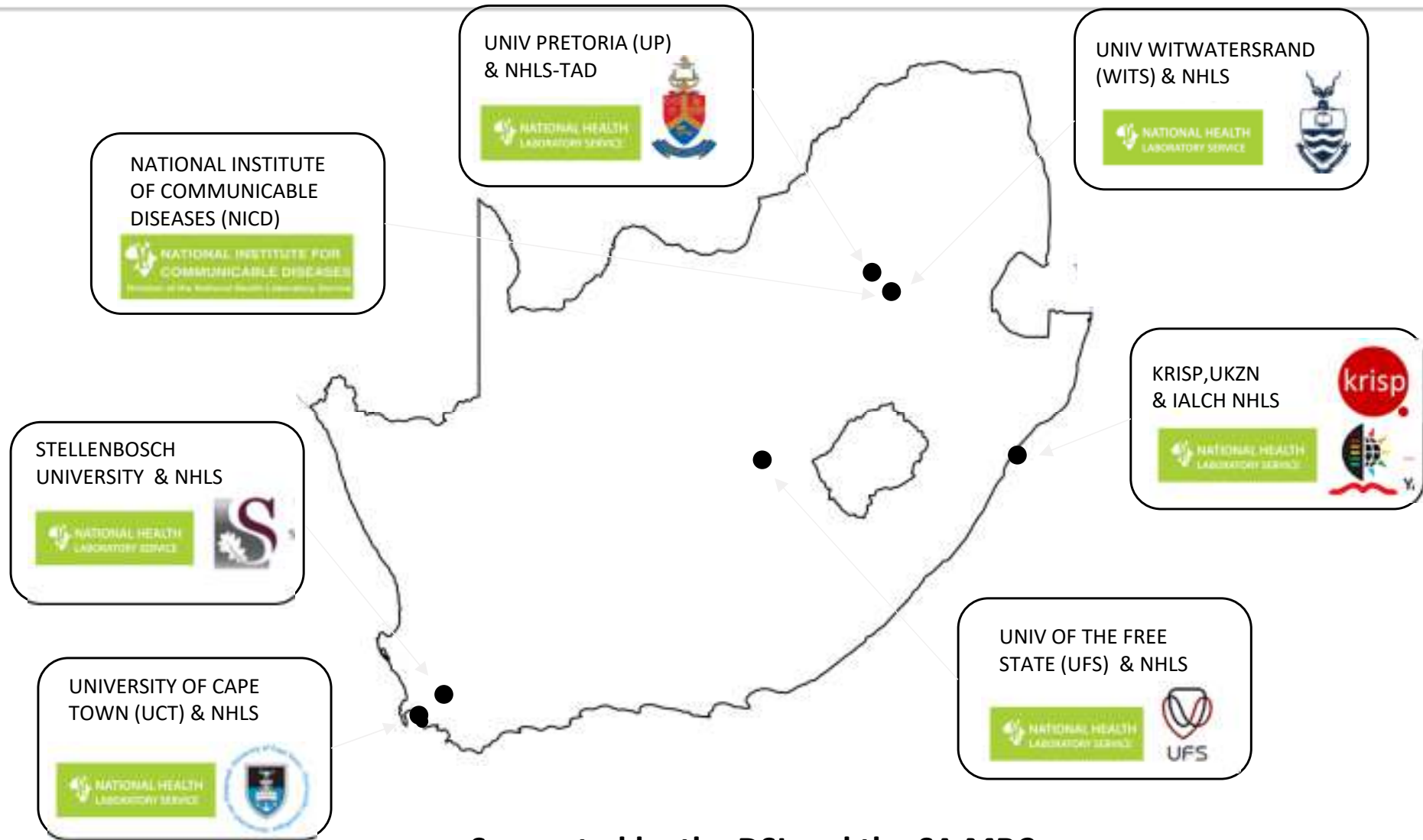
Lecture (10 Minutes)



- How to react quick to epidemics and pandemics, a South African network and pan-African consortium.
- Infrastructure built over a decade and recently expanded.
- Genomics facility at CERI/KRISP/SAMRC to support precision medicine in Africa

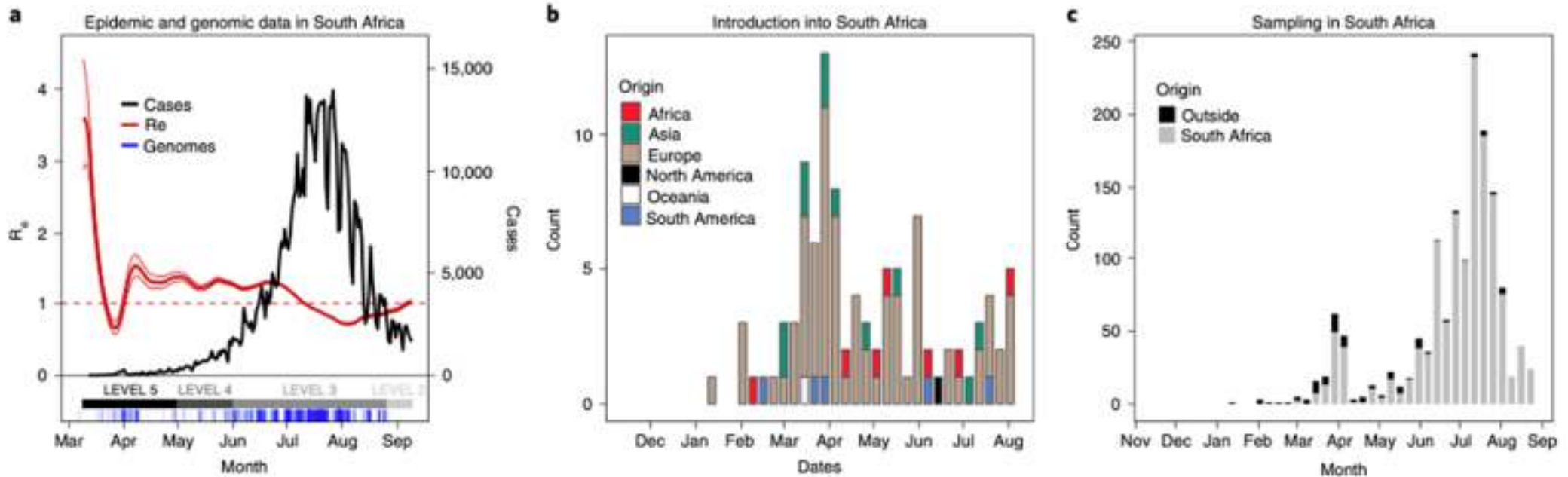


Network for Genomic Surveillance in South Africa (NGS-SA)



Supported by the DSI and the SA MRC

Msomi N, Mlisana K, et al. Lancet Microbe 2020



Tegally et al. **Sixteen novel lineages of SARS-CoV-2 in South Africa**
Nature Medicine 2021

Report into a nosocomial outbreak of coronavirus disease 2019 (COVID-19) at Netcare St. Augustine's Hospital

15 May 2020

Dr Richard Lessells
Prof Yunus Meeza
Prof Tulio de Oliveira

The hospital wards, in chronological order, that were most affected by COVID-19, including ward 1, medical ward 1, medical ward 2, and surgical ward 1. A clear correlation was found between the days when more transmission occurred amongst patients and the wards, where high levels of health care worker infections were observed. We are confident that the main St. Augustine's outbreak started within patients in a long-running hospital in the Johannesburg City (JHB) area, occupying the study site on the St. Augustine's site.

Science Contents - News - Careers - Journals -

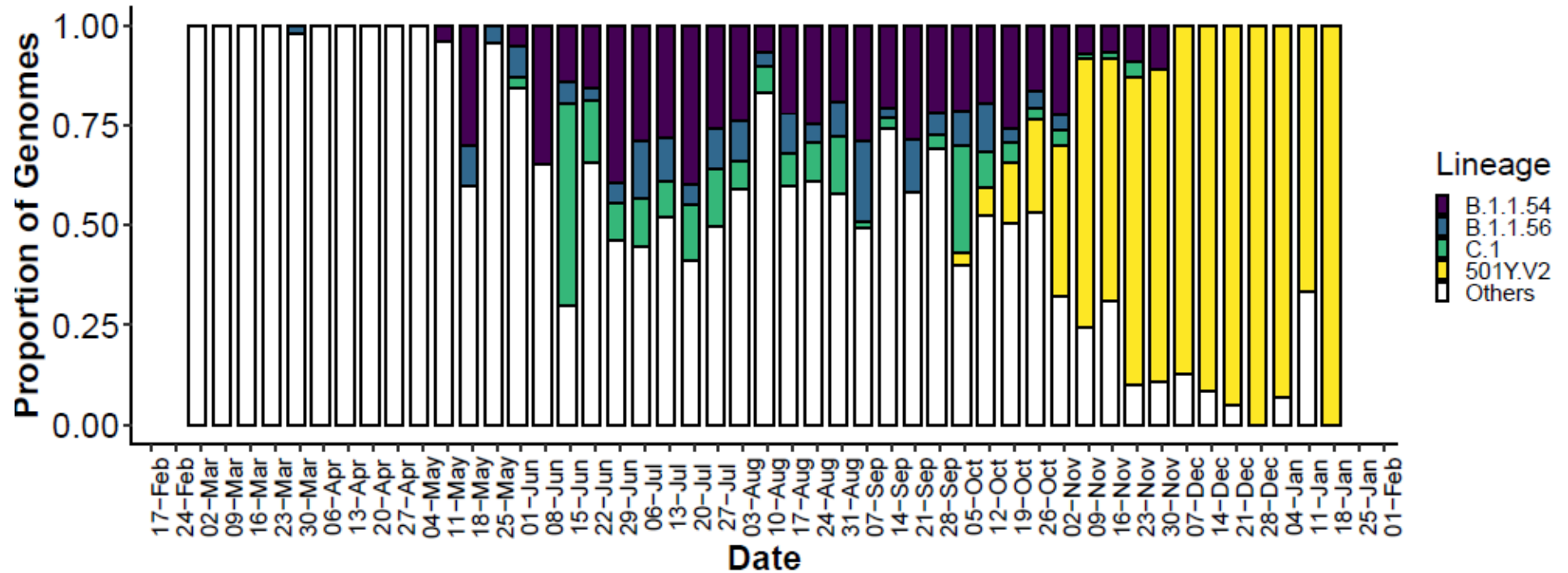
A coronavirus outbreak at St. Augustine's Hospital in Durban, South Africa, caused 119 infections and 15 deaths. AP Photo

Study tells 'remarkable story' about COVID-19's deadly rampage through a South African hospital

By Linda Nordling | May 23, 2020, 4:30 AM

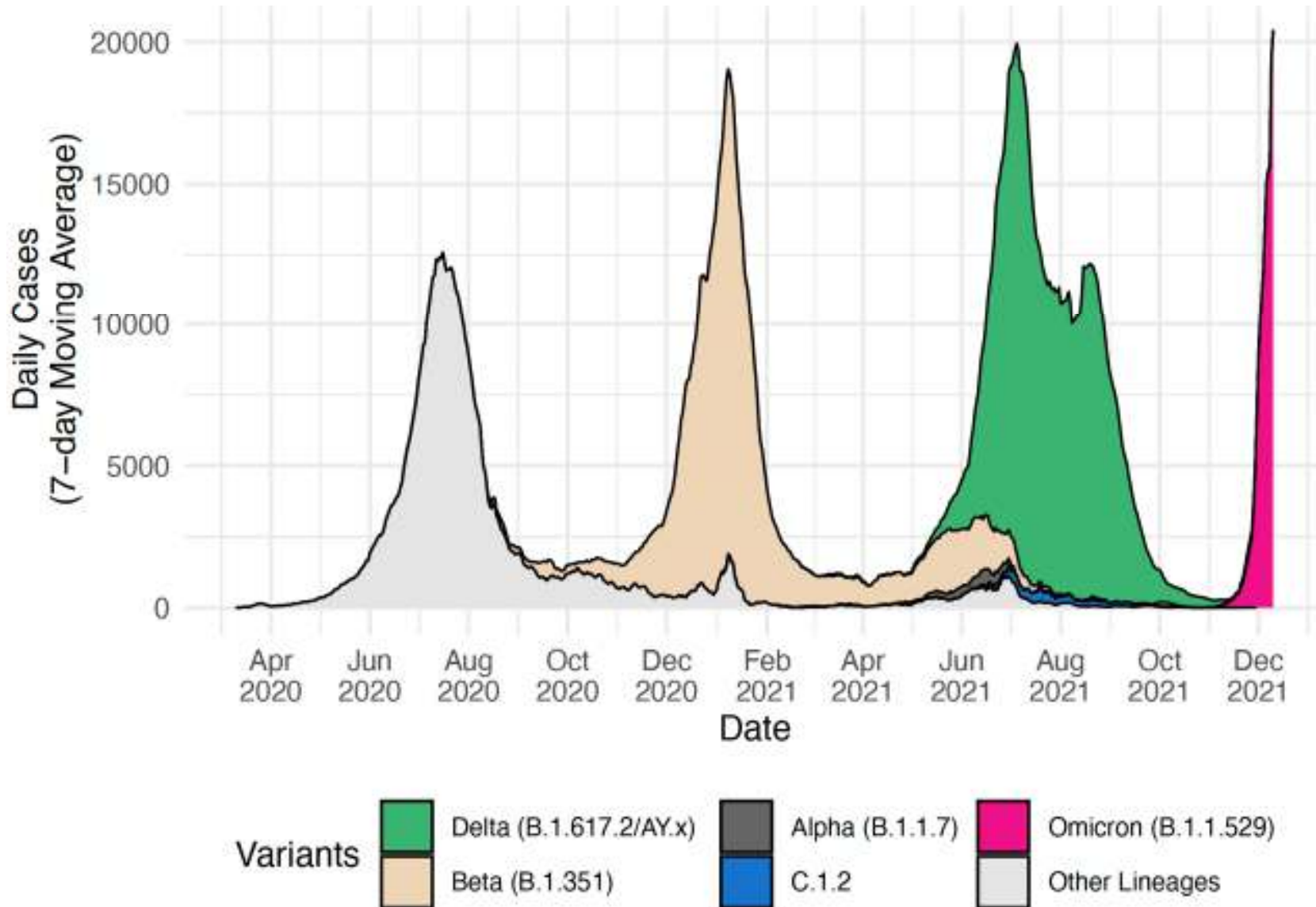
Appointed by the chair of the ministerial advisory committee and Minister of Health to investigate a large nosocomial outbreaks.

- Detailed report produced for Minister and Hospital
- > 14,000 downloads of the report by 120 countries
- > 100 hospital CEOs and IPC trained
- > 5,000 medical care workers trained as part of program with NDoH and private Hospitals to avoid nosocomial outbreaks.



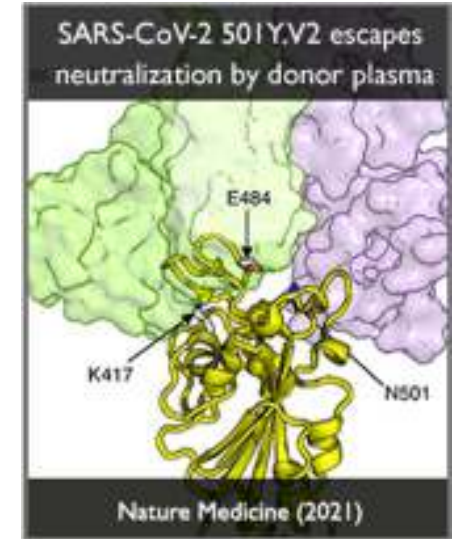
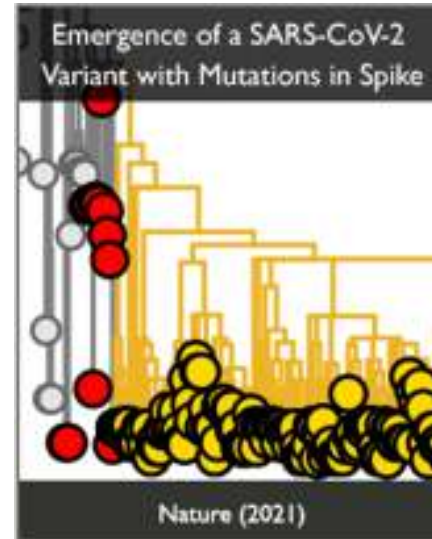
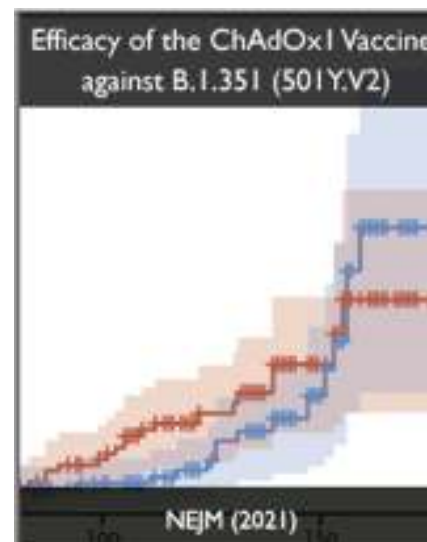
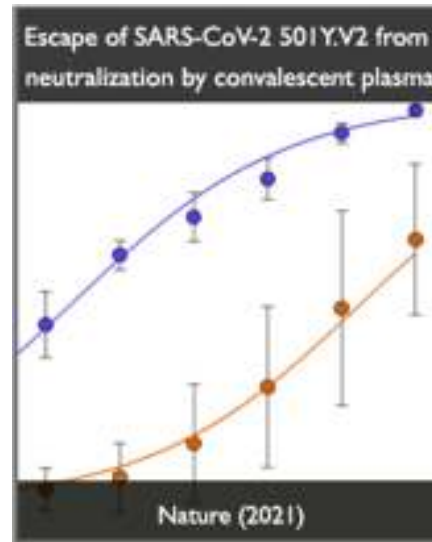
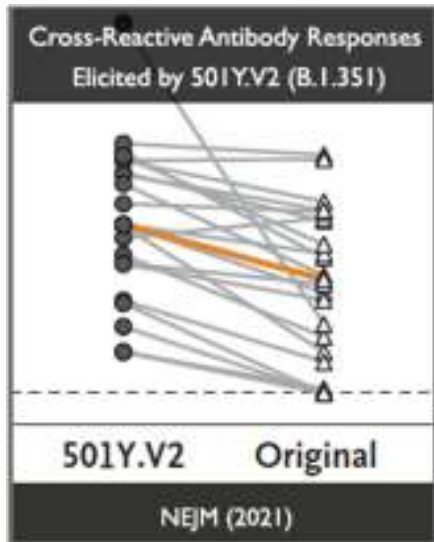
Tegally et al. The emergence of 501Y.V2 (Beta) *Nature* 2021

Distribution of SARS-CoV-2 lineages South Africa – Discovery of Omicron





High-impact publications from SA consortium (25 in 2021-2022)





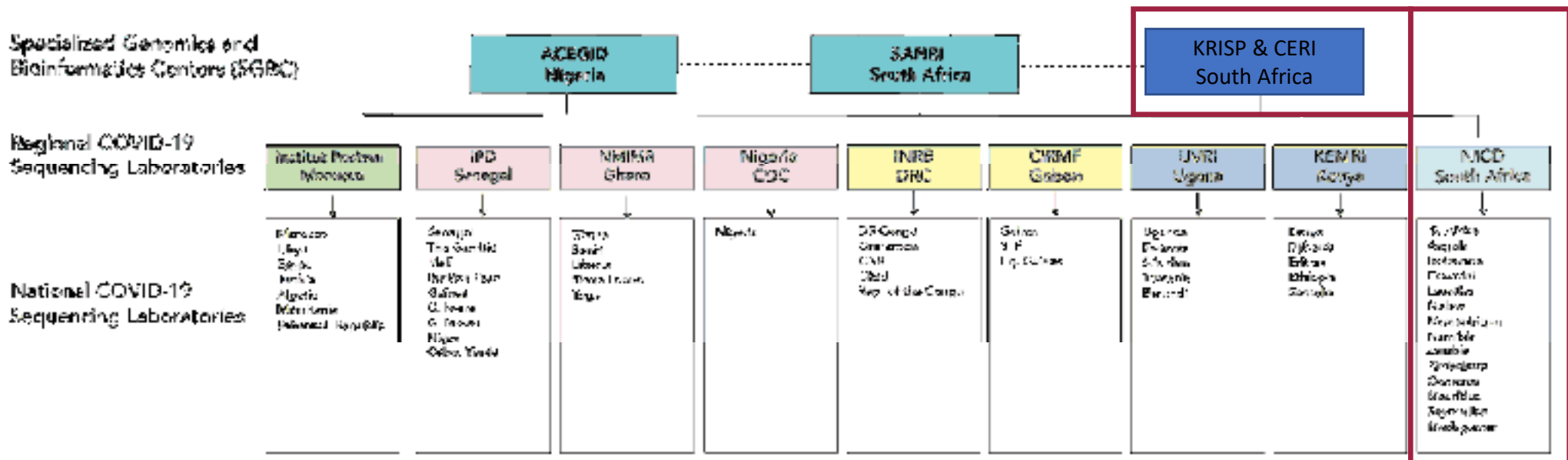
Accelerating SARS-CoV-2 Sequencing in Africa



Coordination

Operationalization of the network

Leverage on existing capacity



Access to sequencing facility



Tessema et al. Lancet Microbe 2021



Large investment on scientific infrastructure

CERI & KRISP have 12 sequencers, 2x Novaseq6000, 2xNextseq2000



Infrastructure available for precision medicine in SA



Whole Human Genomes – Can produce 200-500 a week and negotiated prices similar to USA, U.K. and European large facilities.

Setting up WGS sequencing for pediatrics case at ICU with potential rare diseases – aiming at 24h turn-around time.

Whole Human Exomes, RNAseq, etc.

Pathogen precision medicine for guiding therapies selection for HIV, HCV, TB and vaccines for SARS-CoV-2, HPV.

CERI/KRISP an specialized genomics facility of the AfricaCDC and WHO, already supporting 21 African countries (MTAs signed, weekly/monthly transfer of samples for genomics).