

SAMRC'S RESPONSE TO COVID-19 RESEARCH & DEVELOPMENT

Prof Glenda Gray
CEO & President

SAMRC, NDOH & DSI RESEARCH RESPONSE

Urgent research agenda established 6th March 2020

- Testing: both PCR & POC serology
- Surveillance: in communities and hospitals
- Natural History (esp HIV & TB)
- Therapeutics
- Immunological studies into natural history
- Vaccines
- Convalescent Sera studies
- Monoclonal Antibodies
- Molecular epidemiology

CURRENT RESEARCH: FIRST STUDIES FUNDED

Thematic area	Project title
Surveillance	Sentinel, hospital-based surveillance for investigation of SARS-Coronavirus–2 and other respiratory pathogens in adults hospitalized for Severe Acute Respiratory Infection
Surveillance/ Epidemiology	Serological and genomic investigations of SARS-CoV-2 among HIV-infected and HIV-uninfected individuals to assess the burden of COVID-19 in South Africa
Epidemiology	Supporting the South African COVID-19 response through the deployment and utilisation of a SARS-CoV-2 sequence data solution within the Exatype platform.
Surveillance/ sequencing	How is the SARS-COV-2 coronavirus spreading in urban and rural KwaZulu-Natal, South Africa? An epidemiological and phylogenetic investigation of COVID-19 transmission to guide locally-appropriate prevention.
Diagnostic/ Health systems	Investigating diagnostic Strategies to Optimise the Rapid Diagnosis of COVID-19 in Symptomatic Patients in routine public and private health care settings in South Africa.
Treatment	Hydroxychloroquine for mild to moderate COVID-19 disease: a randomised control trial (COVID-19 containment using Nitroxazole; C3 RCT)
Prevention & Treatment	CROWN CORONATION Study: Chloroquine Repurposing to health workers for Novel CORONAvirus PrevenTION:
Treatment	World Health Organisation Study: Solidarity core protocol, an international study of treatments for COVID-19 in hospitalized patients

PROJECTS UNDERGOING SHAPING AND/OR PEER REVIEW

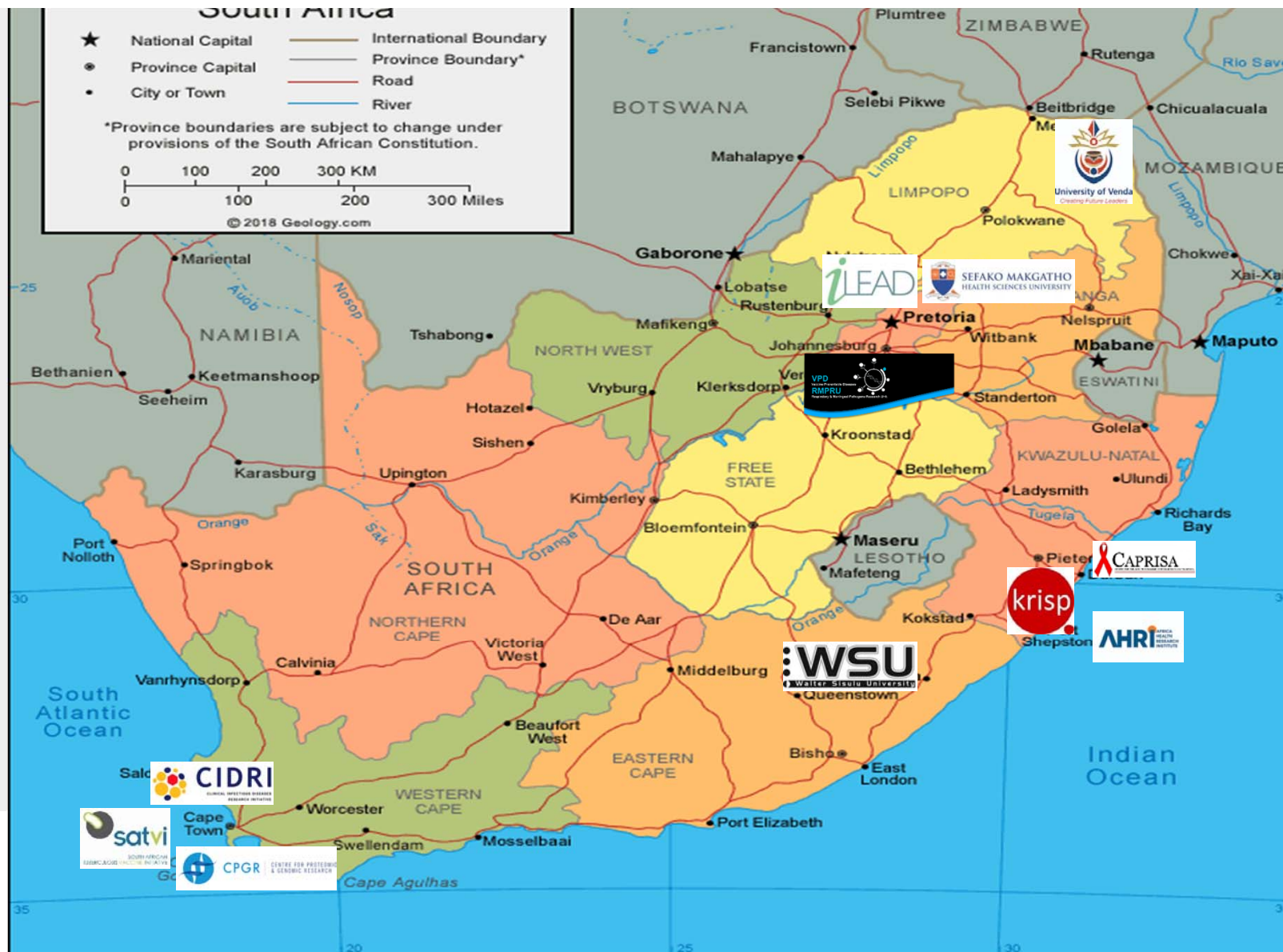
Thematic area	Project title
Surveillance	Maternal and perinatal outcomes of pandemic influenza or novel coronavirus in pregnancy
Surveillance	Spatial and genomic monitoring of COVID-19 cases to fight the flames before they become a wild fire
Convalescent Serum	Clinical Trial Protocol: A randomized, prospective, open label, phase II clinical trial of the therapeutic use of convalescent plasma in the treatment of patients with COVID-19
Diagnostics, Monoclonal antibodies and vaccines	Plant based manufacturing of Antibodies for Covid
Antibodies	Defining SARS-CoV-2 neutralizing responses and Fc effector function in COVID-19 acute and convalescent sera in South Africa
Diagnostics Research	Building quality control reagents for all available COVID-19 tests ACE2 as a COVID-19 outcome predictor: activity and genetic variation in South African cohorts
Prevention & Treatment	Prevention and treatment of COVID-19 in South African healthcare workers – an urgent, pragmatic study.
Vaccine	ChAdOx1-nCoV-19 vaccine trial
Testing	Continuous Quality Monitoring of SARS-CoV-2 Molecular tests for Improved Laboratory Performance
Research	Covid & hypertension

DIAGNOSTIC RESEARCH

Thematic area	Project title
Reagents	RFA 1: Local manufacture of viral nucleic acid isolation kits for naso/oro-pharyngeal swab samples
Reagents	RFA1: The rapid development of application-ready RT-PCR COVID-19 diagnostic
Reagents	RFA1: Stabilised single stranded RNA for use as positive control
POC	RFA 2: Development of a COVID-19 Point of Care (POC) antigen detection test for the detection of acute infection
POC	RFA 2 :Developing a SARS-CoV-2 antigen test using either Spike-1 (S1) or Nucleocapsid (N) antibodies
POC	RFA 2: Aptamer based Covid tet
POC	RFA 2: Optimization and evaluation of a locally developed COVID-19 molecular tests for the rapid ParaDNA point-of-care and high-throughput laboratory-based platforms.

ACADEMIC SURGE LAB TESTING

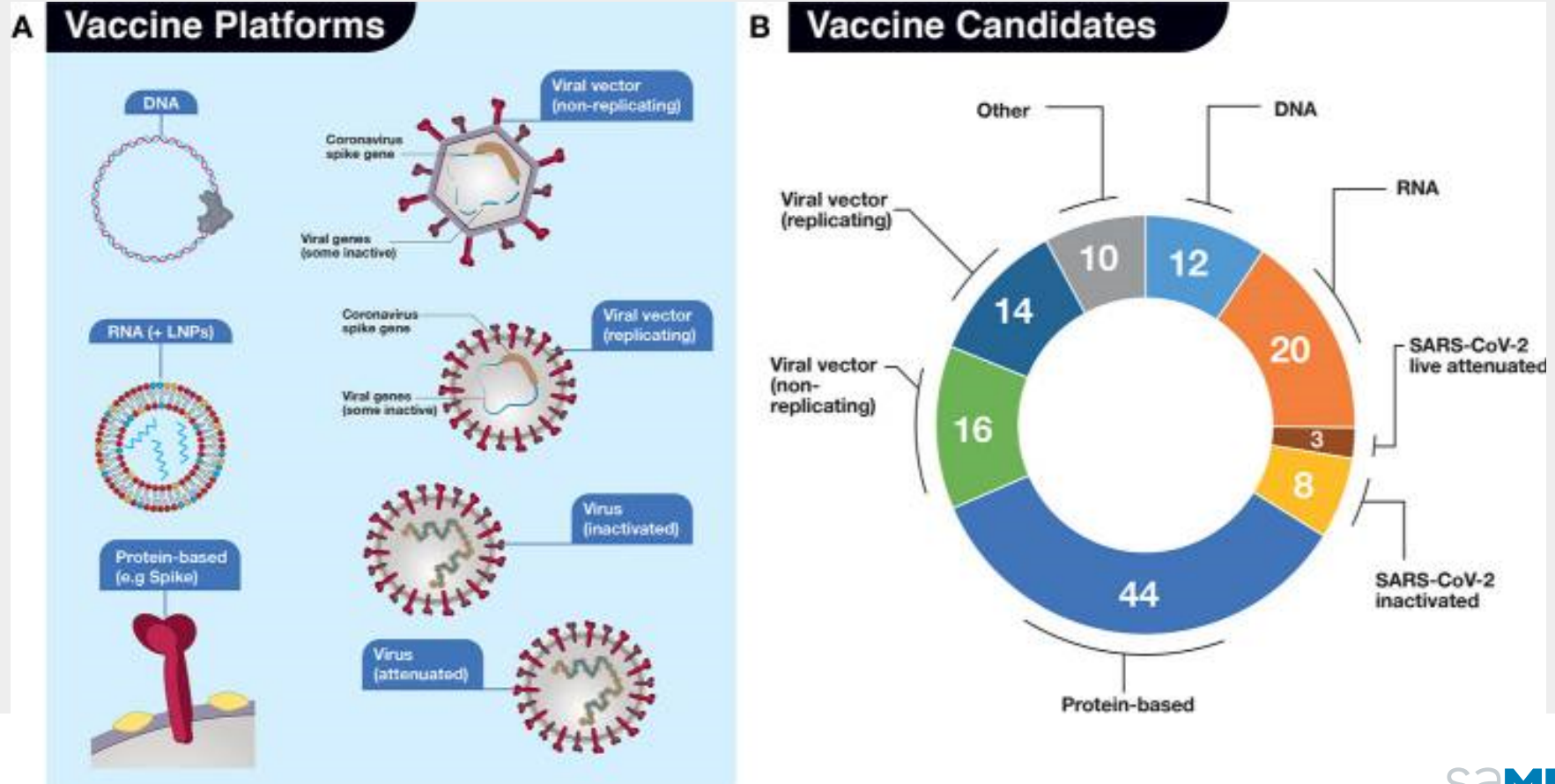
- NHLS/SAMRC initiative
 - Academic and DSI funded surge labs for extra testing capacity
- R88M Surge Screening proposal for Solidarity Fund
- R15M equipment for NHLS from ELMA Philanthropy
 - 2 x Hamilton Robotic systems for NHLS Braamfontein and Polokwane
- R15M from MSDF to be finalized for equipment
- Labs complete 2 tier NHLS validation
 - 1st Paper based infrastructural
 - 2nd site visit audit, several test validation runs
 - Approval to SAMRC to contract
- Contract signed in late June
- Includes expansion into historically disadvantaged institutions



TESTS UP TO 24/7 : ~23000 TESTS

Solidarity Fund testing tracker							
Region	Group	Test completed	Week 1	Week 2	Week 3	Week 4	Week 5
WC	UCT-CIDRI/SATVI	5334	1116	580	944	968	1726
	CPGR	192	0	0	0	0	192
Gauteng	VIDA	1685	0	0	319	666	700
	iLead	9817	2576	3180	2417	961	683
KZN	AHRI	4862	941	946	773	1052	1150
	KRISP	1345	0	0	197	388	760
	CAPRISA	570	0	0	0	0	570
Sub total		23805	4633	4706	4650	4035	5781

Current COVID-19 vaccine candidates



Funk CD et al: Frontiers in Pharmacology, June 2020

COVID-19 vaccine trial in South Africa

ChAdOx1 nCoV-19_ZA_ph1/II

- **Sponsor and vaccine developer:** University of Oxford
- **Funders:** Bill & Melinda Gates Foundation & South African Medical Research Council
- **National principal investigator:** Shabir A. Madhi



South African
ChAdOx1 nCoV-19 COVID-19
Vaccine Trial

Full title: An adaptive phase I/II randomized placebo-controlled trial to determine safety, immunogenicity and efficacy of non-replicating ChAdOx1 SARS-CoV-2 vaccine in South Africa

Replication-deficient simian adenoviral vectored vaccine expressing nCoV-19 spike with leading tissue plasminogen activator (tPA) signal sequence

MONITORING FOR SARS-CoV-2 VIRAL RNA IN WASTEWATER: EARLY WARNING SYSTEM



Presenter: Rabia Johnson, PhD

Deputy Director, Biomedical Research and Innovation Platform (BRIP), South African Medical Research Council (SAMRC)

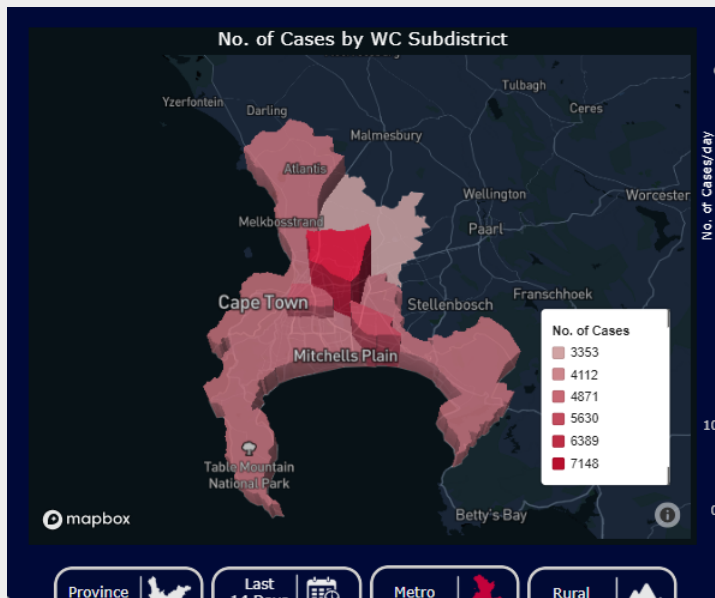
Wastewater COVID-19 Team:

- **SAMRC Executive:** Glenda Gray and Mongezi Mdhuli
 - **BRIP:** Rabia Johnson, Johan Louw, Christo Muller, Samira Ghoor
 - **Environment & Health Research Unit:** Angela Mathee and Renee Street
 - **Tuberculosis Research Platform:** Martie van de Walt, Jeanette Brand and Awelani Mutshembele
- **Stellenbosch University, Microbiology:** Edward Archer and Ludwig Bocker
- **City of Cape Town:** Swastika Surujlal-Naicker, Natacha Berkowitz and Mercia Volschenk
- **Huub Gelderblom COVID-19 Prevention Network (COVPN), Fred Hutchinson Cancer Research Center, Seattle**

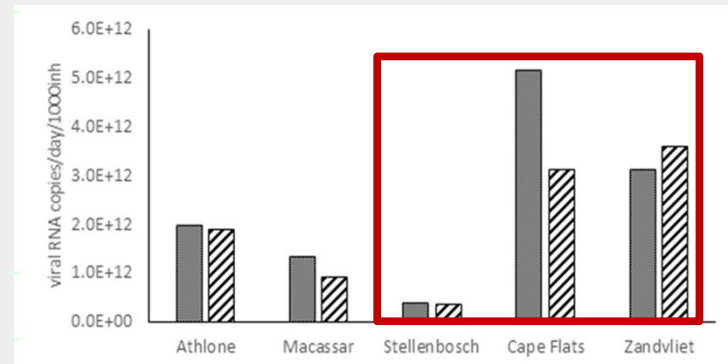


Partner
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KEY FINDINGS



<https://coronavirus.westerncape.gov.za/covid-19-dashboard>



COVID-19 dashboard: Positive cases

- SARS-CoV-2 cases: 18th Jun 2020
- n=82 in Khayelitsha and n=43 Stellenbosch

Khayelitsha subdistrict (one of the areas served by Zandvliet WWTP)

NEXT PROOF OF CONCEPT PHASE: TRACK EPIDEMIC AS IT UNFOLDS

- 24 x WWTP Cape Town Area
Sample over a 6-week period
- Sample Limpopo
- Mthatha
- Post proof of Concept
Sample hot spots in Cape Town
Estimate reduction in prevalence
post-Covid-19, new outbreak



