

SAMRC EXTRAMURAL UNITS:

REPORT 2020/21

CORONAVIRUS | COVID-19



PULSE 82

125

STATUS: 15% COMPLETED

FUNC ATAT : STABLE

TEMP : 104.2

BY: DR REFILOE ZWANE | PROF JEFFREY MPHAHLELE | PROF RACHEL JEWKES

SOUTH AFRICAN MEDICAL RESEARCH COUNCIL

The South African Medical Research Council (SAMRC) was established in 1969 to conduct and fund health research, health innovation, development and research translation. The SAMRC focuses on the top ten causes of mortality, co-morbidities, disability and associated risk factors. The scope of research includes laboratory investigations, pre-clinical and clinical research, and public health studies.

The mandate of the SAMRC is legislated in terms of Act 58, 1991 (as amended): 'the objects of the SAMRC are, through research, development and technology transfer, to promote the improvement of the health and quality of life of the population of the Republic, and to perform such functions as maybe assigned to the SAMRC by or under this Act'.

VISION

Building a healthy nation through research, innovation and transformation

MISSION

To advance the nation's health and quality of life and address inequity by conducting and funding relevant and responsive health research, capacity development, innovation and research translation.

SAMRC VALUES

The SAMRC is guided by the following values that form the foundation of our organisations:

Pioneering: We push the boundaries between the known and the unknown to further our knowledge of human health within the prescripts of responsible (ethical) conduct of research.

Partnering: We celebrate the capacity of collective minds towards a common goal. We build partnerships with many stakeholders at local, national, regional and international levels to exchange ideas, advances shared goals, optimize use of resources to minimise duplication, and leverage funding.

Excellence: We strive for distinction in everything we do by developing highly skilled personnel, capacity building and transformation, and conducting research of high value.

Respect: We value and respect our communities, participants, researchers and funders.

Integrity: We commit to transparency, accountability, open communication and ethical conduct.

Citizenship: We demonstrate responsibility to the community, nation and the World.

GOALS

1

Administer health research effectively and efficiently in South Africa

2

Lead the generation of new knowledge and facilitate its translation into policies and practices to improve health

3

Support innovation and technology development to improve health

4

Build capacity for the long-term sustainability of the country's health research

5

Translate new knowledge into policies and practices to improve health



ABOUT THE EXTRAMURAL UNIT

SAMRC research units (both intramural research units [IMUs] and extramural research units [EMUs]) are the prime vehicles for delivering relevant and responsive health research outputs to address both national and international health issues. While IMUs focus their research activities on public health challenges and some of the major burdens of disease in the country, EMUs undertake research from the bench to the community in strategic research areas not covered by the IMU programme, generating new knowledge and growing the next generation of health scientists for the country. EMUs are based in higher education institutions (mainly universities) and other research intensive organisations such as the National Health Laboratory Service. EMUs enable the SAMRC's funding to support long term programmes of research across a range of institutions of higher education across the breadth of South Africa's Provinces, and enable cutting edge research focusing on diverse health challenges to be positioned at the interface with training and developing the next generation of health professionals and scientists.

The SAMRC's EMUs are provided with a secure, discretionary, financial incentive which is approved in five-year cycles, up to a term limit of 15 years depending on satisfactory performance. It is expected that institutional support and co-funding and the other grants received by the Unit will exceed by several-fold the amount invested by the SAMRC in the Unit.

This report synthesises data from the annual reports submitted by EMUs for the 2020/21 Financial Year and presents highlights of the impact of the EMU research efforts.

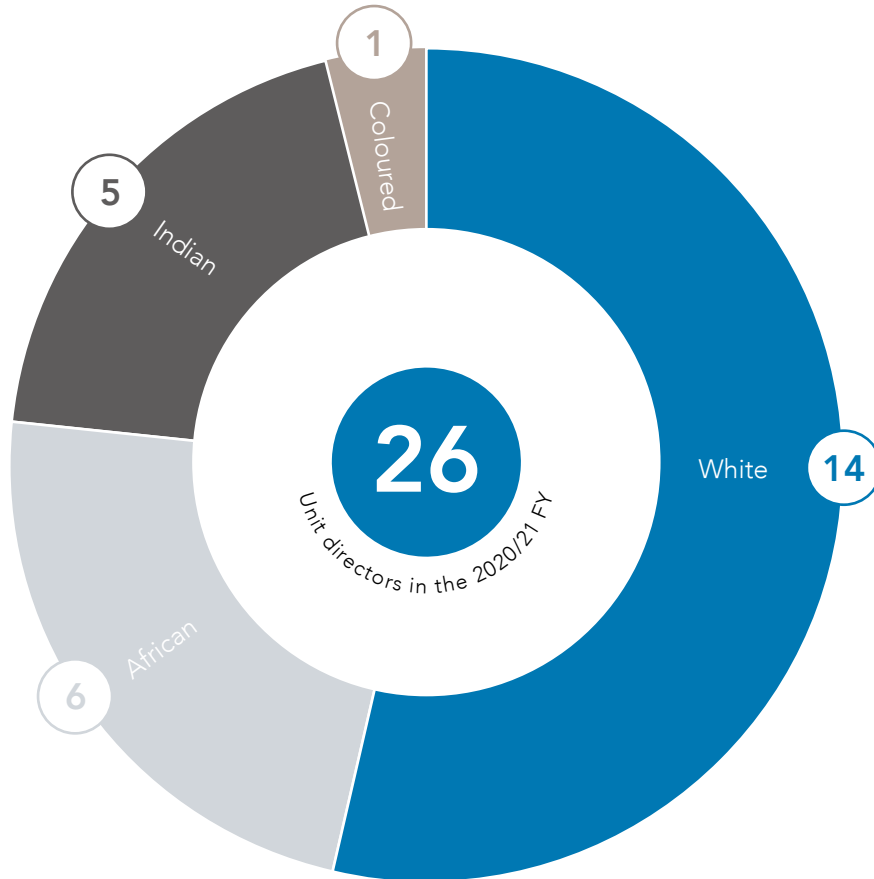
SAMRC Extramural Research Units as at 1 April 2020

(listed alphabetically)

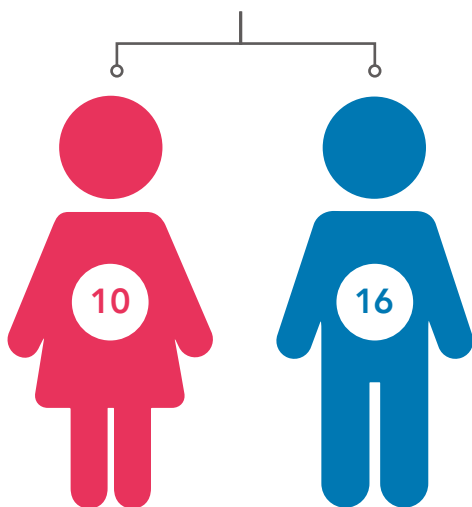
SAMRC EXTRAMURAL UNITS	UNIT DIRECTOR	INSTITUTION	DATE OF ESTABLISHMENT
Antibody Immunity	Prof Lynn Morris	University of the Witwatersrand	2019
Antiviral Gene Therapy	Prof Patrick Arbuthnot	University of the Witwatersrand	2015
Bioinformatics Capacity Development	Prof Alan Christoffels	South African National Biodiversity Institute	2001
Cardiometabolic Health	Prof Tandi Matsha	Cape Peninsula University of Technology	2019
Centre for the Study of Antimicrobial Resistance	Prof Keertan Dheda	University of Cape Town	2018
Centre for Health Economics and Decision Science	Prof Karen Hofman	University of the Witwatersrand	2019
Child and Adolescent Lung Health	Prof Heather Zar	University of Cape Town	2015
Development Pathways for Health	Prof Shane Norris	University of the Witwatersrand	2010
Drug Discovery and Development	Prof Kelly Chibale	University of Cape Town	2007
Genomics of Brain Disorders	Prof Soraya Seedat	Stellenbosch University	2019
Health Services to Systems	Prof Helen Schneider	University of Western Cape	2015
Herbal Drugs	Prof Alvaro Viljoen	Tshwane University of Technology	2015
HIV-TB Pathogens and Treatment	Prof Salim Karim	CAPRISA	2015
Hypertension and Cardiovascular Disease	Prof Marlien Pieters	North West University	2015
Immunology of Infectious Disease	Prof Frank Brombacher	University of Cape Town	2000
Masculinity and Health	Prof Ashley van Niekerk	University of South Africa	2019
Maternal and Infant Health Care Strategies	Prof Robert Pattinson	University of Pretoria	1998
Microbial Water Quality Monitoring	Prof Anthony Okoh	University of Fort Hare	2015
Molecular Mycobacteriology	Prof Valerie Mizrahi	University of Cape Town	2000
Precision Oncology	Prof Zodwa Dlamini	University of Pretoria	2019
Risk and Resilience in Mental Disorders	Prof Dan Stein	University of Cape Town	2017
Rural Public Health and Health Transition	Prof Stephen Tollman	University of the Witwatersrand	2003
Stem Cell Research and Therapy	Prof Michael Pepper	University of Pretoria	2015
Unit for Precision and Genomic Medicine	Prof Rajkumar Ramesar	University of Cape Town	2018
Vaccine and Infectious Analytics	Prof Shabir Madhi	National Health Laboratory Services	2020
Wound and Keloid Scarring Translational	Prof Nonhlanhla Khumalo	University of Cape Town	2019

PROFILE OF UNIT DIRECTORS

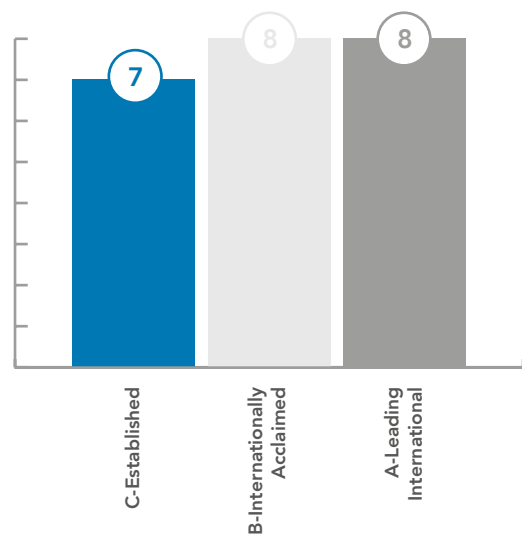
Of the **26 UDs**, **46%** are from **previously disadvantaged background**. The SAMRC is always working to find ways of increasing the number of researchers excluded in the past.



Towards the promotion of women in science, the number of **Female UDs** has increased from **24%** in **2014** to **39%** presently.

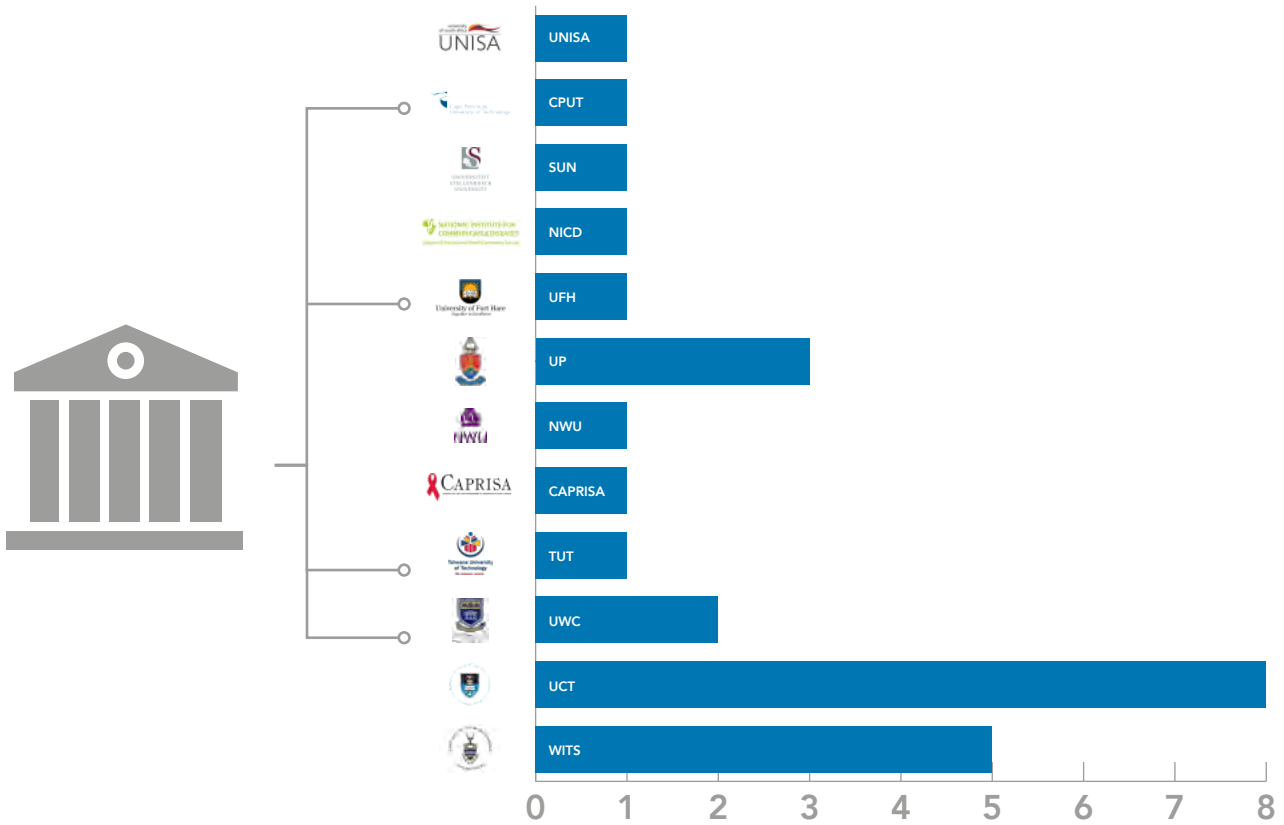


Most of the researchers are **NRF rated** which is an official **affirmation** and a national **recognition** of their **scientific stature** and **research expertise**.



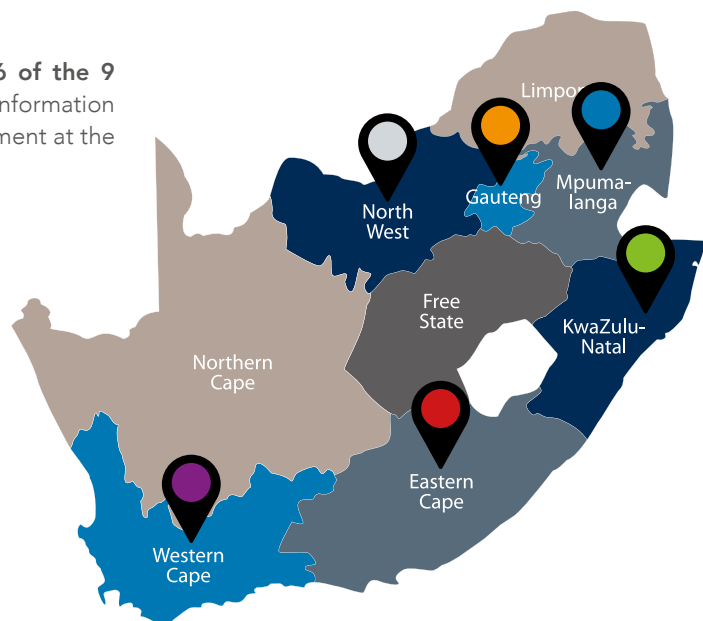
PROFILE OF HOSTING INSTITUTIONS

The SAMRC is currently represented in 12 institutions and is committed to the capacity development of HDIs; of the 12 institutions, 4 are HDIs.



EMU PROVINCIAL SPREAD

The SAMRC Brand is currently represented in 6 of the 9 provinces. EMUs represent windows of scientific information and economic drivers of socioeconomic development at the different provinces.

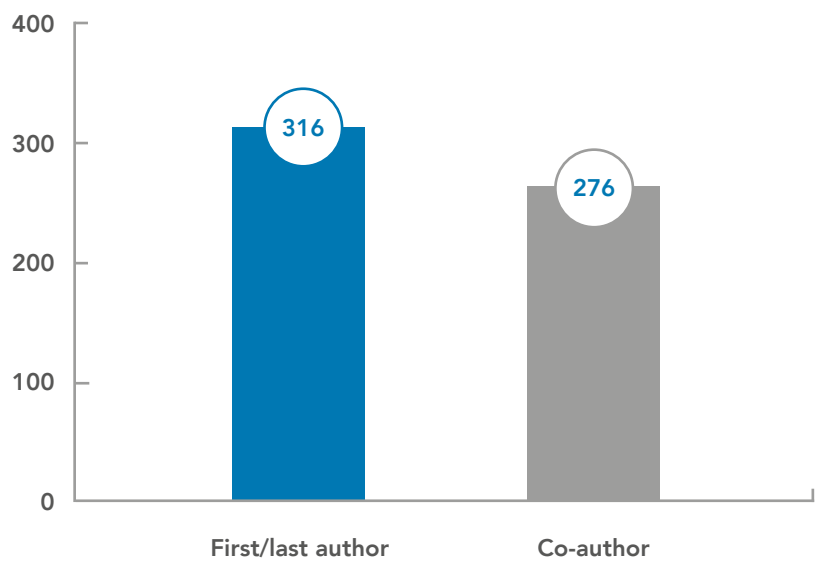


RESEARCH OUTPUT



EMUs produced **592** peer-reviewed publications in 2019/20; 47% of the total SAMRC research output.

Of the **592** peer-reviewed publications from the EMUs, **53%** were first authored by researchers from the EMUs.

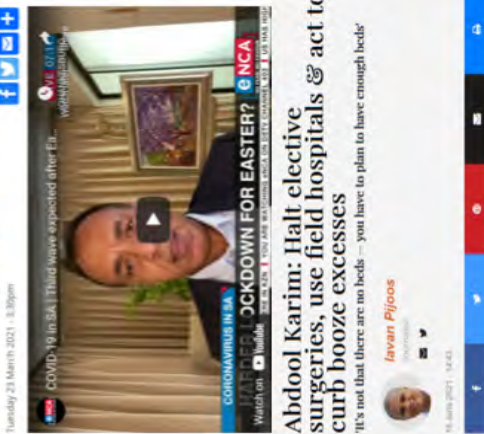


KEY FINDINGS FROM EMU RESEARCH

- Research from the **Bioinformatics Capacity Development Research Unit** in partnership with the UWC School of Pharmacy, developed a computational drug repurposing strategy and predicted peptide-based drugs that can potentially inhibit the interaction of SARS-CoV-2 spike protein with its target (humanACE2).
- Research from the **Cardiometabolic Health Research Unit** showed that Type 2 diabetes, which is normally considered maturity-onset diabetes, is found in young people in Africa and that a portion of individuals with diabetes in South Africa may be receiving incorrect treatment due to this misdiagnosis.
- A study from the **Centre for Health Economic and Decision Science Research Unit** exploring drivers of food provision in the first 1000 days of children's lives, demonstrated that the barriers to healthy eating extend beyond individual knowledge and attitudes, to include the structural and economic conditions under which people live, including gender issues. The solutions are being investigated with community groups in Soweto using a modified CHAT (Choosing All Together) approach.
- The **Child and Adolescent Lung Health Research Unit** studying the Cape Town Adolescent Antiretroviral Cohort of perinatally HIV-infected adolescents and HIV-uninfected controls used brain imaging, to demonstrate that HIV-infected adolescents have abnormalities in brain structure compared to healthy controls.
- Using Umbiflow to screen pregnant women, a study by the **Maternal and Infant Health Care Strategies Research Unit** had a significant impact on reducing perinatal mortality in South Africa. Implementation studies are currently underway to identify barriers and facilitators in scaling up the use of Umbiflow in several districts.
- Emerging from the research of individual families with colorectal cancers, the **Precision and Genomic Medicine Research Unit** have designed a relatively inexpensive state of the art Next Generation Sequencing panel of genes for the rapid screening on individuals likely to be carrying an inherited form of cancer.
- The **Vaccine and Infectious Disease Analytics Research Unit** were instrumental in the fight against COVID by participating in the Novavax COVID-19 Vaccine trial in SA and the UK, which confirmed high levels of efficacy against the original and variant COVID-19.

FEATURED HEADLINES OF SELECTED EMUS

COVID-19 | 'Too late to prevent third wave consequences' - Madhi



Abdool Karim: Halt elective surgeries, use field hospitals & act to curb booze excesses

'It's not that there are no beds – you have to plan to have enough beds'

by **Janine Rijnbeek**



Prof. Abdool Karim, former head of the infectious infectious committee on Covid-19, says the country still see a spike in infections in the most two weeks. (Fig. photo: Image: Joubert Chabane)

Clear hospital wards as much as possible, stop elective surgeries and make use of field hospitals.

Karen Hofman, the professor leading the fight for locality

By **Michelle Daniels** 14 February 2021



Karen Hofman says the Health Protection Unit should be increased to control consumption and stop the rise of jobs.



Wits partners with Biovac to develop skills that will help in producing vaccines

By **Chabane Madhi** 10 Feb 10, 2021

Johannesburg - Wits University has partnered with Cape Town-based bio-pharmaceutical company Biovac to develop skills to produce viral vectored vaccines in South Africa.

Forging new frontiers in healthcare

Look to the Global South for novel vaccines

Wits scholars have the opportunity to lead from the perspective of the Global South, using their distinct expertise, location and context'



Prof. Shabir Madhi, Wits University vice-chancellor and pro-rector, says the university is looking to the Global South for novel vaccines. (Fig. photo: Wits University)

Wits University is home to some of the best scholars in the world who have globally respected research centres. The university has a long history of research excellence and is well placed to look to the Global South for novel vaccines. The university's research centres and programmes in research, teaching and learning, and professional development are well positioned to support scholars in this regard. The university's research centres and programmes in research, teaching and learning, and professional development are well positioned to support scholars in this regard. The university's research centres and programmes in research, teaching and learning, and professional development are well positioned to support scholars in this regard.



Hunger and depression in the pandemic: Why govern target food security to improve South Africa's mental health

By **Shabir Madhi**, **Mark Trushinsky**, **Clare Street** and **Dan Stein** 8 July 2020

South, 90% of South Africans have been experiencing low moods or sadness. Since our first Covid 19 lockdown, more than half of the country's citizens have at some point reported mental distress – and it is getting worse. The pandemic has also created a mental health emergency who are most at risk. It is also an eminently actionable problem.

LATEST LOCAL CORONAVIRUS POLITICS OPINION BUSINESS LIFESTYLE SPORTS

NEW DATA FROM WITS VACCINE TRIALS 'PROMISING' – PROF MADHI

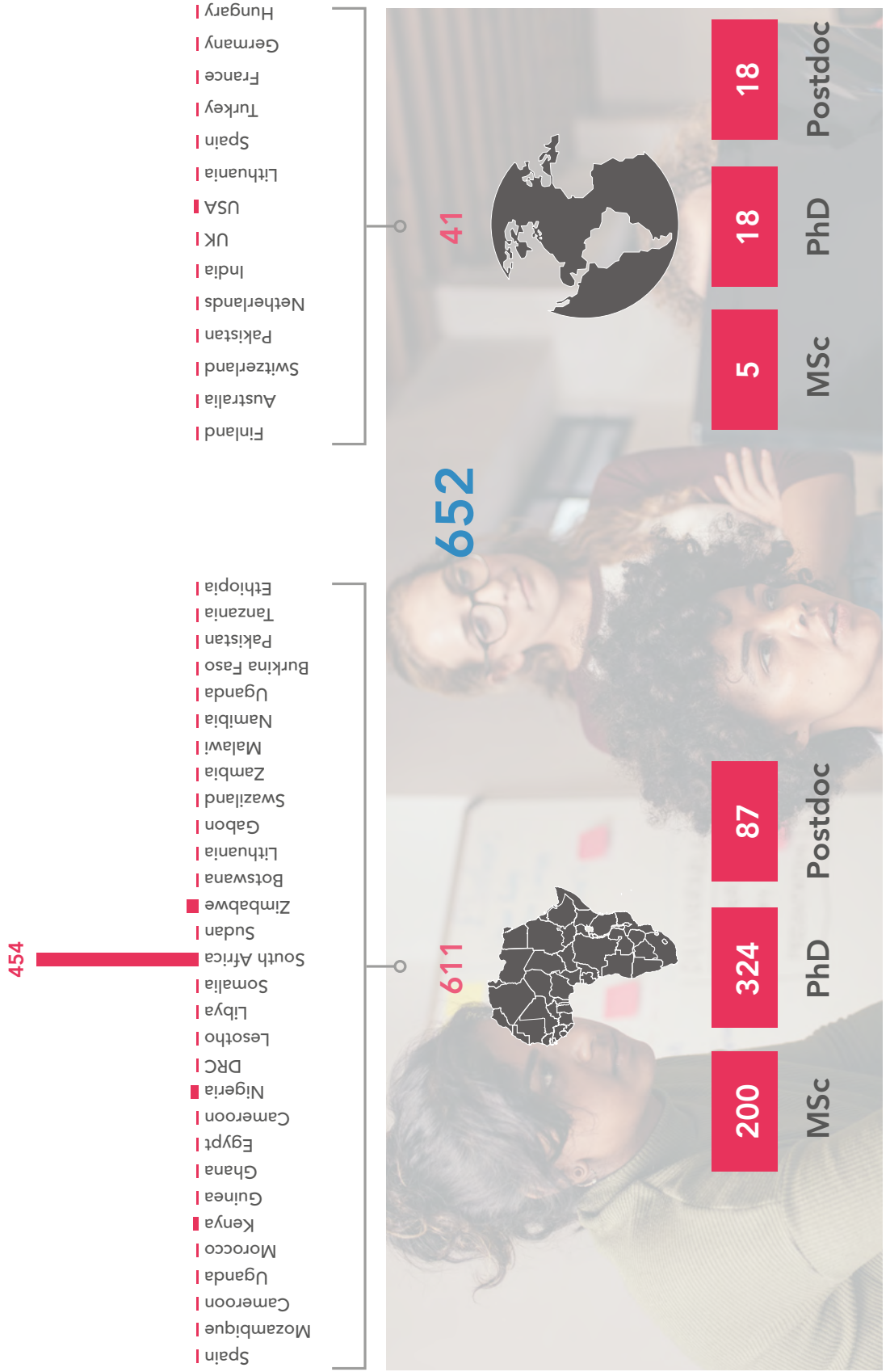
On Friday new research by the Wits Vaccines and Infectious Diseases, Analytics Research Unit found that the Novavax vaccine protected patients who had the variants prevalent in South African and the United Kingdom (UK).



FILE: Wits University's Professor Shabir Madhi said vaccines are the only protection against the virus for people with a weak immune system. Picture: IJBF.com

CONTRIBUTION TO CAPACITY DEVELOPMENT

Training South African students takes priority in EMUs, however the SAMRC brand also attracts students from other African countries and elsewhere in the globe.



OUTPUT OF CAPACITY DEVELOPMENT

EMU capacity development prioritises the training of female and previously disadvantaged students

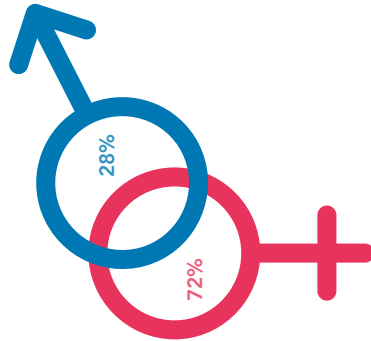


Total #students in the EMUs

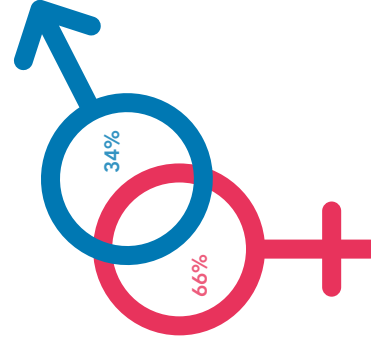
Total #female students

Total #male students

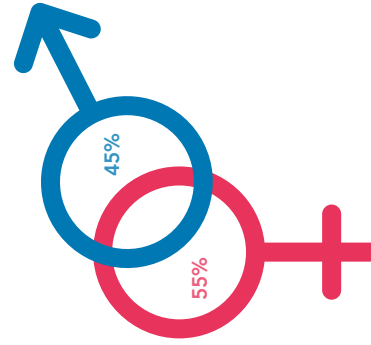
205 MSc students graduated



32 PhD students graduated



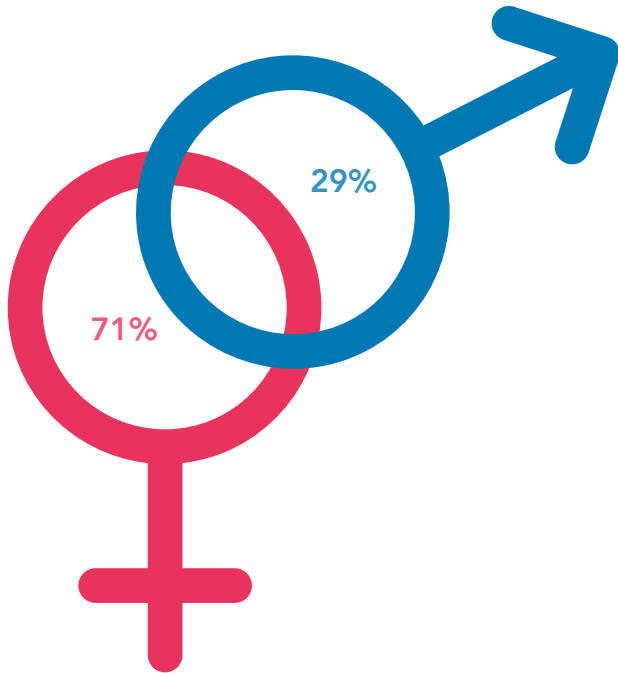
105 Postdoc students graduated



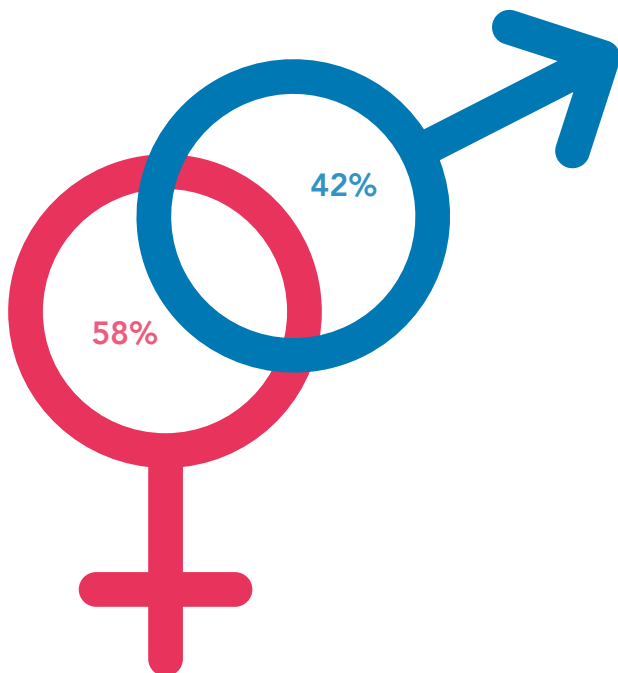
Previously disadvantaged			
	African	Indian	Coloured
White	210	64	43
	335	64	43

97 students graduated in 2020/21.

45 MSc students graduated



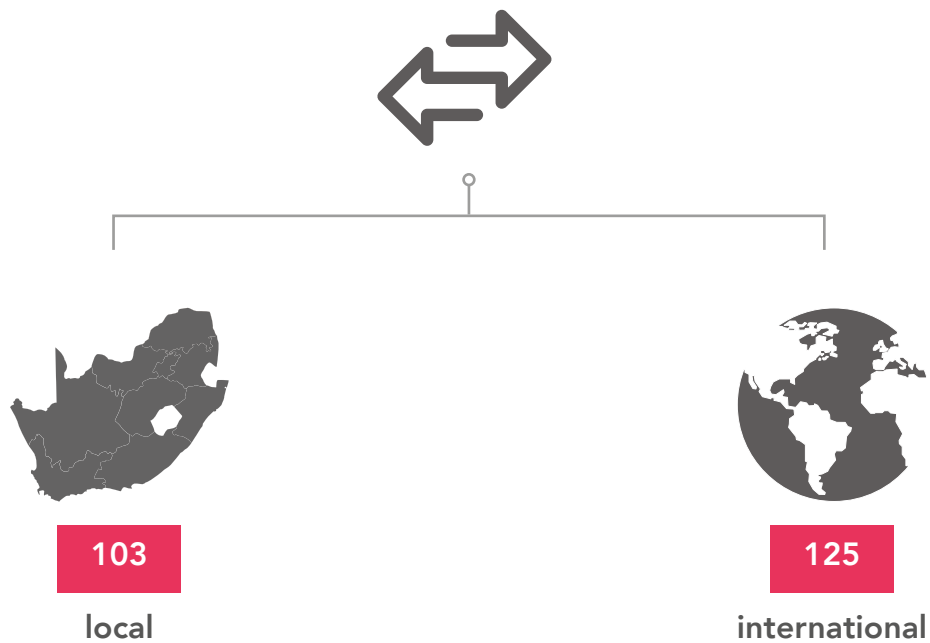
52 PhD students graduated



PARTNERSHIPS

Partnerships and collaborations are mechanisms by which capacity is built and research skills are exchanged. In ensuring that projects have the desired outcomes and contribute to the enhancement of national priorities, EMUs form partnerships that drive our country's research agenda and our efforts to generate knowledge to address the country's health problems.

There are currently **228 EMU Collaborations** for the **2020/21 FY**; indicative of mechanisms by which **research skills** and **practice knowledge** is exchanged, developed and enhanced.



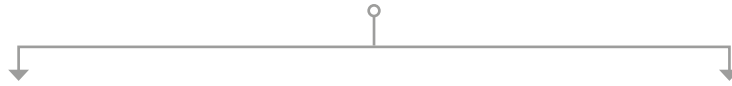
JOBS CREATED BY EMUS

There were **200 Jobs created** in 2020/21; most of the jobs created are **high value, knowledge-based jobs** that contribute to the economy.



FUNDING RAISED BY THE EMUS

The **total funding** received by **EMUs** in 2020/21 was
~R 915,000,000
R 915,348,221



The **total SAMRC Funding** received by EMUs in **2020/21** is
~R 159,000,000
R 159,430,506

The **total leveraged funding (non-SAMRC)** received by EMUs 2020/21 is
~R 756,000,000
R 755,915,715



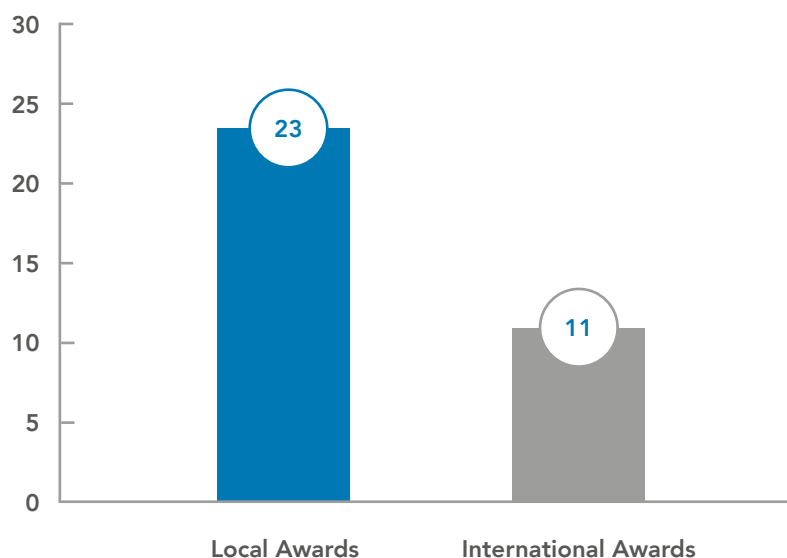
The **EMU baseline + incentivised funds + one off supplementary grant** received in 2020/21 is
~R 41,000,000
R 40,685,099

The **total funding from other SAMRC Programmes (RCD, SHIP, Flagship, etc)** received by EMUs in 2020/21 is
~R 119,000,000
R 118,745,402



AWARDS RECEIVED BY EMUS

The number of **local and international awards** is a reflection of the **national and global stature** of the EMU research.



Local Awards		
EMU	Name	Award
HIV-TB Pathogens and Treatment	NA	The Sunday Times Top 100 Honorary Award for contributions to the South African Covid-19 response
Hypertension and Cardiovascular Disease	Prof Marlien Pieters (UD)	Faculty of Health Sciences Research & Innovation Award-Certificate of recognition
	Prof C Mels	Second runner up for most productive senior researcher in the Faculty of Health Sciences
	R Kruger	Most Productive Emerging Researcher, North-West University
	CM Smuts	Faculty of Health Sciences Research & Innovation Awards – Certificates of Recognition
		Most significant contributions to Community Engaged Research in 2020
	HS Kruger	Most Productive Researcher/Innovator Awards Winner: (Most Productive Senior Researcher)
Mail and Guardian Top 200 Young South Africans Winner: Science and technology category		
Inspiring Fifty South Africans Winner Top 100 Influential Young South Africans for 2020		
Molecular Mycobacteriology	Mr Timothy de Wet	First Prize, IDM Postgraduate Student Publication Prize
Risk and Resilience in Mental Disorders	Christine Lochner	TW Kambule NSTF Researcher for the best SA researcher
Rural Public Health and Health Transition	Mark Collinson	2020 NSTF-South32 Data for Research Award

Local Awards		
EMU	Name	Award
Antibody Immunity	Dr Simone Richardson	L'Oreal UNESCO Women in Science South Africa Young Talents Postdoctoral award at the end of 2020
	Dr Cathrine Scheepers	University of the Witwatersrand, Faculty of Health Sciences, Research Award 2020
Genomics of Brain Disorders	NA	Vice-Rector's 2020 Research Output Award
Centre for Health Economics and Priority Setting	Karen Hofman (UD)	Wits University Vice Chancellor award for VC's Social Impact Award 2020
		Wits University Faculty of Health Sciences Annual Research award - 2020
Cardiometabolic Health	T Matsha (UD)	NSTF-South32 Award: Data category
		CPUT Research Award (2018): Industry funding

International Awards		
EMU	Name	Award
Drug Discovery and Development	Prof Kelly Chibane (UD)	One of the top 20 inspirational medicine makers in the field of small molecules – The Medicine Maker's 2020 Power List
	Dr Lauren Arendse	Royal Society-African Academy of Sciences Future Leaders
HIV-TB Pathogens and Treatment	NA	John Dirks Canada Gairdner Global Health Award from the Gairdner Foundation
	NA	John Maddox Prize for Standing up for Science from Sense about Science and Nature
	NA	500 years of the Straits of Magellan Award from the government of Chile
Hypertension and Cardiovascular Disease	R Kruger	Fellowship of the International Society of Hypertension
	HS Kruger	Fellow of the International Society of Hypertension
Molecular Mycobacteriology	Dr Caron Jacobs	Imaging Scientist Award from the Chan-Zuckerberg Initiative
Rural Public Health and Health Transition	Prof Kathleen Kahn	Alumni Award of Merit: highest honour bestowed by the Harvard T.H Chan School of Public Health
Antobody Immunity	Dr Simone Richardson	Norman Letvin Early Career Investigator Award from the CAVD (Collaboration for AIDS Vaccine Discovery) 2021



SUMMARY OF EMU IMPACT

	2017/18	2018/19	2019/20	2020/21
REGIONAL LEADERSHIP				
EMU Institutional spread	8	8	11	12
Equity in the leadership (UDs)				
<i>#previously disadvantaged UD</i> s	33%	36%	44%	46%
<i>#women UD</i> s	22%	21%	39%	38%
KNOWLEDGE CREATION				
Publications	430	465	592	
<i>#Collaborations</i>	40	155	235	228
<i>#Local</i>	33	80	103	103
<i>#International</i>	7	75	132	125
CREATION OF HUMAN CAPITAL				
<i>#Students registered</i>	426	575	618	652
<i>#female students</i>	65%	64%	63%	66%
<i>#previously disadvantaged</i>	64%	67%	69%	68%
<i>#students trained from rest of Africa</i>	76%	78%	79%	79%
<i>#students sponsored from rest of Africa</i>	81%	81%	78%	80%
<i>#Students graduate</i>	97	76	108	97
<i>#MSc students</i>	51	29	50	45
<i>#MSc-female</i>	78%	72%	62%	71%
<i>#PhD students</i>	46	47	58	52
<i>#PhD-female</i>	54%	51%	59%	58%
<i>#Jobs created</i>	161	247	197	200
REGIONAL INFLUENCE				
Total funding raised	R390m	R548m	R478m	R917m
<i>#Awards received</i>		25	45	34
<i>#National</i>		18	27	23
<i>#International</i>		7	18	11

The background is a vibrant blue with a complex, abstract geometric pattern. It features several overlapping circular and semi-circular shapes, some with dashed lines and others with solid lines. A central circular diagram is prominent, consisting of concentric rings and radial lines, resembling a technical or architectural drawing. The overall effect is one of modernity and precision.

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