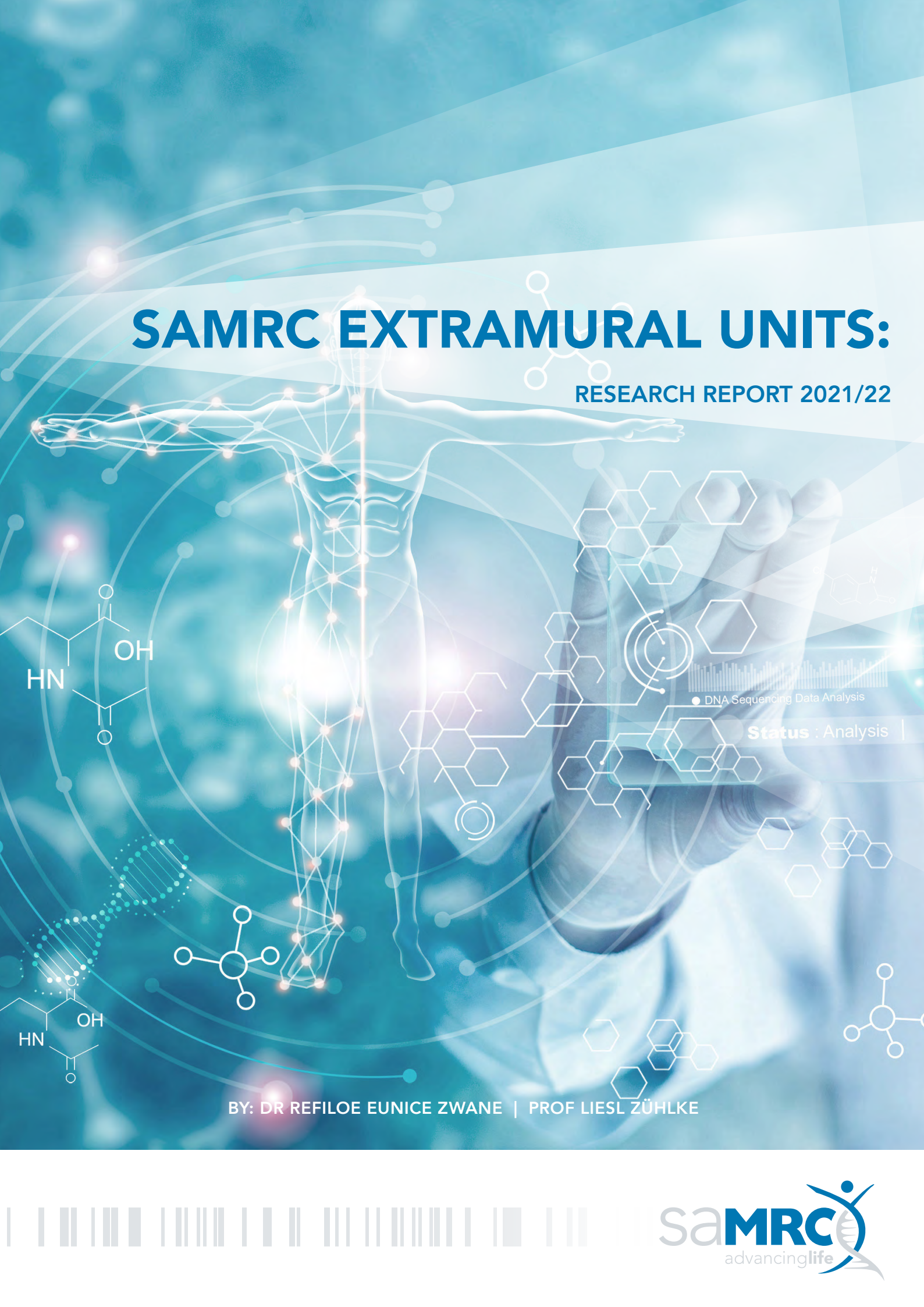


SAMRC EXTRAMURAL UNITS:

RESEARCH REPORT 2021/22



BY: DR REFILOE EUNICE ZWANE | PROF LIESL ZÜHLKE



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 2021/22 Financial Year and presents highlights of the impact of the EMU research efforts.

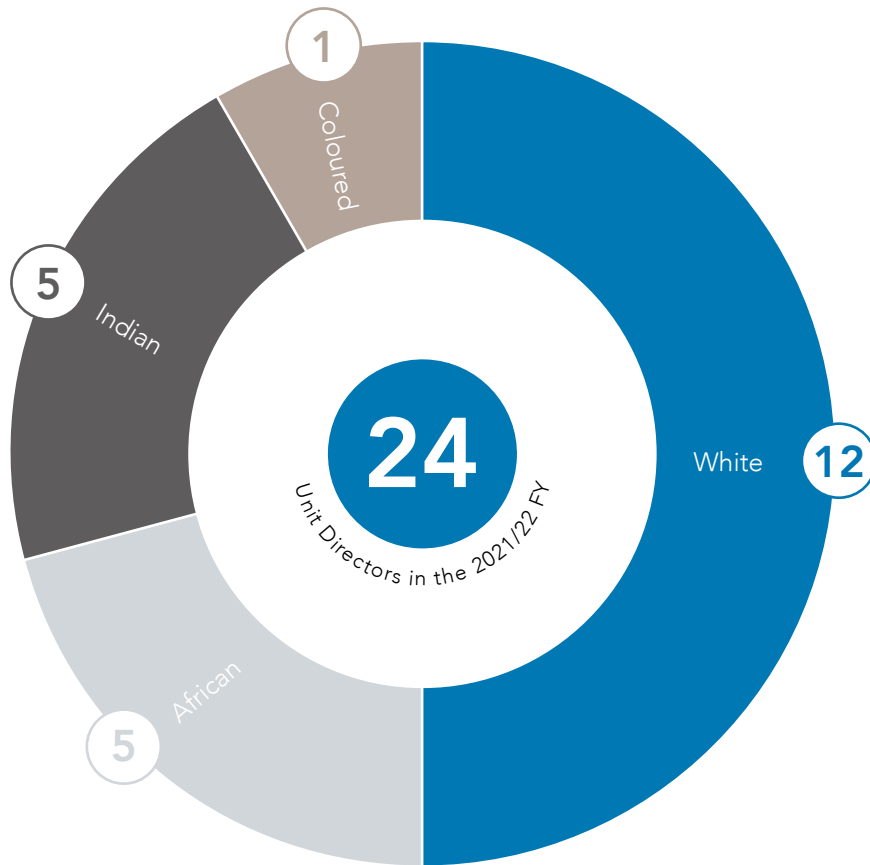
SAMRC Extramural Research Units as at 1 April 2021

(listed alphabetically)

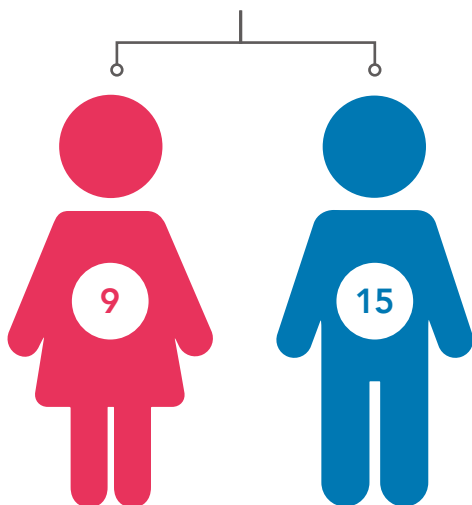
SAMRC EXTRAMURAL UNITS	UNIT DIRECTOR	INSTITUTION	DATE OF ESTABLISHMENT
Antibody Immunity	Prof Lynn Morris	University of the Witwatersrand	2019
Antiviral Gene Therapy	Prof Patrick Arbuthnot	University of the Witwatersrand	2015
Bioinformatics Capacity Development	Prof Alan Christoffels	South African National 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	2009
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
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
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

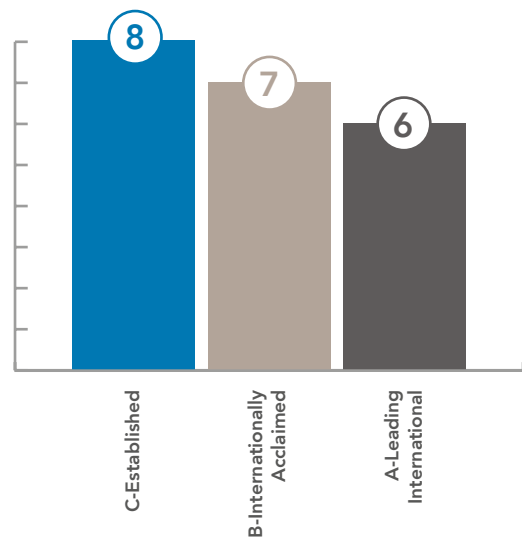
Of the **24 UDs**, **50%** are from **previously disadvantaged background**. The SAMRC strives to increase the number of research leaders from background previously excluded from research leadership.



Towards the promotion of women in science, the number of **Female UDs** has increased from **24%** in **2014** to **38%** presently.

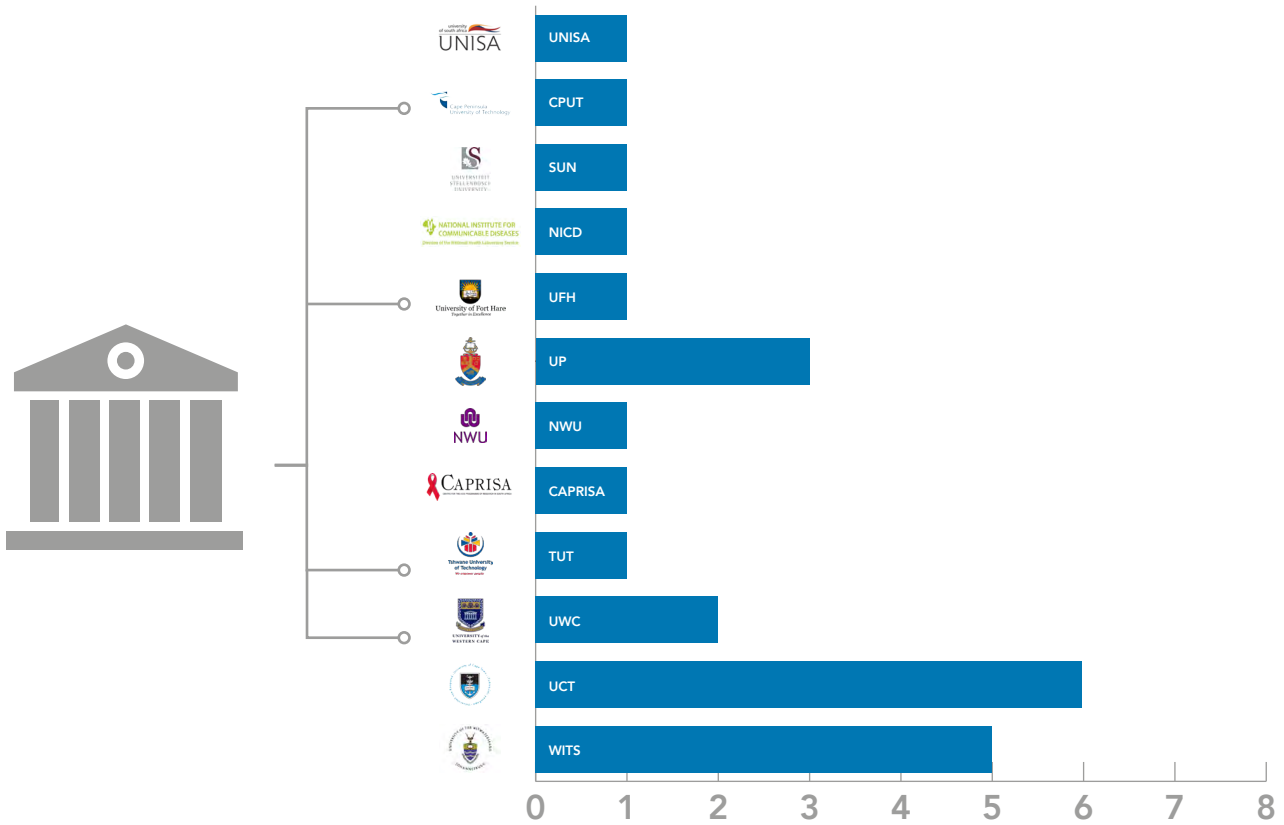


Most of the Unit Directors are **NRF rated** which is an official **affirmation** and a national **recognition** of their **scientific stature** and **research expertise**.



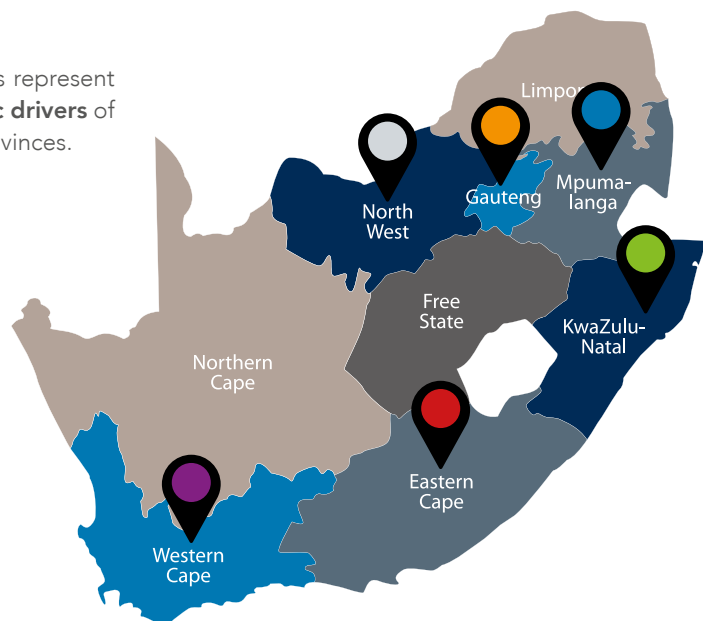
PROFILE OF HOSTING INSTITUTIONS

The SAMRC has **Units** in **12 institutions** and is committed to the capacity development of **HDIs**; of the **12 institutions**, **4 are HDIs**.



EMU PROVINCIAL SPREAD

EMUs are located in **6 of the 9** provinces. EMUs represent **windows of scientific information** and **economic drivers of socioeconomic development** at the different provinces.

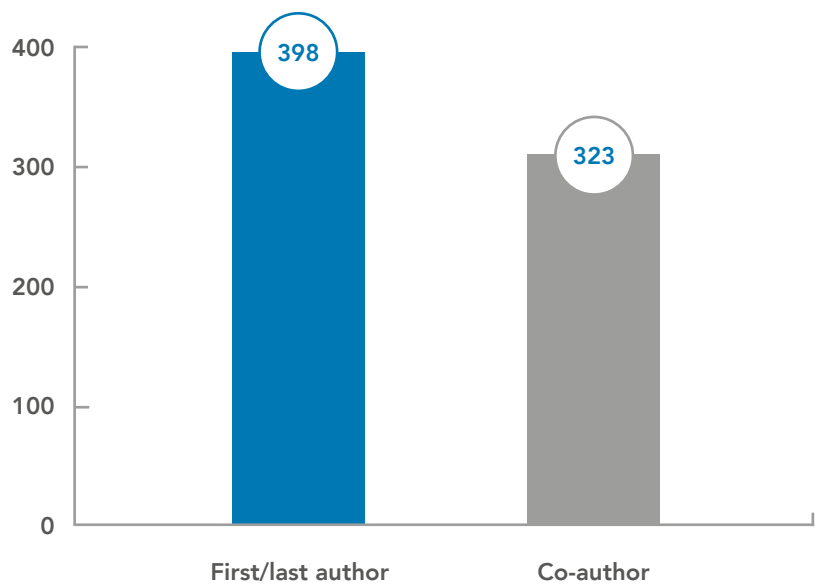


RESEARCH OUTPUT



EMUs produced **721** peer-reviewed publications in **2020/21**; 49% of the total SAMRC research output.

Of the **721** peer-reviewed publications from the EMUs, **55%** were first/last authored by researchers from the EMUs.



KEY FINDINGS FROM EMU RESEARCH

- In a trial study to assess antibody mediated prevention of HIV infection, the **SAMRC/NICD Antibody Immunity Research Unit** provided the proof-of-concept that shows that broadly neutralizing antibodies can prevent HIV acquisition, and that more potent antibodies will be required to significantly reduce acquisition risk.
- The **SAMRC/Wits Antiviral Gene Therapy Research Unit** in collaboration with Dyadic International initiated the use of C1 filamentous yeast technology for protein expression to be used for vaccination and therapy.
- The **SAMRC/CPUT Cardiometabolic Health Research Unit** discovered miRNAs that potentially can be used to assess prediabetes and/or diabetes. These markers performed better than OGTT and HbA1c.
- The **SAMRC/WITS Centre for Health Economics and Decision Science Research Unit** led the finalisation of the South African Values and Ethics Framework for Universal Health Coverage which will support the implementation of health technology assessment in South Africa for the NHI.
- **SAMRC/UCT Child and Adolescent Health Research Unit** studying the Cape Town Adolescent Antiretroviral Cohort of perinatally HIV-infected adolescents and HIV-uninfected controls, demonstrated that adolescents perinatally infected with HIV have accelerated aging as measured by epigenetic changes. This epigenetic age acceleration contributed more to regional alterations of brain volumes, cortical thickness, cortical surface areas and neuronal microstructure than chronological age.
- In a study to understand the impact of HIV infection and its treatment and the effect menopause has on the musculoskeletal health of African women, the **SAMRC/WITS Developmental Pathways for Health Research Unit** found that there was a 19.4% prevalence of osteoporosis of the femoral neck in women, and more than double the prevalence in HIV positive compared to negative women. This raises concerns about future fracture risk in South Africa, particularly in those infected with HIV.
- Until recently, fibrin fibre diameter analyses obtained from scanning electron microscopy imaging has been performed manually which is an extremely time-consuming procedure, ultimately limiting the sample size of projects employing this technique. The **SAMRC/NWU Hypertension and Cardiovascular Disease Research Unit** has developed an automation of this measurement using Diameter J which will significantly shorten the analysis time, allow standardisation between laboratories, and allow the use of this technique in larger sample sizes.
- Using the Umbiflow in a study related to stillbirths, the **SAMRC/UP Maternal and Infant Health Care Strategies Research Unit** showed that Umbiflow can detect fetal growth restriction through detection of placental insufficiency which is one of the leading causes of stillbirths. Large-scale implementation of Umbiflow in South Africa could reduce thousands of stillbirths.
- In a study related to maternal posttraumatic stress disorder, the **SAMRC/UP Stem Cell Research and Therapy Research Unit** reported that maternal posttraumatic stress disorder was associated with acceleration of epigenetic aging of infants at birth. This novel finding may shed light on the mechanisms involved in the intergenerational transmission of trauma.
- The **SAMRC/SUN Genomic and Precision Medicine Research Unit** took the lead in a study involving genetic diagnosis of African children with epilepsies, and established for the first time on the African continent that a genetic diagnosis has major implications on prognosis and selection of treatments.
- The **SAMRC/UCT Wound and Keloid Scarring Translational Research Unit** developed the first cell line in keloid disease which lead to filing a patent.

FEATURED HEADLINES OF SELECTED EMUS

DURBAN – HEALTHCARE workers who have received the Johnson & Johnson vaccine could require a booster shot.

According to vaccinologist and Dean of the Faculty of Health Sciences at Wits University, Professor Shaibr Madhi, the duration of protection of the J&J vaccine lasts for a period of between 60 and 70 days.

Prof Karim Hoffman of the Wits Centre for Health Economics and Decision Science have three years ago, significantly below 20% recommended by the World Health Organisation (WHO).



3rd COVID-19 wave could be less severe provided virus does not mutate: Prof Madhi

UCT Prof Kelly Chitale Named a Rising Black Biotech Leader, Only African Listed

- UCT Professor Kelly Chitale has been named among 25 rising black biotech leaders by an American based publication
- The Age, from Australia is the only African based report by her
- Chitale says she hopes that the recognition will encourage other young black minds to make the most of their potential advantages

#WomensMonth: Probing the secrets of mind, body and soul

Professor Sangeeta Shinde joined Stellenbosch University's Department of Psychiatry in 1992, from her MChD internship and keen to become a medical researcher, but not sure whether specialise in psychiatry or paediatrics.



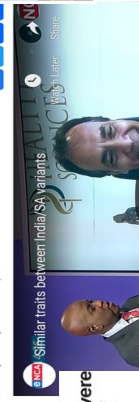
Covid-19 is here to stay

Just as the common flu virus continually mutates, and a new vaccine must be developed each year, so too will SARS-CoV-2 continue to mutate and therefore circulate, said Shaibr Madhi, professor of vaccinology at the University of the Witwatersrand and director of the Medical Research Council Vaccine and Infectious Diseases Applied Research Unit (VIDA).



COVID-19 in SA: Stricter third wave measures needed

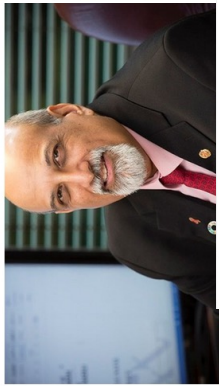
Monday 10 May 2021 - 4:38pm



CORONAVIRUS IN SA
MARKETZEL VARIANTS BEHAVIOUR NOT YET KNOWN
ENCA
NEWS TODAY MARKS 27 YEARS
 on YouTube
 ANALYSIS, WHICH IS BEYOND OUR CONTROL. NEWS TODAY MARKS 27 YEARS

There is no evidence yet to show that current vaccines can offer protection against the variant first discovered in India. That's according to Prof Shaibr Madhi from Wits University comes after at least four people in Gauteng and Kwa-Zulu Natal tested positive with variant. Courtesy #D5N403

Abdool Karim joins the World Health Organisation's Science Council



Scientists develop new method of diagnosing TB from skin



Extension of level 4 lockdown required as cases continue to surge: Prof Shaibr Madhi

12 July 2021, 6:30 AM | @SABCHNews



Netcare and Wits team up for vaccination site

The vaccination site opened on Monday, September 6, in the Old Mutual Sports Hall at the Main Campus of the Wits University.

September 6, 2021



University of the Witwatersrand (Wits) students, alumni, and their families and friends can now receive their COVID-19 vaccinations at the Wits main campus. This is made possible through a partnership between the university and the Netcare Group.

OPINION | Going local on health innovation - it is time and we are ready

fin24 Professor Ravi Chandra



From Classic and Critical to Integrative Psychiatry, Dan J. Stein, MD, PhD, DPhil

July 1, 2021
 Amir Rishi, MD
 @SABCHNews

Traveling the middle road between algorithm and intuition in psychiatric research and treatment.

Prof Karim warns of possibility of new COVID-19 variant emerging

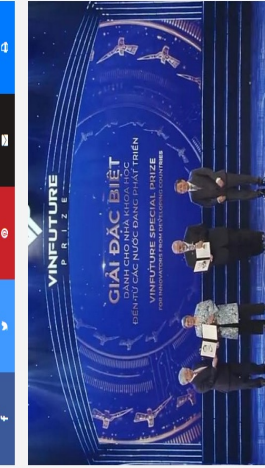
10 May 2021, 7:06 PM | @SABCHNews



Salim and Quarraisha Abdool Karim scoop another international award

Nivashini Nair
 Senior reporter
 24 January 2022 - 10:19

24 January 2022 - 10:19



VINEVUTURE
 GIẢI ĐẶC BIỆT DANH CHÓNG KHÁNH HƯƠNG
 GIẢI THƯ CẤP QUỐC DANG PHÁT TRIỂN
 VINEVUTURE SPECIAL PRIZE
 THE VINEVUTURE AWARDS

OPINION | Laboratory tests in diabetes mellitus - past, present and future health



Until fairly recently, Type 2 diabetes mellitus was considered a major health issue only in developed countries, but there's been an increase in prevalence in developing countries. This has been attributed to rapid urbanisation, increased fast food consumption and general lack of exercise.

According to the International Diabetes Federation, African countries can expect an increase of up to 83% in the number of people with diabetes by 2040. Their latest report shows that South Africa has the highest prevalence of diabetes on the continent, and the highest number of

Hunger and depression in the pandemic. Why government must target food security in response to South Africa's lockdown



30 OCTOBER 2021 | STONY NEWMAN DAVIDS. Read time: 7 min.

2030 Future Leaders Dinner: celebrating excellence

30 OCTOBER 2021 | STONY NEWMAN DAVIDS. Read time: 7 min.

HIV vaccines and immunotherapies "would be further along" if they had the resources of COVID-19, says leading antibody researcher

Guest Column | 28 July 2021



"Money does solve problems, there's no question" This was the answer by Professor Lynn Morris, since money at the moment is the only thing that is in a primary setting with HIV

Community-based TB testing intervention enters critical multilayer phase

17 MAY 2021 | STONY NEWMAN DAVIDS. Read time: 7 min.



Four doctors abroad helped us to do a TB testing intervention and we received a further 71000 number of funding for the next multilayer phase of the project. Pheme Michael / iStock.com

The ground breaking XACT Model project, which seeks to advance community-based active case finding (ACF) to a critical multilayer phase in four sub-Saharan African countries, including South Africa. The project is set to revolutionise TB diagnosis and treatment, and take diagnostic tests out of the clinic and into the community at the University of Cape Town's (UCT) Centre for Lung Infection and Immunity (CLII), the project is the first of its kind for South Africa. While its primary objective is to facilitate testing, clinicians also hope that it will interrupt transmission of the TB

UCT News survey

- News content
- News delivery
- News style
- UCT student site
- UCT staff site

Most Feared

- World Occurs Day: Sustaining the pace
- UCT staff members to be highest ranking in
- UCT VC dedicates honorary doctorate to
- Study tour to learn about disruptive fir
- UCT remains top in Africa



Epidemiologist Professor Salim Abdool Karim to receive Rhodes honour

31 Aug 2021

Rhodes University announced that it will confer an honorary degree of Doctor of Science (DSc) on Professor Salim Abdool Karim, who is widely recognised for his scientific and leadership contributions to the AIDS and Covid-19 pandemics. This will be done at the university's second virtual graduation ceremony for Master's and PhD students.

We need to vaccinate 90% of over-35s - Madhi

03 Aug 2021

People over the age of 35 need to be the focus of vaccinations - especially those over 50

A single, clear, well-crafted message about Covid-19 and vaccination has been missing

Hurdles to vaccination could have been minimised and government should be talking vaccinations to the people instead of the other way round



Vaccine: SA expat Dr Soon-Shiong launches R3 billion initiative

30 OCTOBER 2021 | STONY NEWMAN DAVIDS. Read time: 7 min.

30 OCTOBER 2021 | STONY NEWMAN DAVIDS. Read time: 7 min.

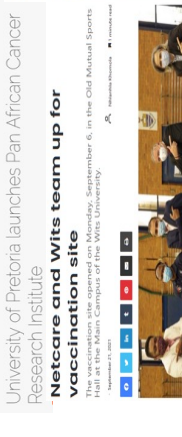
2030 Future Leaders Dinner: celebrating excellence

30 OCTOBER 2021 | STONY NEWMAN DAVIDS. Read time: 7 min.

STONY NEWMAN DAVIDS. PHOTOS: ERIC MADINA. Read time: 7 min.

The party was attended by several members of parliament, including the Deputy Minister of Education, Koko Modibane, and the Deputy Minister of Health, Mcebisi Johnson.

These four organisations are coming together with the private sector or objective of building an evergreening capacity for health innovation on the continent, said Dr. Karim.



University of Pretoria launches Pan African Cancer Research Institute

Netcare and Wits team up for vaccination site

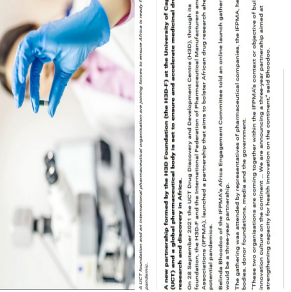
Many Wits interviews Professor Karen Hillman, Director of PRICESER SA

The steady report with many Wits

Calls for Sugar Tax to be doubled

Research has shown that the introduction of a sugar tax in South Africa has worked to reduce sales of sugary drinks

About 70% of women and about 40% of men in South Africa are overweight or obese, costing the economy about 7% of GDP



UCT News survey

Most Feared

World Occurs Day: Sustaining the pace

UCT staff members to be highest ranking in

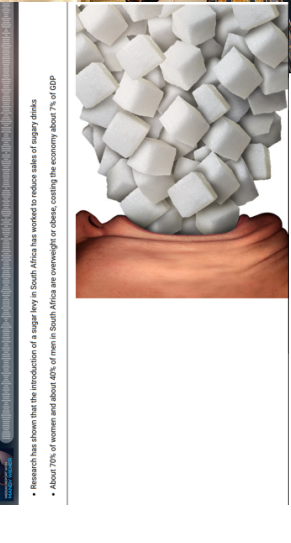
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Future Leaders Dinner: celebrating excellence



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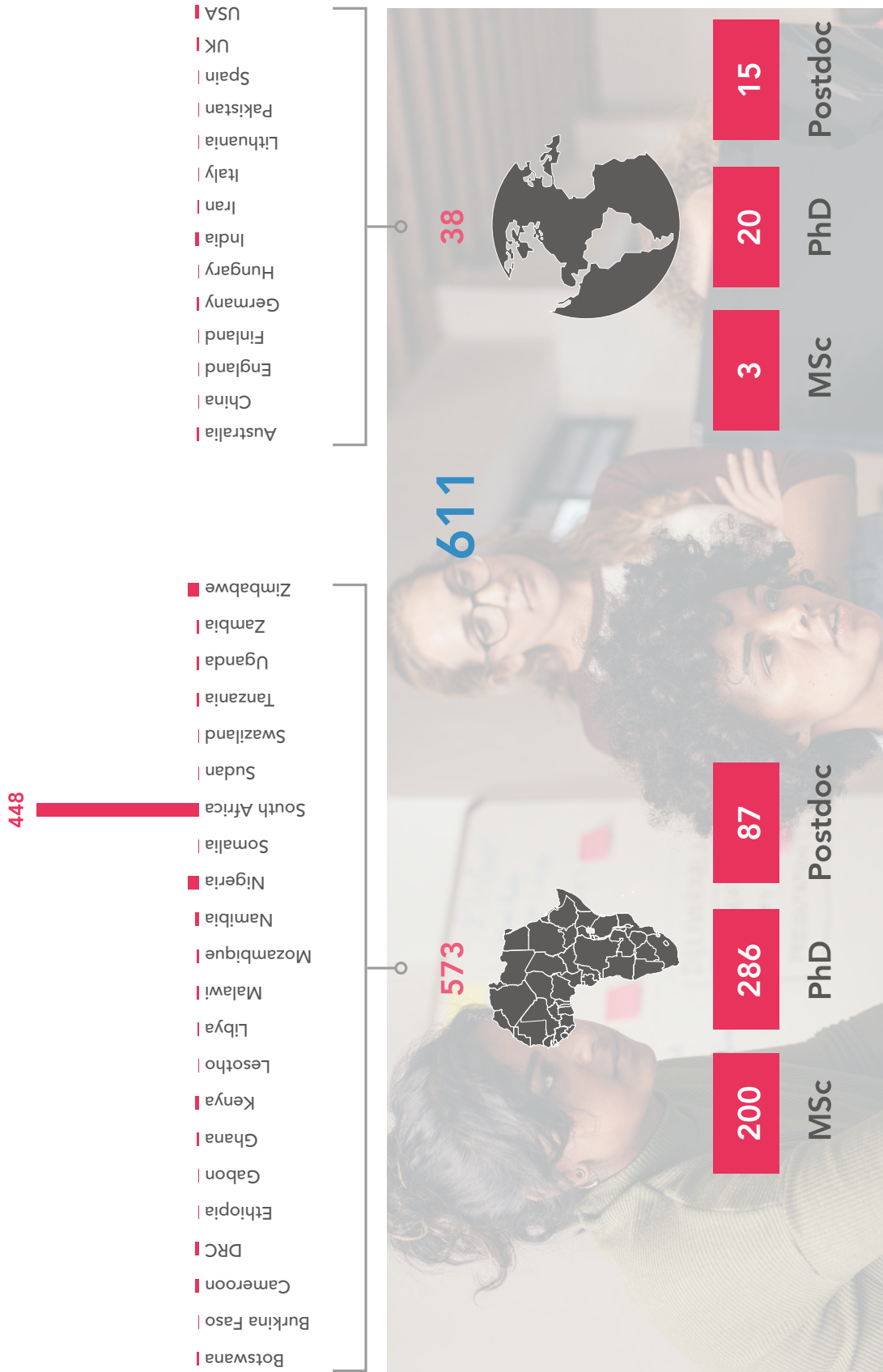
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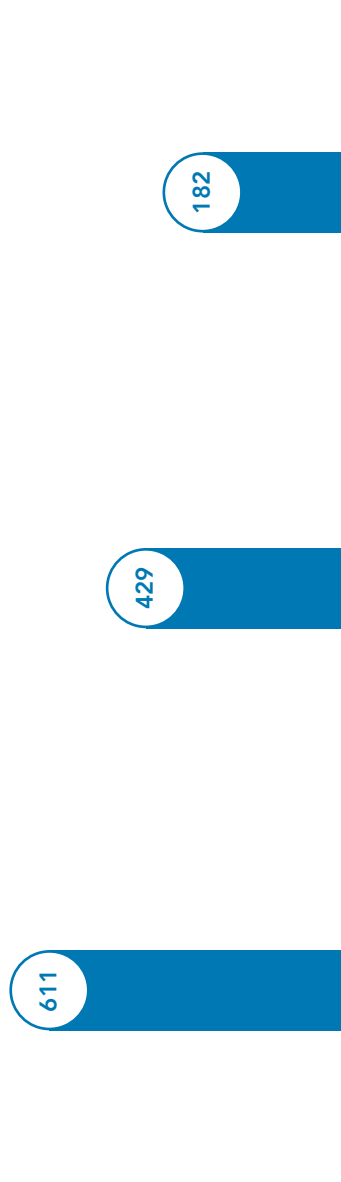
CONTRIBUTION TO CAPACITY DEVELOPMENT

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



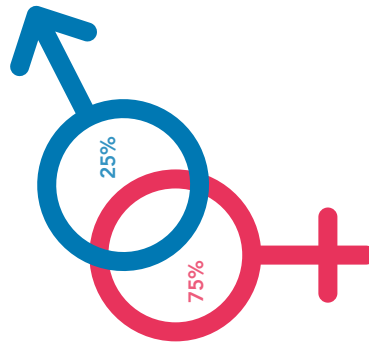
OUTPUT OF CAPACITY DEVELOPMENT

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

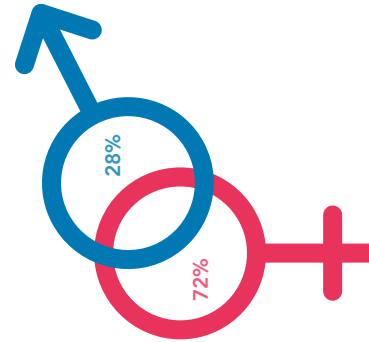


Total #students in the EMUs Total #female students Total #male students

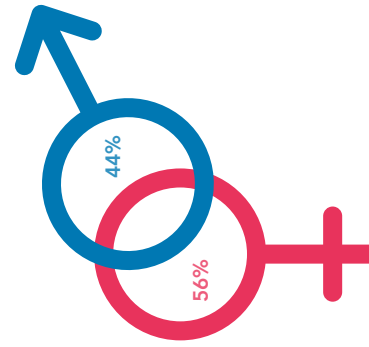
203 MSc students



306 PhD students



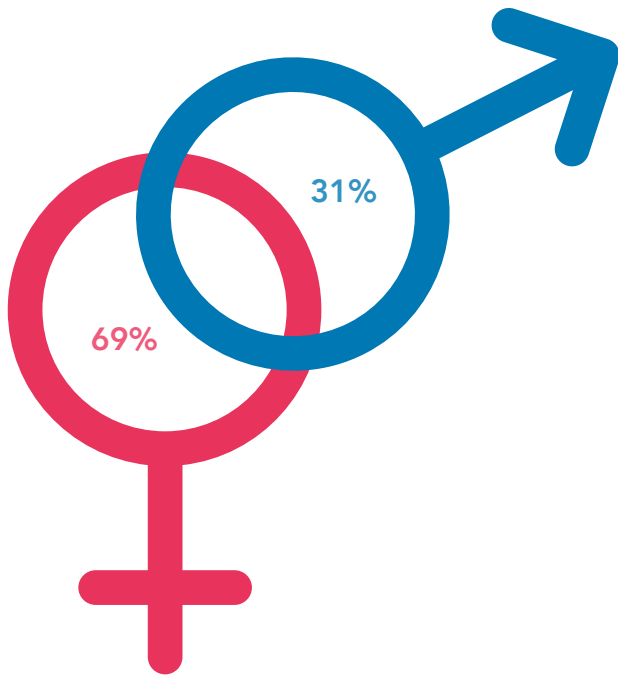
102 Postdoc students



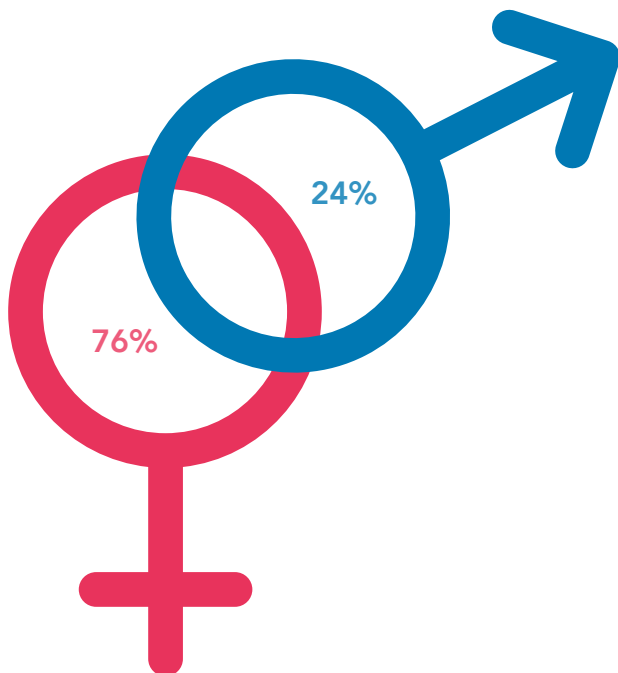
Previously disadvantaged				
	African	Indian	Coloured	
White	212	297	63	39

112 students graduated in 2021/22.

58 MSc students graduated



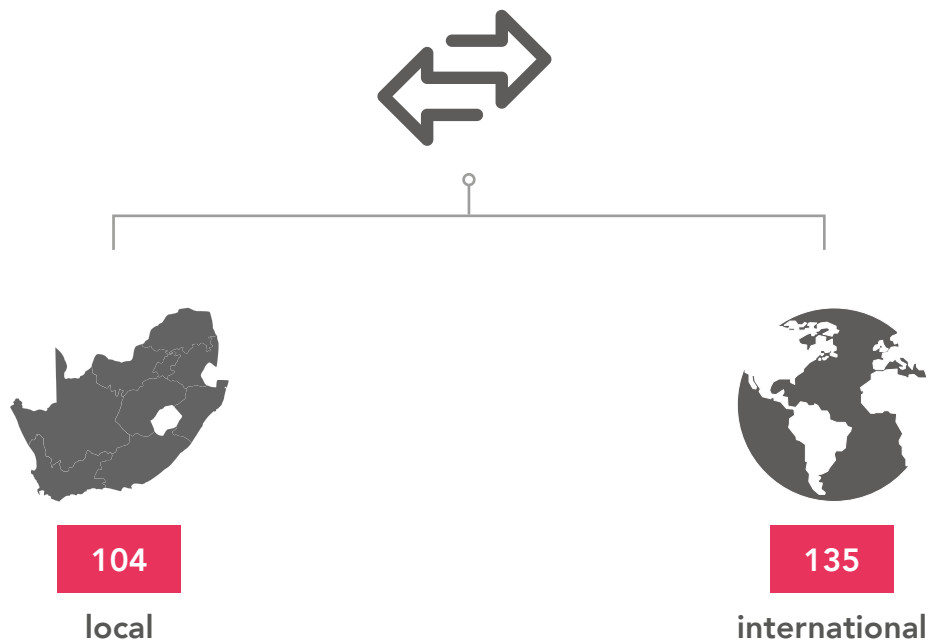
54 PhD students graduated



PARTNERSHIPS

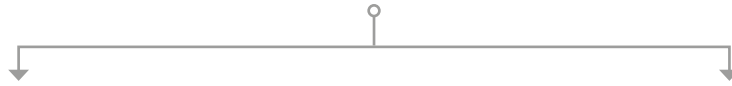
Partnerships and collaborations are mechanisms by which capacity is built and research skills are exchanged. In ensuring that projects have the desired outcomes and contribute to the enhancement of national priorities, EMUs form partnerships that drive our country's research agenda and our efforts to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

There are currently **239 EMU Collaborations** for the **2021/22 FY**; indicative of mechanisms by which **research skills** and **practice knowledge** is exchanged, developed and enhanced.



FUNDING RAISED BY THE EMUS

The **total funding** received by **EMUs** in 2021/22 was
~R 815,000,000
R 815,271,029



The **total SAMRC Funding** received by EMUs in **2021/22** is
~R 146,000,000
R 145,703,659

The **total leveraged funding (non-SAMRC)** received by EMUs 2021/22 is
~R 670,000,000
R 669,567,369



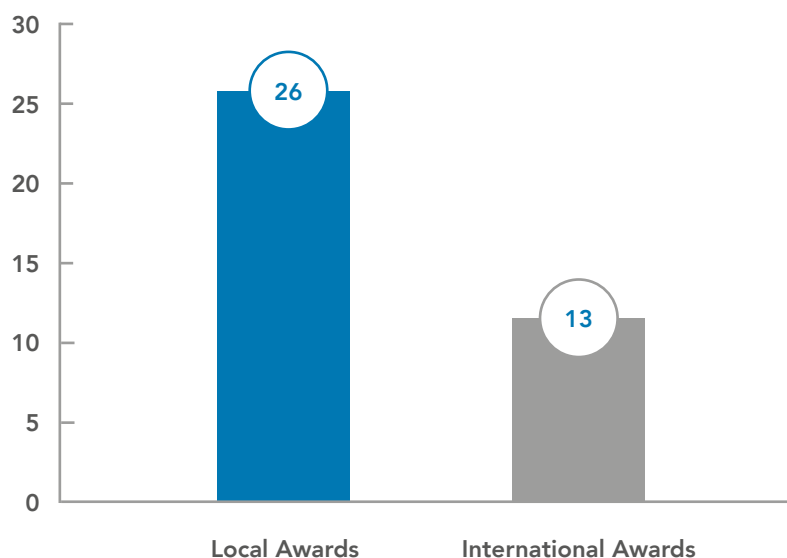
The **EMU baseline + incentivised funds + one off supplementary grant** received in 2021/22 is
~R 28,000,000
R 27,889,365

The **total funding from other SAMRC Programmes (RCD, SHIP, Flagship, etc)** received by EMUs in 2021/22 is
~R 118,000,000
R 117,804,294



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	Award
HIV-TB pathogens and treatment	Honorary Fellowship
	UNISA Chancellor's Calabash Award from the University of South Africa
	Honorary Doctorate: DSc (honoris causa) from Rhodes University
Hypertension and cardiovascular disease	Most Productive Research Entity
	Most significant contribution to generation of external income
	1st Runner up: Most productive emerging researcher
	2nd Runner up: Most productive emerging researcher
	Vice-Chancellor's medal for most outstanding MSc Student
	Best oral presentations in their respective categories during the 1st Spring School of the SAHS NextGen network
	ISH Austin Doyle Award
	Most productive Senior Researcher in the Faculty of Health Sciences
	Most significant contribution to generation of external income
	1st Runner up: Most productive Senior Researcher
	Winner: Most sustainable productive researcher
	Most sustainable productive researcher
	Apolitical's 100 most influential academics in Government of COVID-19 response
Vaccines and Infectious Diseases Analytics	Exceptional Service Award

Local Awards	
EMU	Award
Rural public health and health transition	3rd place in South Africa among Top Scientists
Stem cell research therapy	Faculty Research Prize in recognition of excellence in research
Antibody Immunity Research Unit	Runner-up prize for the best oral presentation during the SAIS Conference
	Postgraduate merit award
	Vice-Rector's Award for research outputs
Genomics of brain disorders	Research excellence award
Cardiometabolic Health	Conferment of Membership to Academy of Sciences in South Africa
Masculinity and Health	National Research Foundation Team Award

International Awards	
EMU	Award
Drug discovery and development	One of the 22 black biotech leaders in honour of Juneteenth in the USA
Herbal drugs	IPUF award for Contributing towards research on indigenous herbal medicines and developing research capacity
HIV-TB pathogens and treatment	CPHIA Lifetime Achievement in Public Health Award from the African Union (AU) and Africa CDC
	VinFuture Special Prize from the VinFuture Foundation in Vietnam
Microbial water quality monitoring	Elected Fellow of the prestigious Royal Society of Biology
	Elected Fellow, Nigerian Society for Microbiology
	Elected Fellow, Nigerian Academy of Science
Vaccines and infectious diseases analytics	Harry Oppenheimer Foundation Fellowship Award
	Academy of Science of South Africa (ASSAF) Science-for-Society Gold medal
Risk and resilience in mental disorders	Pamela Sklar Innovation Award
Stem cell research therapy	Nominated one of the 100 Most Influential Academics in Government (globally)
Antobody Immunity	Recognition as a vaccine luminary by the UK government for partnership with Project Halo
Genomics of brain disorders	Global Chair award



SUMMARY OF EMU IMPACT

	2017/18	2018/19	2019/20	2020/21	2021/22
REGIONAL LEADERSHIP					
EMU Institutional spread	8	8	11	12	12
Equity in the leadership (UDs)					
#previously disadvantaged UD's	33%	36%	44%	46%	50%
#women UD's	22%	21%	39%	38%	38%
KNOWLEDGE CREATION					
Publications	430	465	592	721	
#Collaborations					
	40	155	235	228	239
#Local	33	80	103	103	104
#International	7	75	132	125	135
CREATION OF HUMAN CAPITAL					
#Students registered					
	426	575	618	652	611
#female students	65%	64%	63%	66%	70%
#previously disadvantaged	64%	67%	69%	68%	65%
#students trained from rest of Africa	76%	78%	79%	79%	81%
#Students graduate					
	97	76	108	97	112
#MSc students	51	29	50	45	52
#MSc-female	78%	72%	62%	71%	69%
#PhD students	46	47	58	52	54
#PhD-female	54%	51%	59%	58%	76%
REGIONAL INFLUENCE					
Total funding raised	R390m	R548m	R478m	R917m	815m
#Awards received					
		25	45	34	39
#National		18	27	23	26
#International		7	18	11	13

The background is a solid blue color with a complex, abstract geometric pattern. The pattern consists of various overlapping shapes, including circles, squares, and lines, creating a sense of depth and movement. A prominent feature is a large, circular diagram in the center, which appears to be a technical or architectural drawing, possibly a floor plan or a cross-section of a structure. The diagram is composed of concentric circles, radial lines, and various rectangular and circular elements, all rendered in a lighter shade of blue. The overall effect is a modern, technical, and futuristic aesthetic.

PO Box 19070
7505 Tygerberg, South Africa
Enquiries: Tel: +27 21 938 0911
Email: info@mrc.ac.za

www.samrc.ac.za