ANNUAL REPORT

2017|2018

saMRC

advancinglife

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OUR MANDATE

The mandate of the South African Medical Research Council (SAMRC), in terms of the MRC Act 58, 1991 (as amended), is to improve the health and quality of life of South Africans. This needs to be realised through research, development and technology transfer.

IN BRIEF

The SAMRC was established in 1969 to conduct and fund health research and medical innovation. We focus on the top ten causes of death and disability and associated risk factors. We acquire the most accurate health information, provide policy makers with the tools to make informed healthcare policy decisions to enhance the quality of life of the people in South Africa.

OUR VISION

Building a healthy nation through research and innovation

OUR MISSION

To improve the nation's health and quality of life by conducting and funding relevant and responsive health research, development, innovation and research translation

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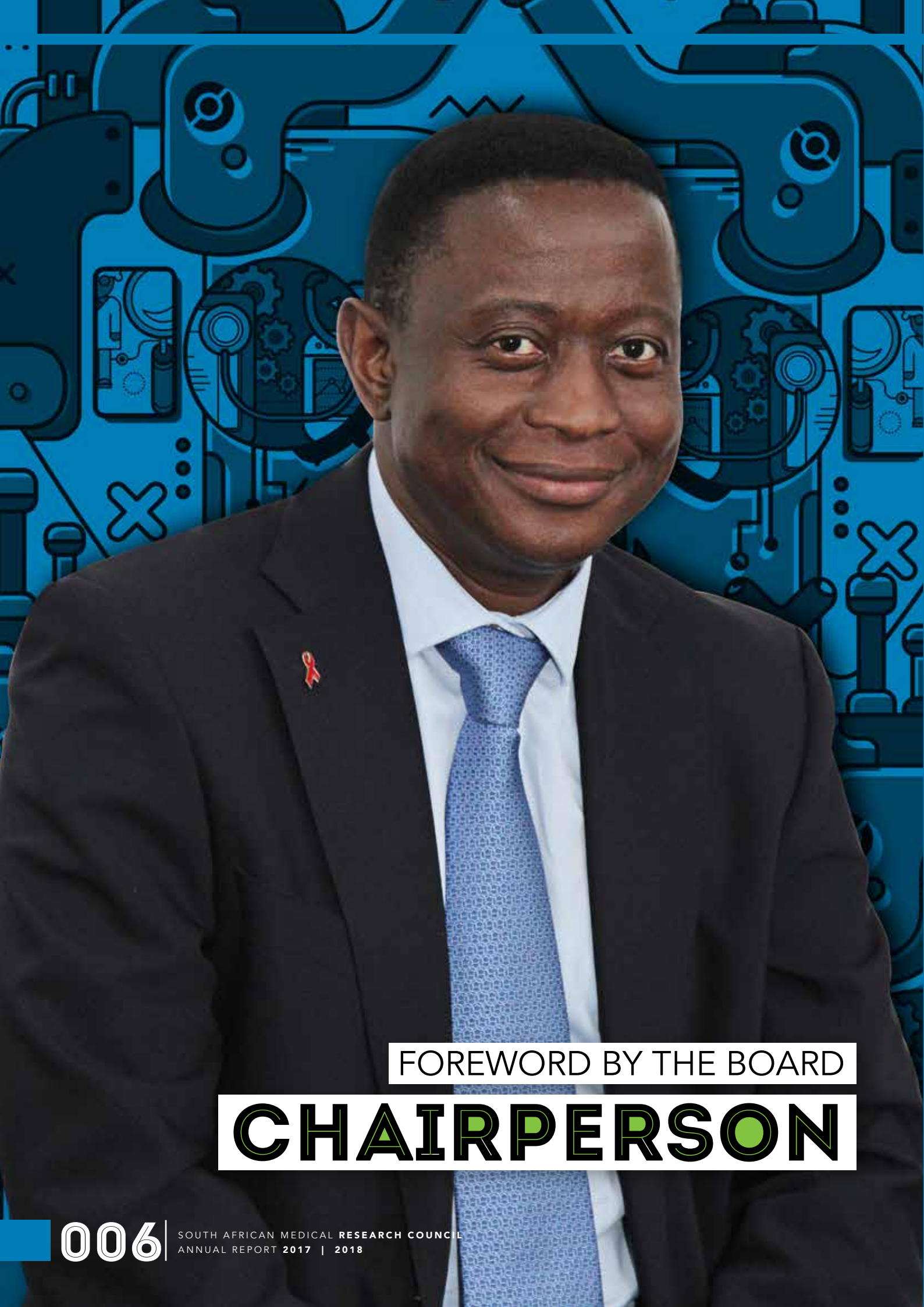


FOREWORD BY THE BOARD

CHAIRPERSON

THE SAMRC IS PIONEERING HEALTH RESEARCH, COLLABORATING AND CONNECTING, DRIVING EXCELLENCE IN SCIENCE AND CATALYSING POSITIVE CHANGE IN THE HEALTH OF THE NATION.

There are three interconnected concepts that define the 2017/18 financial period in the work of the South African Medical Research Council (SAMRC): **Leading Impact, Connecting** and **Catalysing Change**.

Leading Impact for the SAMRC is about how the SAMRC has conducted and funded science that makes a difference in the health of South Africans. The SAMRC has in this period pioneered solutions in healthcare by strategically investing in impactful medical research, innovations and programmes, while practicing prudence for sound corporate governance.

Keeping to the principles of good corporate governance is also highlighted by the achievement of the SAMRC of five consecutive clean audits by the Auditor-General. This speaks to duteous financial management and an organisation with the leadership and foresight that understands its fiduciary responsibility.

Organisational risk awareness and the ability to assess and mitigate risks are key components of corporate governance. The SAMRC should be commended for developing a strategic risk register that links strategic risks to their strategic goals. A clear indicator in how the SAMRC has the appetite for cutting edge science while managing organisational performance.

The joint venture to set up the African Genomics Centre with Beijing Genomics Institute at the SAMRC head office Cape Town, with equal risk sharing, along with various, North-South and South-South partnerships, shows how the SAMRC is pioneering health research, collaborating and connecting, driving excellence in science and catalysing positive change in the health of the nation.

The investment in research capacity within the SAMRC, which is aligned with their transformation plan, enables scientists and support staff with the necessary passion, skills and experience to progress. The external focused research capacity development programmes then provide opportunities to develop current and future scientists to make a difference in the health of South Africans.

Integrating development of human capacity within the organisation and outside is important for institutional stability and sustainability. This synergy is what makes the SAMRC a leading science council that still connects with the people who make their work possible.

I would like to thank the people of South Africa for enabling us to conduct the research needed into the burden of disease and associated risk factors that impact on the health and wealth of the country.

I would also like to express my gratitude to the Honourable Minister Motsoaledi and the Department of Health for supporting the SAMRC. I am proud that the SAMRC continues to show its impact as it turns 50 in 2019.

Professor Glenda Gray, President and CEO of the SAMRC should also be commended for her leadership. In her role, she has ensured **scientific excellence, sound financial management**, a focus on **research translation, implementation science** and greater **engagement with communities.**

The Board also congratulates Professor Quarraisha Abdool Karim, Deputy Vice-Chairperson for her appointment by UNAIDS as UN Special Ambassador for Adolescents and HIV. This achievement shows how the SAMRC leadership have international impact and resonance.

Let us continue Leading Impact, Connecting and Catalysing Change.

Sincerely
PROFESSOR MIKE SATHEKGE
Board Chairperson

FOREWORD BY OUR

PRESIDENT & CEO

As the SAMRC heads towards its 50th year, we will demonstrate the impact we are having in South Africa. Despite the tight fiscal environment, the SAMRC has shown impact in strategic healthcare innovation, conducting responsive medical research and research translation to improve the quality of life of South Africans. In addition, we are committed to developing the next generation of health researchers.

During the 2017/18 financial year, the SAMRC's impact can be characterised by our scientific output, local and global collaborations, capacity development and knowledge translation strategies, which include engagement with both policy makers and the communities we serve. These pillars of impact were achieved through our focus on strategically funding and conducting responsive health research. Science cannot exist in a vacuum, as a developing country investing in both health research and addressing transformation of science is vital.

Transformation remains an integral part of developing towards a more inclusive and economically vibrant society. We see transformation as the blue print towards growing a responsive scientific edifice of South Africa. Transformation in science, by supporting diversity in our new generation of scientists, is one of the SAMRC's strategic tools towards fulfilling the promise of a long and healthy life for all South Africans.

As part of our transformation agenda and research capacity development, we have increased the number of masters and doctoral students supported through our programmes, as well as developing a cohort of interns and clinicians of which includes the National Health Scholars Programme, an ambitious public-private partnership.

To support the National Department of Health in fulfilling its promise of a healthy life for all, the SAMRC funds research into South Africa's burden of disease. The SAMRC offers at least 20 different funding opportunities per annum, resulting in close to 400 ongoing and funded projects over a one to five year period.

We have demonstrated excellence in scientific output through the growth in our NRF rated intramural scientists, from 9 to 30 from 2014 to 2017; with two female A1 rated scientists in leadership roles. Our scientists are leaders as evidenced by high impact publications, citations per publication, first authored articles, and other scholarly activities.

Partnerships and collaborations remain critical to the advancement of cutting edge research and health innovation. One such public-private partnership is the agreement between the SAMRC and Beijing Genomics Institute to establish the first in Africa, Genomics Sequencing Facility – the African Genomics Centre. The Centre will be an important national asset to contribute to the better understanding of factors that impact the health of South Africans. This novel field of research harnesses the science of genomics for personalised medicine.

Key collaborations have been critical for the SAMRC, these include the Cochrane African Network, to increase and promote the use of evidence-based healthcare in Africa. The Global Alliance for Chronic Diseases is also the first major collaborative research funding into non-communicable diseases, while the SAMRC partnership with Healthy Life Trajectories Initiative sets to promote research cooperation in Canada, China, India and Brazil. Among other significant country partnerships are those established in Senegal, Sweden, The Gambia, India, and Madagascar.

We are also part of the BRICS TB Research Network, an endevour to address the problems with TB in BRICS and to raise resources to find local solutions within these countries. This multi-country vision aims to accelerate research and innovation in TB, through the BRICS cooperation mechanisms towards the development and innovation of diagnostics, vaccines, drugs and regimens, infection control and patient centred delivery.

Made possible through funding by the SAMRC, the national licence for the Cochrane Library, which went operational on 1 June 2017, led to a 35% increase in full text downloads of Cochrane reviews in 2017, compared to the same period in 2016. South Africa was the first country outside Western Europe, North America and Australia to procure a national licence, India has now done the same.

Headed by the Corporate Performance Office, the SAMRC's schools outreach programme provides a platform for seasoned scientists to interact with schoolchildren, in partnership with the Department of Education, school children are advised on careers in science and the work of the SAMRC in health research.

Through collective efforts, social movements such as March for Science open another opportunity to engage communities and various stakeholders on the importance of science. Investing in science is needed for the country's development as a healthy nation is needed to compete across global frontiers.

Thank you to the entire SAMRC team, all of you involved in science and those of you supporting our science endeavour. A huge word of gratitude to the citizens of South Africa who contribute to science by enabling us to conduct research to find health solutions for diseases that impact on the quality of life of South Africans.

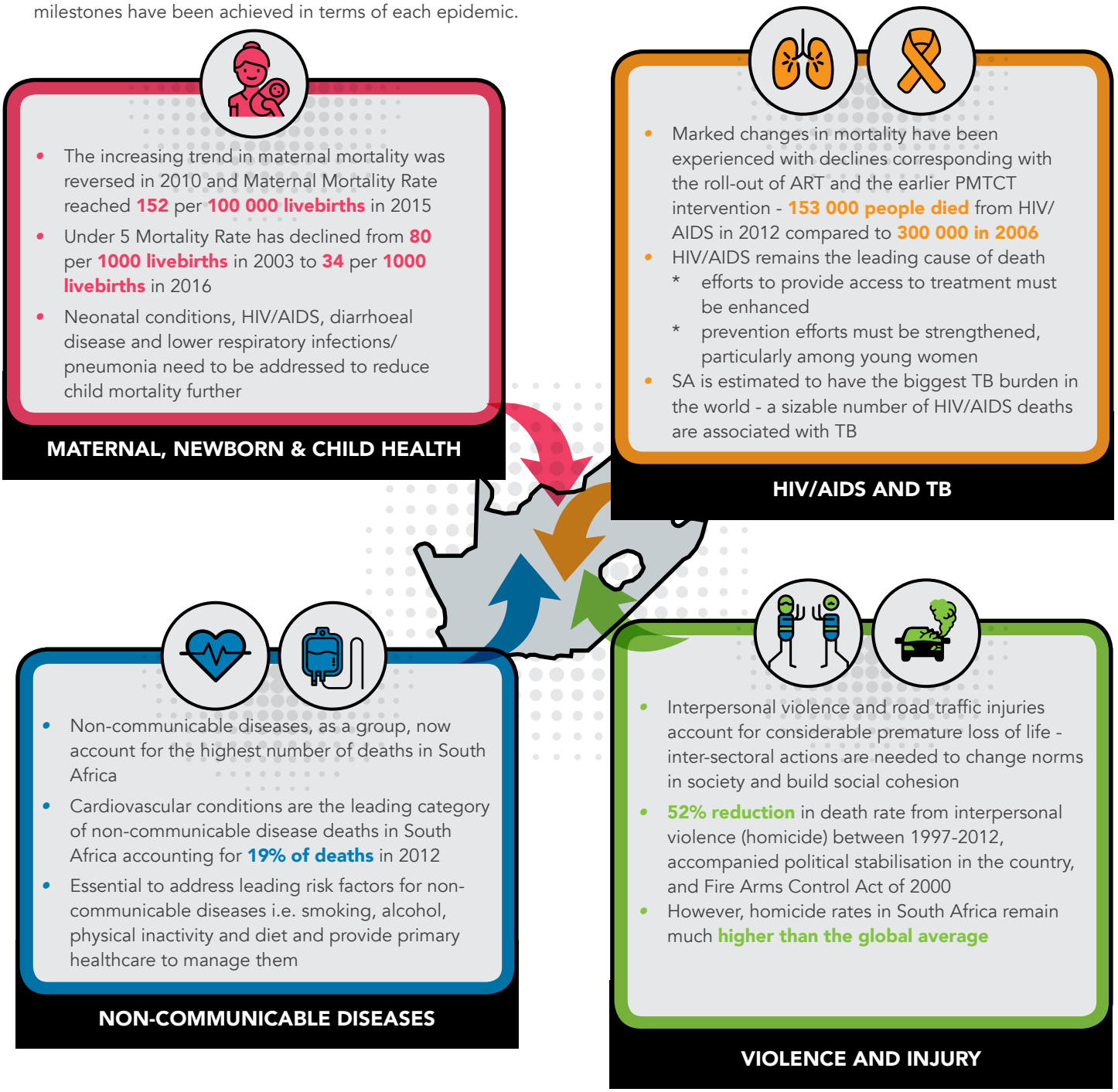
Sincerely
PROFESSOR GLENDA E GRAY
President & CEO: South African Medical Research Council

OUR STRATEGIC ENVIRONMENT

SOUTH AFRICA FACES A COCKTAIL OF FOUR COLLIDING EPIDEMICS:

- MATERNAL, NEWBORN & CHILD HEALTH
- HIV/AIDS AND TB
- NON-COMMUNICABLE DISEASES
- VIOLENCE AND INJURY

Our Burden of Disease Research Unit analysis of data on South Africa's health status shows that significant progress and milestones have been achieved in terms of each epidemic.



MATERNAL, NEWBORN & CHILD HEALTH

- The increasing trend in maternal mortality was reversed in 2010 and Maternal Mortality Rate reached **152** per **100 000 livebirths** in 2015
- Under 5 Mortality Rate has declined from **80** per **1000 livebirths** in 2003 to **34** per **1000 livebirths** in 2016
- Neonatal conditions, HIV/AIDS, diarrhoeal disease and lower respiratory infections/ pneumonia need to be addressed to reduce child mortality further

HIV/AIDS AND TB

- Marked changes in mortality have been experienced with declines corresponding with the roll-out of ART and the earlier PMTCT intervention - **153 000 people died** from HIV/ AIDS in 2012 compared to **300 000 in 2006**
- HIV/AIDS remains the leading cause of death
  - efforts to provide access to treatment must be enhanced
  - prevention efforts must be strengthened, particularly among young women
- SA is estimated to have the biggest TB burden in the world - a sizable number of HIV/AIDS deaths are associated with TB

NON-COMMUNICABLE DISEASES

- Non-communicable diseases, as a group, now account for the highest number of deaths in South Africa
- Cardiovascular conditions are the leading category of non-communicable disease deaths in South Africa accounting for **19% of deaths** in 2012
- Essential to address leading risk factors for non-communicable diseases i.e. smoking, alcohol, physical inactivity and diet and provide primary healthcare to manage them

VIOLENCE AND INJURY

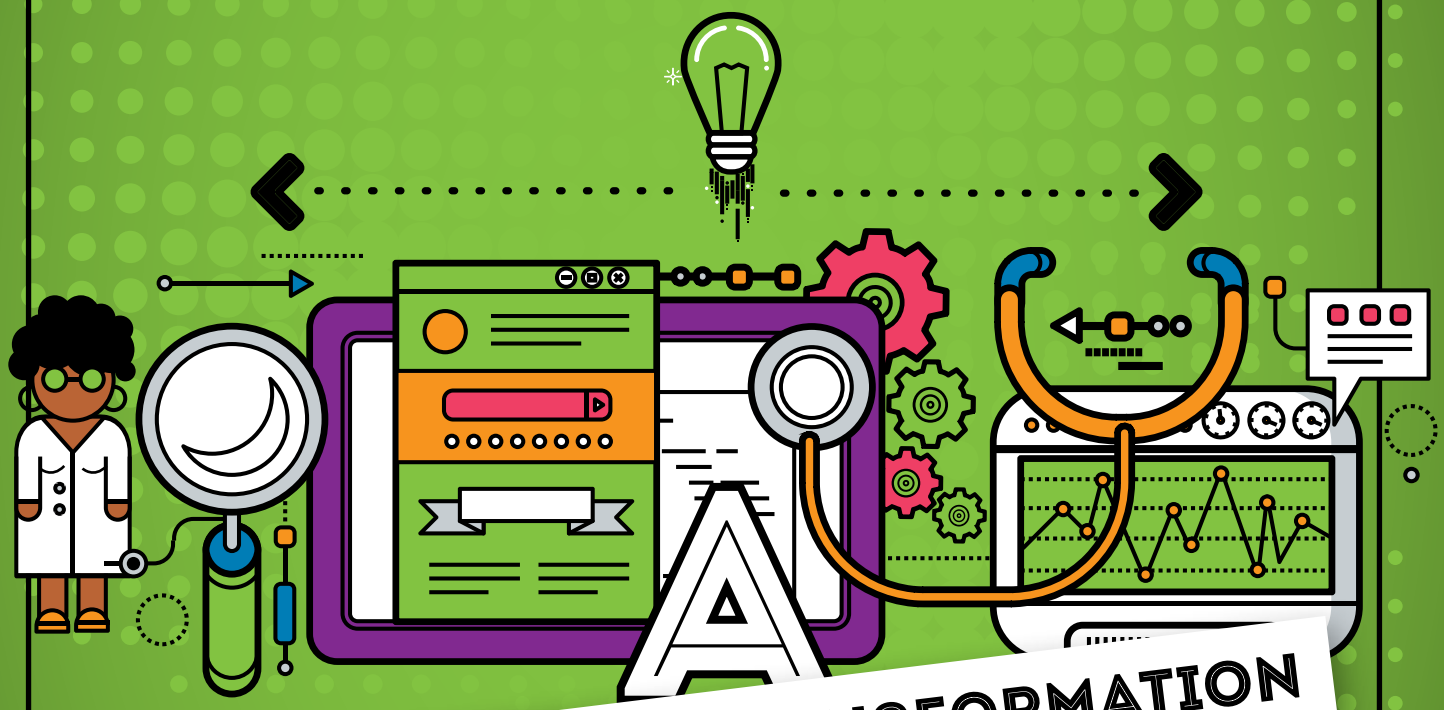
- Interpersonal violence and road traffic injuries account for considerable premature loss of life - inter-sectoral actions are needed to change norms in society and build social cohesion
- **52% reduction** in death rate from interpersonal violence (homicide) between 1997-2012, accompanied political stabilisation in the country, and Fire Arms Control Act of 2000
- However, homicide rates in South Africa remain much **higher than the global average**

Rapid Mortality Surveillance shows that by 2016, the average life expectancy in the country had increased to 63.8 years.

TOP TEN CAUSES OF DEATH IN SOUTH AFRICA 2012

Rank		Cause	No. of deaths	% deaths
1		**HIV/AIDS**	153 661	29.1
2		**Cerebrovascular disease**	39 830	7.5
3		**Lower respiratory infections**	25 977	4.9
4		**Ischaemic heart disease**	24 969	4.7
5		**Tuberculosis**	23 817	4.5
6		**Diabetes mellitus**	18 894	3.6
7		**Hypertensive heart disease**	18 755	3.5
8		**Interpersonal violence**	18 741	3.5
9		**Road injuries**	17 597	3.3
10		**Diarrhoeal diseases**	16 349	3.1
Top 10 causes			**358 590**	**67.8**
Total			**528 947**	**100.0**

Source: Pillay-van Wyk et al, Lancet Global Health 2017.



ORGANISATIONAL TRANSFORMATION

ORGANISATIONAL TRANSFORMATION

TRANSFORMATION PLAN

Our transformation plan

The SAMRC transformation agenda has both an internal focus to develop the limited critical mass in health research and an external link to transform medical research through research capacity development programmes. Internally, transformation of scientists, particularly at the Specialist Scientist level and above, remains a key part of the Transformation Plan.

Research capacity development is both a core function in funding health research and innovation, and one for practicing social responsibility in the provision of opportunities to grow a new generation of African scientists.

Augmentation of doctoral and postdoctoral researchers

Within the SAMRC units, there are 48 masters and doctoral students enrolled on internship programmes. This represents the start of the research pipeline into the SAMRC. A new programme, the SAMRC's intramural National Health Scholars Programme, has been implemented from 2018-2021 to attract top talent for either (i) enrolment for doctoral degrees or (ii) employment as postdoctoral researchers. The target is an additional 20-25 researchers funded for four years and assigned to an intra- or extra-mural unit. About R4.0m per annum will be ring-fenced, from the Research Capacity Development Division's budget, for the intramural National Health Scholars Programme from 2018-2021. Each scholarship will be valued at R350 000 (n= 20).

Supporting early career scientists

Optimisation of posts

1. All vacant posts and the posts of employees older than 62 years of age will be reallocated to a central pot and, through open competition and peer review, will be allocated to units to meet transformation objectives.
2. There will be no conversion of posts from Specialist Scientist and up to more junior levels given the low critical mass at senior research levels and overall.
3. All baseline posts in units that are or become vacant will require approval from the Executive Management Committee for units to retain those posts.
4. NRF ratings for all intramural scientists will continue.
5. Continue the process of employing Deputy Directors.

Competitive intramural funding programme

1. Competitive funding will be made available for intramural units. Research grants will be made available as seed funding to intramural researchers in 2018.
2. Baseline funding will be preserved given the tight fiscal constraints. Contract funding and underspent funds may be utlised where necessary.
3. To build intramural science, a transdisciplinary approach will be utlised with peer feedback and support.
4. The indirect costs from external grants will be utilised to fund transdisciplinary research up to the value of 1% of the indirect costs of the grant.

Implementation plan and timelines for 2017-2021

1. Implement Deputy Director's programme across all units in order of priority; increase from 4 to 10.
2. Increase the 10 Chief Specialist Scientists to 15 Chief Specialist Scientists (average of 1 per year).
3. Increase the 10 Senior Specialist Scientists to 15 Senior Specialist Scientists.
4. Increase the 26 Specialist Scientists to 31 Specialist Scientists.
5. Employ 20 doctoral and postdoctoral researchers.
6. A research translation strategy needs to be developed and implemented.
7. A disability and access in the workplace audit to be conducted.

PROFESSIONAL TRANSFORMATION & SUCCESSION

NATIONAL RESEARCH FOUNDATION (NRF) RATING

The NRF rating system is a key driver in the NRF's aim to build a globally competitive science system in South Africa. It is a valuable tool for benchmarking the quality of our researchers against the best in the world. NRF ratings are allocated based on a researcher's recent research outputs and impact as perceived by international peer reviewers. The rating system encourages researchers to publish high quality outputs in high impact journals/outlets. Rated researchers as supervisors will impart cutting-edge skills to the next generation of researchers.

The rating of individuals is based primarily on the quality and impact of their research outputs over the past eight years, taking into consideration the evaluation made by local and international peers. It identifies researchers who count among the leaders in their fields of expertise and gives recognition to those who constantly produce high quality research outputs. Several South African universities use the outcomes of the NRF evaluation and rating process to position themselves as research-intensive institutions, while others provide incentives for their staff members to acquire and maintain a rating and give special recognition to top-rated researchers.

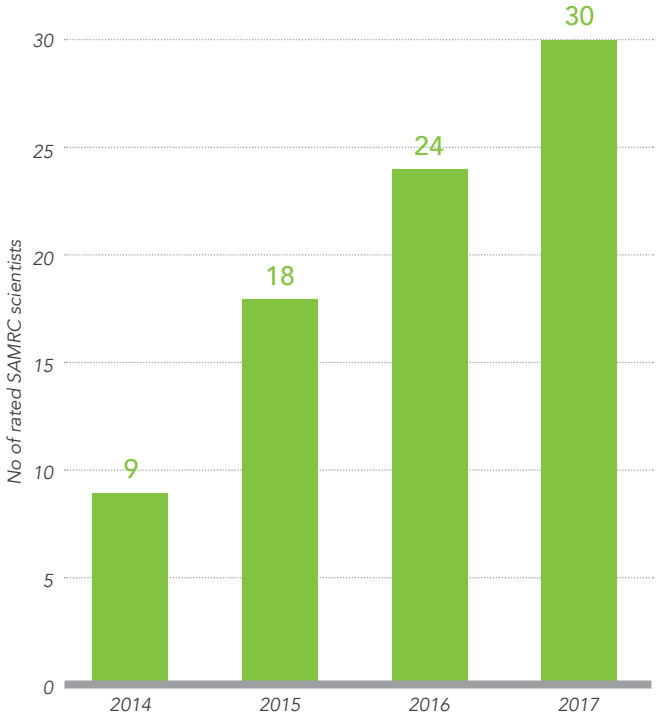
(Source: National Research Foundation, www.nrf.ac.za)

The ratings that are awarded fall within the following categories:

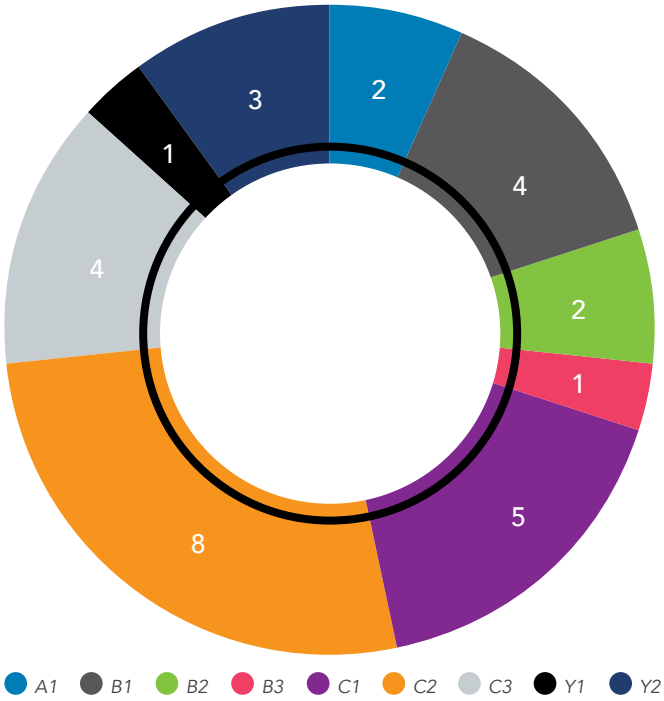
A	LEADING INTERNATIONAL RESEARCHERS
B	INTERNATIONALLY ACCLAIMED RESEARCHERS
C	ESTABLISHED RESEARCHERS
P	PRESTIGIOUS AWARDS
Y	PROMISING YOUNG RESEARCHERS

Since 2014 the SAMRC implemented an organisation wide programme to encourage scientists to be rated by the NRF. The graph shows how SAMRC scientists have progressed in terms of the NRF rating.

GROWTH OF NRF RATED SAMRC SCIENTISTS



SAMRC RATED SCIENTISTS 2017



SUCCESSION

The SAMRC has escalated transformation and succession planning to one of its highest strategic priorities. In particular, the organisation needs to prepare for the replacement of Unit Directors due to several factors including retirement, natural attrition or promotion, and in a way that supports transformation of the workforce. The current career progression strategy of the SAMRC has not enabled a seamless progression to leadership levels within the organisation including Unit Director positions. To this end, Deputy Director positions have been established as an approach to support the transformation strategy into leadership positions within the SAMRC.

The appointment of four Intramural Unit Deputy Directors has been finalised as part of phase 1:

- Gender and Health Research Unit
- Health Systems Research Unit
- Alcohol Tobacco and Other Drugs Research Unit; and
- Violence, Injury and Peace Research Unit.

In the second phase, Deputy Directors in the following research unitss will be appointed during 2018/19:

- HIV Prevention Research Unit
- Biomedical Research and Innovation Platform
- Burden of Disease Research Unit
- AIDS and TB Research
- Biostatistics

FINANCIAL TRANSFORMATION

STRATEGIC FISCAL TRANSFORMATION

Despite the tight fiscal environment, the SAMRC introduced strategies that have resulted in the following achievements:

5 CLEAN AUDITS

ACHIEVEMENT
In 2016/17 SAMRC received its 5th consecutive clean audit

19.5% ADMINISTRATION BUDGET

ACHIEVEMENT
Over the past 3 years, the Administration budget was 19.5% of the total budget.

20% TARGET

TARGET
The aim, over the MTEF period, is to contain the Administration budget to ≤20% of the total SAMRC budget

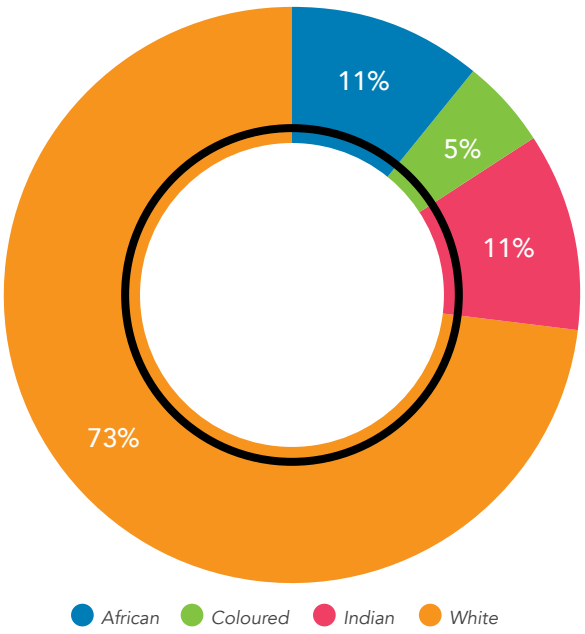
BUDGET TRENDS

	Audited Outcome	Audited Outcome	Audited Outcome	Revised estimate	Average growth rate (%)	Expenditure/total: Average (%)	Medium-term estimate			Average growth rate (%)	Expenditure/total: Average (%)
R thousand	2014/15	2015/16	2016/17	2017/18	2014/15 – 2017/18		2018/19	2019/20	2020/21	2017/18 – 2020/21	
Administration	163,146	170,348	189,396	199,232	6.9%	19.5%	183,111	194,684	203,259	0.7%	17.7%
Core research	444,501	535,096	541,656	603,247	10.7%	57.1%	660,301	601,655	651,300	2.6%	56.9%
Innovation and technology	112,058	151,747	236,581	190,992	19.5%	18.2%	202,596	203,330	205,857	2.5%	18.2%
Capacity development	34,229	45,059	60,584	58,153	19.3%	5.2%	85,565	88,980	89,092	15.3%	7.3%
Total expense	753,934	902,250	1,028,217	1,051,624	11.7%	100.0%	1,131,573	1,088,649	1,149,508	3.0%	100.0%

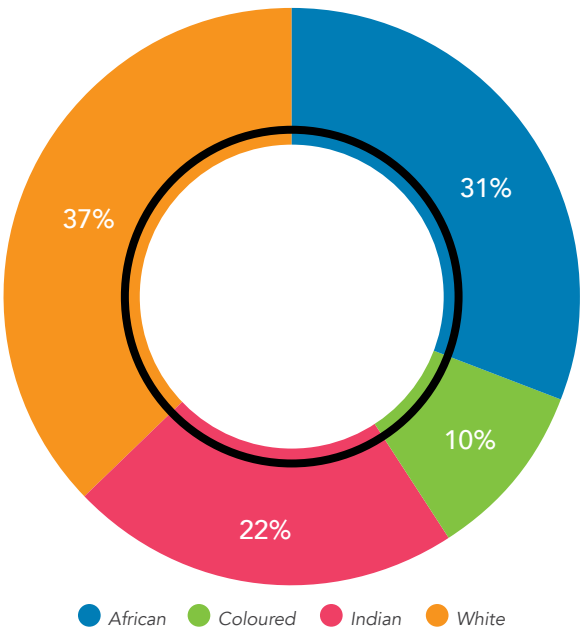
TRANSFORMING OUR RESEARCH FUNDING STREAMS

In 2012, the SAMRC Self-Initiated Research (SIR) grants were skewed with whites receiving most of the grants (73%) and Africans only 11%. During the reporting period these figures drastically changed with allocations for Africans increasing by nearly three-fold (from 11% in 2013/14 to 31% in 2017/18) and two-fold for both Coloureds (from 5% to 10%) and Indians (from 11% to 22%), respectively.

2013/14



2017/18



TRANSFORMING CAPACITY DEVELOPMENT

SAMRC established the Division of Research Capacity Development (RCD) to support health research capacity by providing and administering scholarships and grants to South African citizens studying towards Masters and PhDs in medical and health sciences. The division also provides funding support to post-doctoral candidates, early career scientists and mid-career scientists. Since 2016, SAMRC introduced a five-year initiative aimed at strengthening research capacity development at selected South African universities that previously did not have access to adequate resources.

MID-CAREER SCIENTIST PROGRAMME

We have established a funding opportunity known as the Mid-Career Scientist Programme, which is a strategic research initiative aimed at supporting scientists within research nodes. The project is aimed at developing promising mid-career scientists to facilitate their retention in the public sector in areas of strategic interest to both the National Department of Health and SAMRC. By establishing mid-career scientists, the SAMRC aims to fast track and transition independent researchers who will become equipped to write their own grants and thereby secure their own salary and research support. During 2017/18 SAMRC increased its support to five compared to three grantees in the 2016/17 reporting period.

Mid-career scientists by Gender, Race and Institution

Name	Gender	Race	Institution
Prof Khumalo	Female	Black	UCT
Prof Mokwena	Female	Black	SMU
Prof Gamieldien	Male	Coloured	UWC
Dr Funani	Male	Black	WITS
Dr Sibeko	Female	Black	SUN

SAMRC RESEARCH STRENGTHENING AND CAPACITY DEVELOPMENT (RCDI)

The SAMRC recognises the importance of national collaborative biomedical research to advance science and expand biomedical knowledge. The aim of working with identified institutions is to strengthen research initiatives and develop enhanced research capacity at previously resource constrained institutions.

The research strengthening and capacity building opportunity will equip and capacitate identified institutions to conduct excellent multidisciplinary research to address some of the key questions that could impact on lowering the burden of disease in South Africa.

Identified Universities benefiting from the Programme:

1. University of Fort Hare
2. University of Limpopo
3. University of Venda
4. University of Walter Sisulu
5. University of Zululand
6. University of the Western Cape
7. Mangosuthu University of Technology
8. Sefako Makgatho Health Sciences University

R8 MILLION

INVESTED IN 8 PREVIOUSLY

RESOURCE CONSTRAINED INSTITUTIONS

TRANSFORMING STRATEGIC COLLABORATIONS, PUBLIC PRIVATE PARTNERSHIPS & AGREEMENTS

SAMRC and BGI

In April 2017, the SAMRC entered into a Memorandum of Understanding with the Beijing Genomics Institute (BGI) and developed a proposal to establish a genomics sequencing facility to localise completely human genome sequencing capacity in South Africa. The Facility will offer the latest cost effective next generation sequencing technology from BGI. An agreement was signed on 16 February 2018 and the establishment of this facility is underway. The initial objectives are to transfer skills in bioinformatics and the genomics workflow as well as validate the BGI Technology in South Africa.

The SAMRC and BGI will jointly create a Whole Genome Sequencing laboratory to provide NGS services to the research and clinical market across Africa. This includes:

- Sequencing and bioinformatics services
- NGS applications and collaborations for Health, Agriculture and Industrial Biotechnology
- Training Services in the area of Whole Genome sequencing
- Help establish data registries
- Ongoing joint collaboration to create whole genome sequencing projects and research capacity.

SAMRC, Novartis, and DST

The SAMRC has signed a Memorandum of Understanding (MoU) with Norvatis and the South African Department of Science and Technology (DST) to formalise Novartis' ongoing investment in developing South African research capabilities, scientific cooperation and collaboration for capacity building and innovation.

The MoU is a public-private partnership (PPP) that aims to create a framework for potential cooperation between the parties. The PPP will look at joint research programmes in selected communicable and non-communicable diseases, so as to improve access to innovative medicines for people and to strengthen research and development (R&D) infrastructure and ecosystems in South Africa and across Africa.

The MoU demonstrates our commitment to R&D that will position South Africa as an innovative hub for Africa.

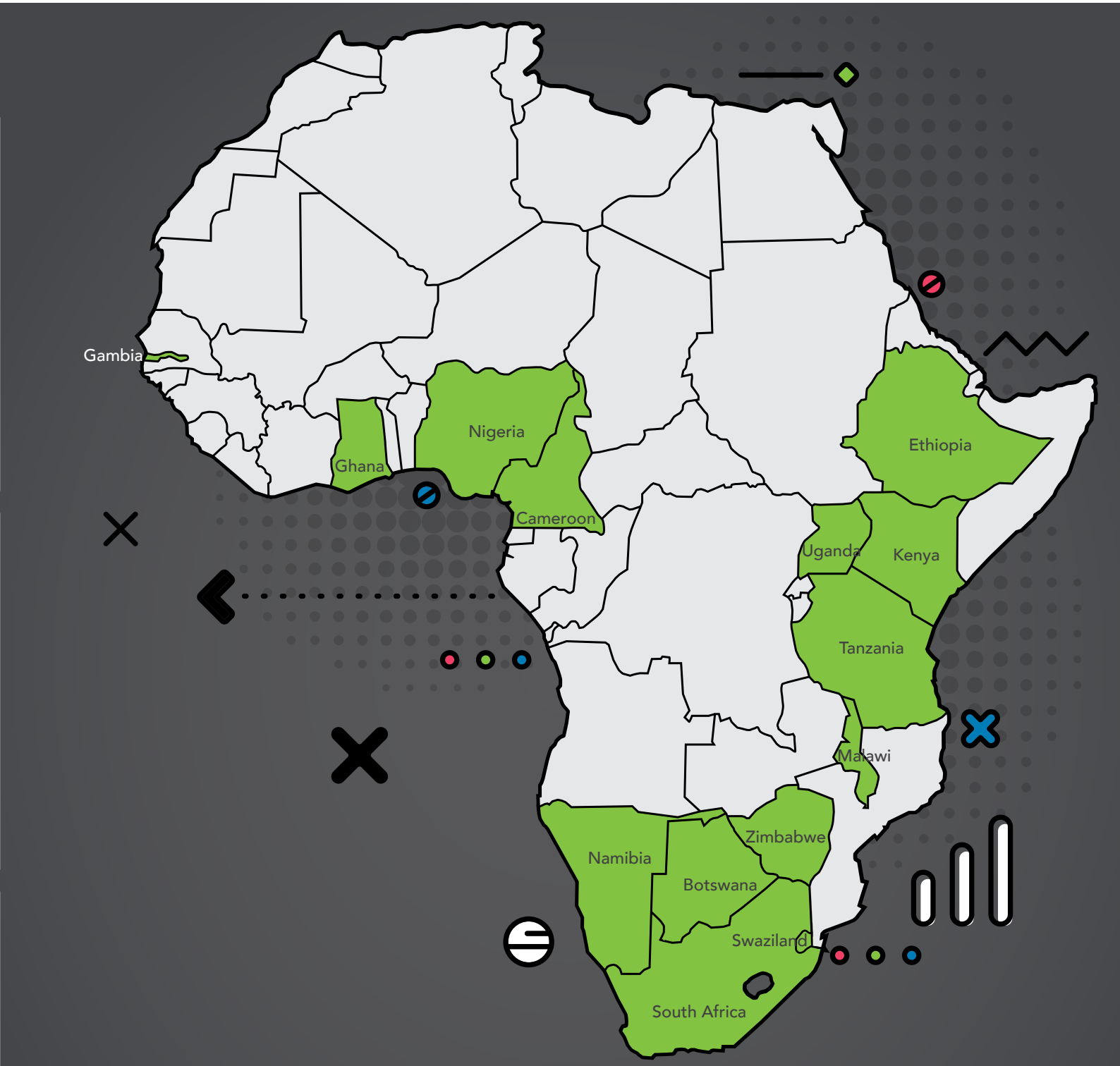
Cochrane African Network

Cochrane South Africa along with Cochrane authors in the African region have established the Cochrane African Network (CAN) to promote and increase the use of evidence-based healthcare and evidence-informed policy making. CAN activities will include capacity building, priority setting and conducting high quality relevant Cochrane Reviews.

Cochrane Africa is a network with a vision to increase the use of best evidence to inform healthcare decision making in the sub-Saharan African region.

This is a global, independent Cochrane network of researchers, professionals, patients, carers and people interested in health.

Cochrane exists to ensure that healthcare decisions get better. Cochrane produces reviews that summarise the best-available evidence generated through research to inform decisions about health. This evidence is used by guideline developers and healthcare decisions makers globally.



DISTRIBUTION OF COCHRANE AUTHORS IN AFRICA

TOTAL OF 576

GLOBAL ALLIANCE FOR CHRONIC DISEASE

The Global Alliance for Chronic Disease (GACD) is a grouping of the world's biggest public research funding agencies, including the IMRC. The GACD originated from the Grand Challenges Partnership which was announced in 2007. This partnership model is between low middle and high income countries tasked to address the prevention and treatment of non-communicable diseases on a global scale. The GACD is the first collaboration of major research funding agencies to specifically address chronic non-communicable diseases.

GACD research focuses on implementation science and engages with policy makers in the following research areas: hypertension, type 2 diabetes, chronic respiratory conditions, mental illness, and cardiovascular diseases. Professor Glenda Gray, President & CEO of the SAMRC Chairs the GACD.

HEALTHY LIFE TRAJECTORIES INITIATIVE

SAMRC is the South African partner of Healthy Life Trajectories Initiative (HeLTI) and we are funding South Africa's participation in the initiative. SAMRC will fund the South African participants up to R5 million per year for five years to establish a cohort in South Africa. HeLTI represents an excellent opportunity to promote and enhance research collaboration with Canada, China, India and Brazil while developing and implementing new interventions, which will drive policy changes and enhance the prevention and management of non-communicable diseases in South Africa.

The South African team has completed the first year of formative research and training and will be establishing the cohort in year 2 of the study.

GLOBAL ANTIMICROBIAL RESISTANCE RESEARCH AND DEVELOPMENT PARTNERSHIP

We have provided funding towards furthering the activities of the Global Antimicrobial Resistance Research and Development Partnership (GARDP) in South Africa. This funding will contribute to the global development and delivery of affordable new or improved antibiotic treatments for drug-resistant bacterial infections where there are currently no adequate treatments, beginning with neonatal sepsis and sexually transmitted infections.

The MoU with GARDP was signed in May 2016 and the SAMRC is contributing R2 million to the partnership. A workshop on Antimicrobial Resistance (AMR) was hosted in September 2016 in Cape Town, where 40 South African and sub-Saharan delegates participated. The SAMRC will fund AMR projects in South Africa and host the Drugs for Neglected Diseases initiative (DNDi) regional office.

We are pleased to report that Prof Glenda Gray has accepted an invitation to serve on the Board of GARDP. This Board – a first for GARDP – will provide strategy and direction for this relatively new initiative which was incubated and nurtured by DNDi since 2015.

JOINT PROGRAM IN ANTI-MICROBIAL RESEARCH (JPIAMR)

The Joint Program in Antimicrobial Research (JPIAMR) was formed in 2011 by 15 European countries with the support of the European Commission and now comprise 26 countries globally. It is funding 65 million Euros of basic and exploratory research on new antibiotics, stewardship of existing antibiotics, and studies and control of the spread of antibiotic resistance between humans, animals, and the environment in a One Health perspective. It also supports research through several activities such as the establishment of a Virtual Research Institute. JPIAMR coordinates national research programmes on AMR through its Strategic Research Agenda and with input from the Innovative Medicines Initiative and a network of non-governmental stakeholders.

South Africa formally joined the JPIAMR programme in 2017 and Professor Richard Gordon, Executive Director of SAMRC's GIPD Unit has been elected onto the Steering Committee. The SAMRC will seek to become funding partners in the next few years.

PARTNERSHIPS WITH OTHER COUNTRIES

Senegal

Workshop held at SAMRC's regional office in Pretoria on 29 June 2016 with a high level delegation from Senegal. The objectives were to explore capacity building, joint human capital development programmes, as well as joint strategic research projects. Presentations focused on the following areas: chronic illnesses, hypertension and diabetes, maternal and child healthcare, molecular genetics and molecular biology, nuclear medicine, vaccine development, and communicable diseases.

Sweden

The SAMRC and the Swedish Research Council for Health, Working Life & Welfare (FORTE) Forte signed a MoU in August 2015. The objective is to strengthen collaboration between South Africa and Sweden in Science, Technology, and Innovation between South Africa and Sweden.

Two focus areas for collaborative research were identified: inequalities in health, as well as health systems and healthy systems policies. A workshop was hosted in Cape Town by SAMRC in October 2015 and the Request for Applications was published in January 2016. The partnerships sets to fund 11 collaborative projects with a budget of R22 million over three years from SAMRC and 15.9 million over three years by Forte.

Sudan

A workshop was hosted in Cape Town in December 2015 with the Sudanese delegation. The focus area was drug research and development from natural products and diagnostic development. There is a MoU in place with the Department of Science and Technology (DST) for managing the collaboration signed in March 2016. The DST is providing R1 million over two years for joint projects with matching funding from the Sudanese government for partners in Sudan.

India

HIV and TB Collaboration already in place between the SAMRC, South African Department of Science and Technology, the Department of Science and Technology of India and the Indian Department of Biotechnology.

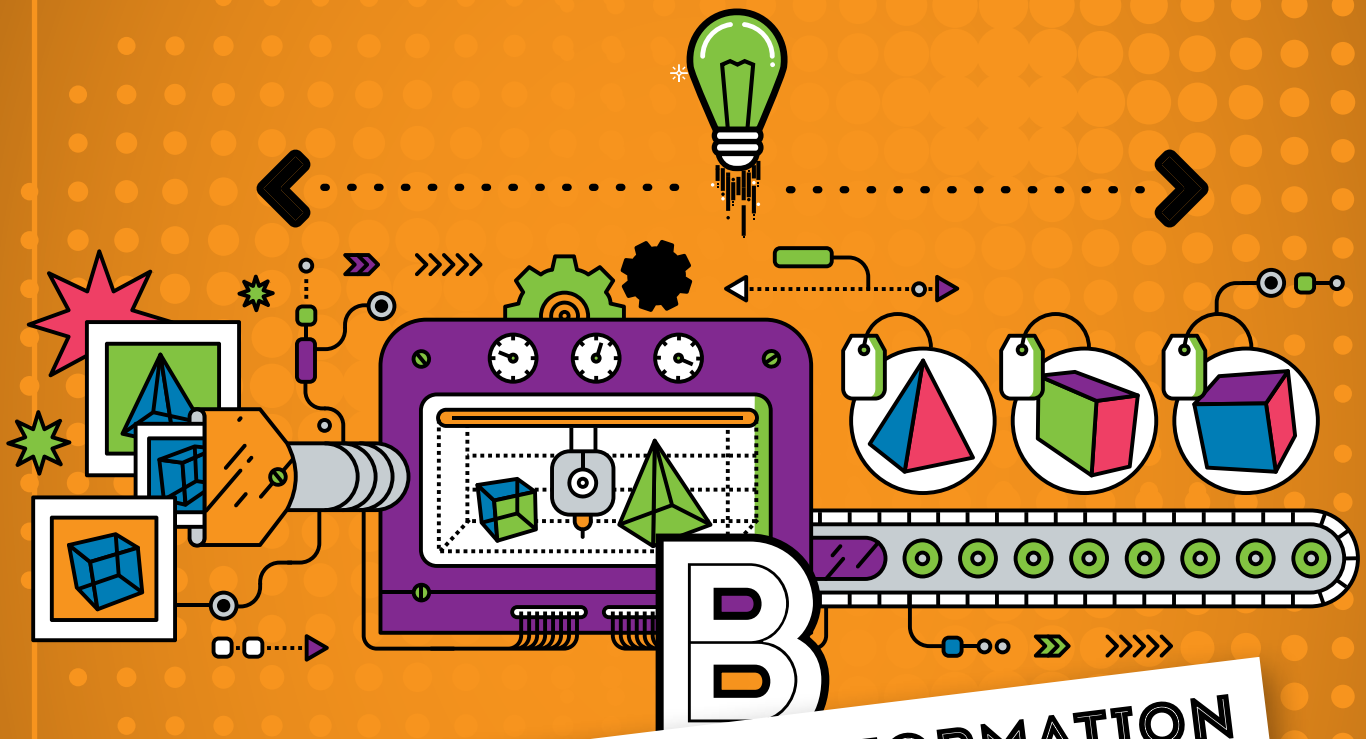
Seven projects were selected for funding with four of these projects in South Africa focusing on capacity development. The different stakeholders are looking at further collaborative opportunities.

BRICS TB RESEARCH NETWORK

The Dept of Health requested the SAMRC to serve as its strategic partner in the BRICS TB Research Network. The network is an outcome of the BRICS TB Cooperation Plan approved at the 6th Health Ministers Meeting in New Delhi, 2016, and supported by BRICS Heads of States, as agreed in the Xiamen Declaration, 2017. The purpose of the Network is to promote and conduct collaborative scientific research along the spectrum, from basic to operational, for the development and innovation on diagnostics, vaccines, drugs and regimens, infection control for TB and patient service delivery. The SAMRC convened a workshop in January 2018 and is progressing the outcomes of the workshop. Prof Glenda Gray, SAMRC President and CEO, serves as a member of the South African mission.

SOUTH AFRICA-US PROGRAM FOR COLLABORATIVE BIOMEDICAL RESEARCH

This programme was established in 2015 as a joint initiative between the SAMRC and the U.S. National Institutes of Health (NIH). Thirty one grants were awarded in three funding categories, i.e. R01, R21 and U01. In June 2017, the SAMRC convened a R21 investigators meeting in Durban. A further meeting of R01 investigators is planned for 2018. The SAMRC provides matching funding of $4 million for this programme.



B PERFORMANCE INFORMATION

STATEMENT OF RESPONSIBILITY

PERFORMANCE FOR YEAR ENDED 31 MARCH 2018

The President is responsible for the preparation of the South African Medical Research Council's performance information and for the judgements made in this information.

The President is responsible for establishing and implementing a system of internal controls designed to provide reasonable assurance as to the integrity and reliability of performance information.

> In my opinion, the performance information fairly reflects the actual achievements against planned objectives, indicators and targets as per the Strategic and Annual Performance Plan of the South African Medical Research Council for the financial year ended 31 March 2018. The South African Medical Research Council's performance information for the year ended 31 March 2018 has been examined by external auditors and their report is presented on page 154.

The performance information of the South African Medical Research Council set out on the following pages have been approved by the Board.

PROFESSOR GLENDA E. GRAY
President & Chief Executive Officer
South African Medical Research Council
31 March 2018

STRATEGIC OUTCOME ORIENTATED GOALS

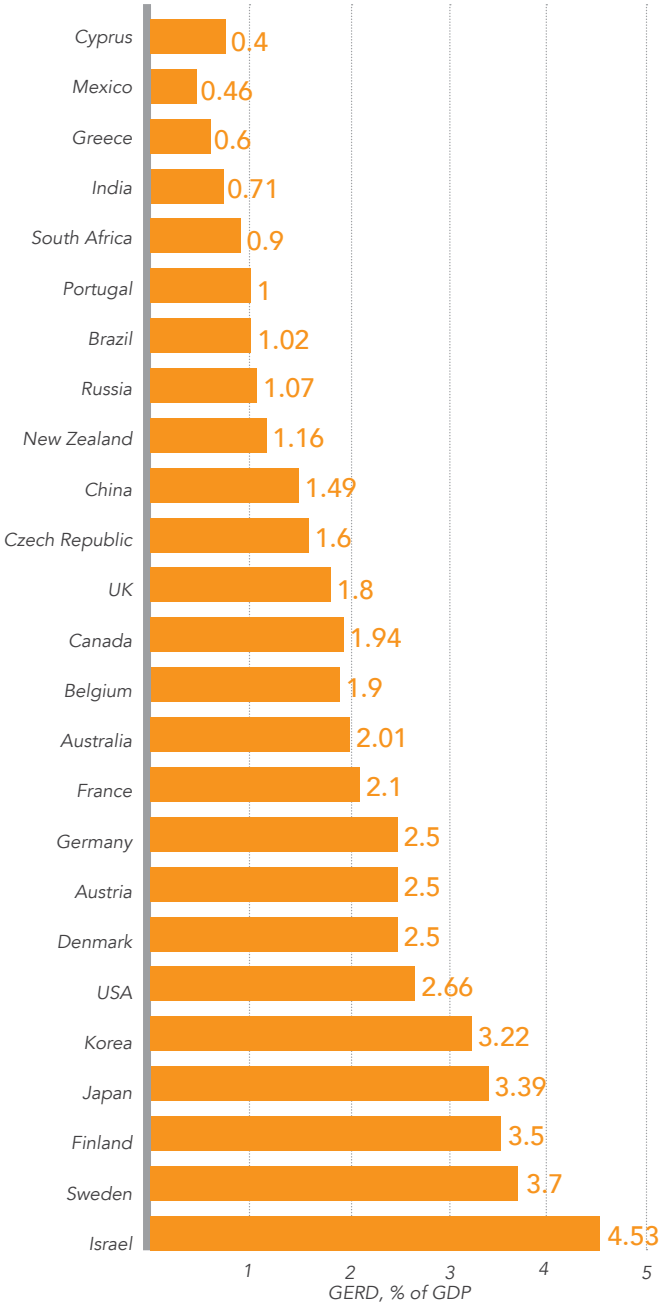
The SAMRC has ***four strategic goals*** that are aligned with the four outputs of the health sector NSDA that contribute to outcome 2 "A long and healthy life for all South Africans". The SAMRC's mandate will be reviewed occasionally and goals will be aligned accordingly.

STRATEGIC GOAL 1	**Administer health research effectively and efficiently in South Africa**
Goal statement	Strengthening of financial processes towards an unqualified audit opinion from the Auditor General
Strategic objectives	1.1 To ensure good governance, effective administration, an unqualified audit and compliance with government regulations 1.2 To promote the organisation's administrative efficiency to maximise the funds available for research
Objective statement	To strengthen financial management, monitoring and evaluation
Baseline (2015-16)	Improved financial management at all levels within the SAMRC and an unqualified audit
Indicator/s	1.1 Compliance with legislative prescripts, reflected in the final audit report relating to the processes and systems of the SAMRC 1.2 Percentage (%) of the 2017/18 SAMRC total budget spent on salaries and operations of all corporate administrative functions

For gross expenditure on R&D (GERD) to have impact, 2% is the threshold. The BRIC nations GERD are in a narrow range of 0.71 – 1.49%. South Africa is lagging with only 0.9% GERD. South Africa therefore needs to spend at least 2% GERD to contribute to economic development.

GERD: Gross Domestic Expenditure on Research & Development

GLOBAL GROSS EXPENDITURE ON R&D

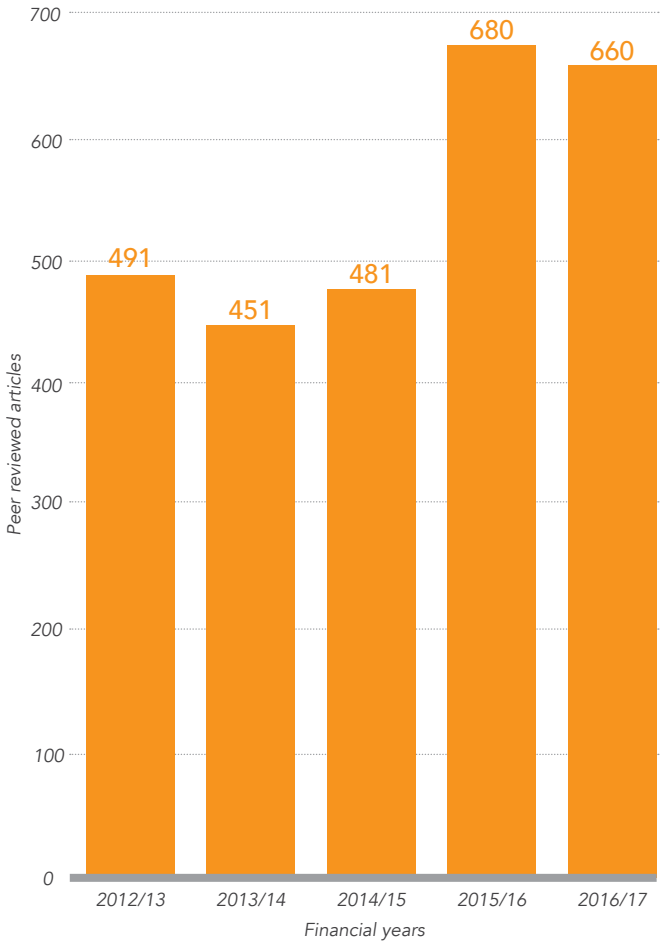


STRATEGIC GOAL 2	**Lead the generation of new knowledge and facilitate its translation into policies and practices to improve health**
Goal statement	Promote the improvement of health and quality of life (prevention of ill health, improvements in public health and treatment) in South Africa through research
Strategic objectives	2.1 To produce and disseminate new scientific findings and knowledge on health 2.2 To promote scientific excellence and the reputation of South African health research 2.3 To provide leadership in the generation of new knowledge in health 2.4 To facilitate the translation of SAMRC research findings into health policies and practices 2.5 To provide funding for the conduct of health research
Objective statement	Number of indexed journal articles published during the year to create and disseminate new quality knowledge through research with expert endorsement from specialists in the field
Baseline (2015/16)	2.1 450 2.2 115 *2.3 12 2.4 165 2.5 4 2.6 110
Indicators	2.1 Number of peer reviewed articles with a SAMRC affiliated author that are published in ISI journals* during the reporting period 2.2 Number of peer reviewed articles published in ISI journals with acknowledgement of SAMRC support during the reporting period 2.3 Number of published indexed high impact factor journal articles with a SAMRC affiliated author 2.4 Number of ISI journal articles where the first author is affiliated to the SAMRC during the reporting period 2.5 Number of new policies and guidelines that reference SAMRC research during the reporting period 2.6 Number of research grants awarded by the SAMRC during the reporting period

* International Scientific Indexing: The ISI provides indexing of major international journals such as journal impact factor and research papers.

For every financial year, the SAMRC aims to increase its number of publications beyond the expected target. During 2017/18, the number of publications improved from 680 to 865 which is far beyond the stipulated baseline of 450. This demonstrates the improved performance of the SAMRC in its key indicator.

PEER REVIEWED ARTICLES, 2012 - 2017

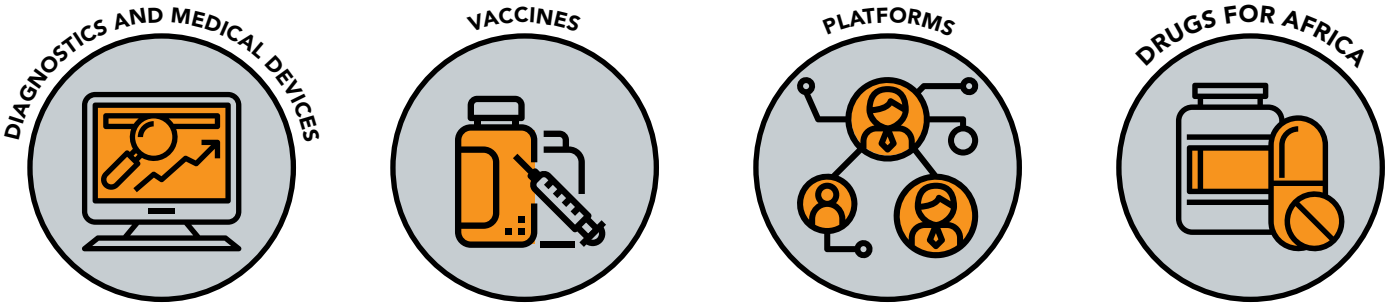


STRATEGIC GOAL 3	Support innovation and technology development to improve health
Goal statement	Promote the improvement of health and quality of life (prevention of ill health, improvements in public health and treatment) in South Africa through innovation, technology development and transfer
Strategic objective	3. To provide funding for health research innovation and technology development
Objective statement	Number of innovations to promote the improvement of health and quality of life in the country through innovation, technology development and transfer (innovation projects supported, invention disclosures, patents filed and licences concluded) developed in the year
Baseline (2015-16)	3.1 Thirty (30) innovation and technology developments 3.2 New indicator
Indicator/s	3.1 Number of innovation and technology projects funded by the SAMRC to develop new diagnostics, devices, vaccines and therapeutics 3.2 Number of new diagnostics, devices, vaccines and therapeutics developed during the reporting period

GRANTS, INNOVATION AND PRODUCT DEVELOPMENT

The Grants, Innovation and Product Development (GIPD) Division builds research capacity by optimising grant making opportunities to address the burden of disease through medical diagnostics, treatments and innovations. GIPD is responsible for all external grant and platform funding of the SAMRC. GIPD is also responsible for driving and managing commercialisation both within and outside the SAMRC.

Embedded in GIPD is the Strategic Health Innovation Partnerships (SHIP) that is instrumental in catalysing increased investment in innovation and product development-focused programmes and with a major increase at international co-funding. The role of SHIP is to focus on multi-disciplinary translational research and product development aimed at developing new:



Showcasing key health innovations

STRATEGIC GOAL 4	Build capacity for the long-term sustainability of the country's health research
Goal statement	To provide research support in the broad field of health research, describing original research initiated by a researcher at a recognised research institution and creating and maintaining collaborative research initiatives in collaboration with research programmes. The guiding elements for each initiative/project are: • Long-term and sustainable; • Focused; • Strong corrective action; • Private – public partnerships; • Africa centric perspective; Innovation; • Operationally – best business practices; • Technology infrastructure
Strategic objectives	4. To enhance the long-term sustainability of health research in South Africa by providing funding for the next generation of health researchers
Objective statement	Study bursaries, scholarships and fellowships are awarded to students towards a postgraduate degree in health research
Baseline (2015-16)	Sixty five (65) bursaries/scholarships/fellowships
Indicator	Number of SAMRC bursaries, scholarships and fellowships provided for postgraduate study at masters, doctoral and postdoctoral levels Number of masters and doctoral students graduated during the reporting period

STRATEGIC OBJECTIVES, PERFORMANCE INDICATORS, PLANNED TARGETS AND ACTUAL ACHIEVEMENTS

STRATEGIC GOAL	STRATEGIC OBJECTIVE	INDICATOR NO.	PROGRAMME PERFORMANCE INDICATOR	
Administer health research effectively and efficiently in South Africa	To ensure good governance, effective administration and compliance with government regulations	1.1	Compliance with legislative prescripts, reflected in the final audit report relating to the processes and systems of the SAMRC	
	To promote the organisation's administrative efficiency to maximise the funds available for research	1.2	Percentage (%) of the 2017/18 SAMRC total budget spent on salaries and operations of all corporate administrative functions	
Lead the generation of new knowledge and facilitate its translation into policies and practices to improve health	To produce and disseminate new scientific findings and knowledge on health	2.1	Number of published journal articles, book chapters and books by SAMRC researchers within intramural, extramural research units and collaborating centres at the SAMRC (Malaria, TB, HIV and Cancer), Self-Initiated Research, SHIP and Flagship projects	
		2.2	Number of journal articles published by SAMRC grant-holders with acknowledgement of SAMRC support during the reporting period	
	To promote scientific excellence and the reputation of South African health research	2.3	Number of published indexed impact factor journal articles with a SAMRC affiliated author	
	To provide leadership in the generation of new knowledge in health	2.4	Number of journal articles where the first and/or last author is affiliated to the SAMRC during the reporting period	
	To facilitate the translation of SAMRC research findings into health policies and practices	2.5	Number of new policies and guidelines that reference SAMRC research during the reporting period	
	To provide funding for the conduct of health research	2.6	Number (new and renewals) of research grants awarded by the SAMRC during the reported period	

	SP TARGET	FINAL 16/17 PERFORMANCE	REPORTING PERIOD: 2017/18 PERFORMANCE TARGET	FINAL PERFORMANCE	VARIANCE
	Clean audit	Clean Audit	Clean audit	Unqualified Audit with findings	
	20%	18%	20%	19%	
	*3150	660	700	865	New units and centres were established since 2014 that contributed to an increased number of publications. The funding of HDI institutions also commences in 2015 leading to more publications. Corrective action: The SAMRC will, when crafting the 2020-2024 Strategic Plan, increase the target in line with the revised baseline.
	*825	135	185	197	Institutions receiving grant funding from the SAMRC have been made aware, through a clause in the contract between the institution and the SAMRC, that they are required to acknowledge the SAMRC in their publications. **Corrective action:** The SAMRC will continue to ensure that units, centres and research funded by the SAMRC continue to acknowledge SAMRC grant funding in their publications.
	*2124	605	650	765	The over-achievement in publications is due to the SAMRC including all publications in journals with impact factors. Prior only a few select journals were recognised and counted. **Corrective action:** As the baseline for this indicator changed, the target will be amended in the 2020-2024 Strategic Plan.
	*1830	415	450	490	New units and centres were established since 2014 which contributed to an increased number of publications. The funding of HDI institutions also commences in 2015 leading to more publications, including first and last author publications. **Corrective action:** The SAMRC will, when crafting the 2020-2024 Strategic Plan, increase the target in line with the revised baseline.
	27	4	6	9	An online search for publications where SAMRC research is referenced showed that the number of times the SAMRC is being referenced locally and internationally increased substantially. **Corrective action:** The SAMRC will, when crafting the 2020-2024 Strategic Plan, increase the target in line with the revised baseline.
	750	147	168	168	

STRATEGIC GOAL	STRATEGIC OBJECTIVE	INDICATOR NO.	PROGRAMME PERFORMANCE INDICATOR	
Support innovation and technology development to improve health	To provide funding for health research innovation and technology development	3.1	Number of innovation and technology projects funded by the SAMRC to develop new diagnostics, devices, vaccines and therapeutics during the reported period	
		3.2	Number of new diagnostics, devices, vaccines and therapeutics progressed to the next stage of development during the reporting period	
Build capacity for the long-term sustainability of the country's health research	To enhance the long-term sustainability of health research in South Africa by providing funding for the next generation of health researchers	4.1	Number of SAMRC bursaries/scholarships/ fellowships provided for postgraduate study at masters, doctoral and postdoctoral levels during the reported period	
		4.2	Number of masters and doctoral students graduated during the reporting period	

** signifies that data will be contributed by both intramural and extramural units. Where the symbol does not appear, the data is only from intramural units or for SAMRC's administrative processes.*

OUR RESEARCH PROFILE

We focus on responsive health research and innovation to respond to the National Department of Health's *promise of a long and happy life for all South Africans*. We research, analyse and categorise the causes of death, to find suitable ways to prevent disease in a certain population group, or to improve the standard of living of those living with existing medical conditions. This work is conducted by our research units, these are either Intramural Research Units (IRU) or Extramural Research Units (ERU).

Intramural Research Units (IRU) are based at the SAMRC campuses and the scientists are directly employed by the organisation. Extramural Research Units (ERU) enable scientists based at tertiary institutions to conduct research funded by the SAMRC.

The research programmes and units are specified in the table below.

RESEARCH PROGRAMMES	RESEARCH UNITS
HEALTH PROMOTION AND DISEASE PREVENTION NSDA 1: INCREASING LIFE EXPECTANCY	• Alcohol, Tobacco and Other Drug Research Unit (IRU) • Anxiety and Stress Disorders Research Unit (ERU) • Non-Communicable Diseases Research Unit (IRU) • Environment and Health Research Unit (IRU) • Rural Public Health and Health Transition Research Unit (ERU) • Violence, Injury and Peace Research Unit (IRU) • Hypertension and Cardiovascular Disease Research Unit (ERU) • Microbial Water Quality Monitoring Research Unit (ERU)

	SP TARGET	FINAL 16/17 PERFORMANCE	REPORTING PERIOD: 2017/18 PERFORMANCE TARGET	FINAL PERFORMANCE	VARIANCE
	180	56	40	92	The target set for this indicator was set too conservative. **Corrective action:** The organisation will review the target set for the indicator when crafting the 2020-2024 Strategic Plan.
	New Indicator	2	2	2	
	435	156	98	155	There were more bursaries, scholarships and fellowships provided for postgraduate studies than anticipated. **Corrective action:** The SAMRC will, when crafting the 2020-2024 Strategic Plan, increase the target in line with increased funding for bursaries/scholarships/fellowships
	New Indicator	69	55	80	The SAMRC research grant funding and student intake increased substantially, thus resulting in an increase number of students graduating. Some programmes, such as the HDI initiative, led to more publications and more graduates. **Corrective action:** The target will be reviewed for the 2020-2024 Strategic Plan to accommodate the increased student intake and funding programmes.

RESEARCH PROGRAMMES	RESEARCH UNITS
MATERNAL, CHILD AND WOMEN'S HEALTH NSDA 2: DECREASING MATERNAL AND CHILD MORTALITY	• Gender and Health Research Unit (IRU) • Maternal and Infant Health Care Strategies Research Unit (ERU) • Development Pathways Research Unit (ERU) • Child and Adolescent Lung Health Research Unit (ERU)
HIV, AIDS, TB AND OTHER COMMUNICABLE DISEASES NSDA 3: COMBATING HIV AND AIDS, AND DECREASING THE BURDEN OF DISEASE FROM TB	• HIV Prevention Research Unit (IRU) • Centre for Tuberculosis Research Unit (IRU) • Molecular Mycobacteriology Research Unit (ERU) • Respiratory and Meningeal Pathogens Research Unit (ERU)
HEALTH SYSTEMS STRENGTHENING NSDA 4: STRENGTHENING HEALTH SYSTEM EFFECTIVENESS	• Burden of Disease Research Unit (IRU) • Biostatistics Research Unit (IRU) • Cochrane South Africa (IRU) • Health Systems Research Unit (IRU) • HIV-TB Pathogenesis and Treatment Research Unit (ERU) • Health Services to Systems Research Unit (ERU)
PUBLIC HEALTH INNOVATION	• Drug Discovery and Development Research Unit (ERU) • Primate Unit and Delft Animal Centre (IRU) • The Biomedical Research and Innovation Platform (IRU) • Herbal Drugs Research Unit (ERU)
BIOMEDICAL RESEARCH	• Bioinformatics Capacity Development Research Unit (ERU) • Immunology of Infectious Diseases Research Unit (ERU) • Stem Cell Research and Therapy Research Unit (ERU) • Antiviral Gene Therapy Research Unit (ERU)

FUNDING HEALTH INNOVATION & RESPONSIVE MEDICAL RESEARCH SPECIFIC GRANT FUNDING SCHEMES

INVESTING IN INNOVATION & TECHNOLOGY

CASE STUDY

The Grants, Innovation and Product Development Division (GIPD) Division is responsible for external grant and platform funding of the SAMRC, which includes oversight of more than 200 grants ranging from SAMRC-specific grant funding to collaborative grant funding with local and international partners to address the burden of disease in South Africa and to foster collaboration both on the African continent and beyond. GIPD is also responsible for leading and managing innovation, with the goal of commercialisation of SAMRC funded innovations.

Total value of funding allocated to research & innovation during the 2017/18 reporting period:

R198 203 960,21
(GIPD PROJECTS INCLUDING SHIP, NEWTON AND STRATEGIC PROJECTS)

R25 000 000,00
(SELF-INITIATED RESEARCH GRANTS)

NOTABLE ACTIVITIES OF THE 2017/ 18 FINANCIAL YEAR INCLUDE:

DRUG DISCOVERY: The Development of a second Malaria drug discovery Candidate MMV674594. Progression of another anti-malaria lead compound, MMV1542017, to late-lead status.

VACCINE DISCOVERY: Successful establishment of the SHIV challenge and humanized mouse models in South Africa, both of which will be important for HIV product development efforts in the country. The SAMRC's EMC has approved transfer of the SHIV challenge model to the Primate Unit and Delft Animal Center (PUDAC), which will further develop, maintain and offer the model as a service to HIV researchers. This is the only one of its kind in Africa and has the potential to accelerate HIV vaccine development in South Africa.

The SHIP team, in partnership with the Gates Foundation have funded several activities as part of key global vaccine studies around Correlates for TB Vaccine development. These include the CORTIS Study, RISK4 and TB HART.

PRECISION MEDICINE: Development of a clinically applicable diagnostic test kit and pharmacogenomics algorithm for breast cancer. This will enable provision of a comprehensive genetic testing service and targeted treatment for breast cancer based on the disease pattern relevant to the diverse South African population. This project has now secured funding from the Technology Innovation Agency to take the project and business model to the next level.

MEDICAL DEVICES: The Tshwane Khulelwe study secured funding from the WHO for an expanded study of the Umbiflow Doppler device in Ghana, India, Kenya and Rwanda.

The first case series, which was meant to demonstrate feasibility of the Ellavi Uterine Balloon Tamponade (UBT) is now complete and has been a success. The overall success rate was 78.9%, i.e., the device stopped bleeding in 15 out of 19 patients (15/19). This was even higher (88,2%) when 2 patients, where the use of UBT would not have been indicated, were excluded from the analysis. All patients included in the case series had a good outcome. The SHIP Steering Committee and the SAMRC EMC has approved expansion of the case series to two additional sites, with the purpose of demonstrating whether the UBT can be successfully used by midwives in an urban clinic as well as in a remote area in the Eastern Cape.

BIG DATA: Partnering with The Square Kilometre Array (SKA) and DARA at University of Leeds through the Newton Fund to host a unique big data summer school.

INNOVATION TECHNOLOGIES: The Clinical Health Guidelines App, which was successfully launched in 2015, continues to enjoy success with the number of downloads having gone up to over 65000. The App has been updated to include the adult and Paediatric hospital guidelines. The majority of downloads are from South Africa. The relevance and quality of the App is also demonstrated by the fact that this App is gaining popularity in several other countries. In addition to the guidelines, the App allows reporting on adverse drug reactions and drug stock outs, which, after 24 months, has generated some startling data. This has resulted in the spinning out of a company called EMG (Essential Medical Guidance), which currently employs 20 people. EMG guidance, recently won the Global Seedstars "Best Health Technology in the world" in Switzerland.

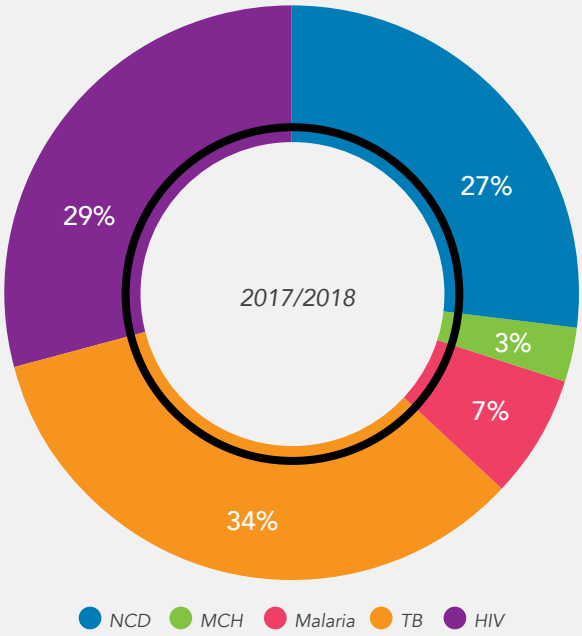
STRATEGIC HEALTH INNOVATION PARTNERSHIPS (SHIP): The South African Department of Science and Technology has renewed its commitment to fund SHIP for another three years.

POPULATION HEALTH: Establishing an agreement with the Department of Science and Technology to host the South African Population Research Infrastructure Network (SAPRIN). Officially launched in November 2017, SAPRIN is a unique, cutting edge programme seeking to develop a network of community based population studies in all nine provinces. The first three sites are in Limpopo (Dikgale), UKZN (AHRI) and Agincourt (Mpumalanga). The facility in Dikgale will soon be opening a new building to conduct the study.

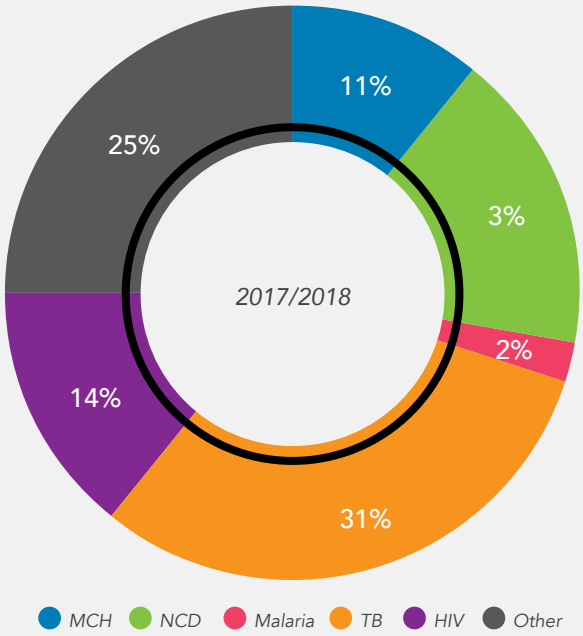
INVESTING IN HEALTHCARE INNOVATION

Grants, Innovation and Product Development (GIPD) is the SAMRC's external grants funding mechanism. GIPD invests in healthcare innovation by funding health research and development informed by strategic partnerships with local and international public-private funders, seeking to address health challenges in South Africa. GIPD through its funding programmes has invested in the following:

SHIP/GIDP DISBURSEMENTS PER DISEASE AREA



SHIP/GIDP DISBURSEMENTS PER DISEASE AREA



SHIP	Strategic Health Innovation Partnerships
GIPD	Grants, Innovation and Product Development
SRI	Strategic Research Initiatives
SIR	Self-Initiated Research Grants
NIH	National Institutes of Health

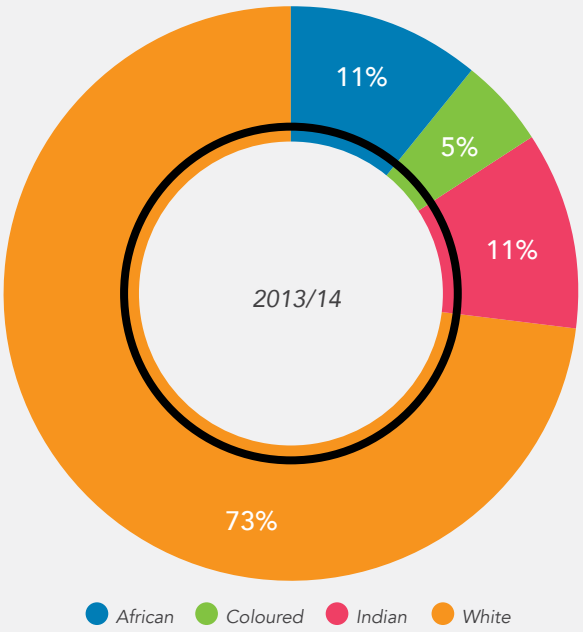
MCH	Maternal & child health
HIV	Human immunodeficiency virus
NCD	Non-communicable diseases
TB	Tuberculosis

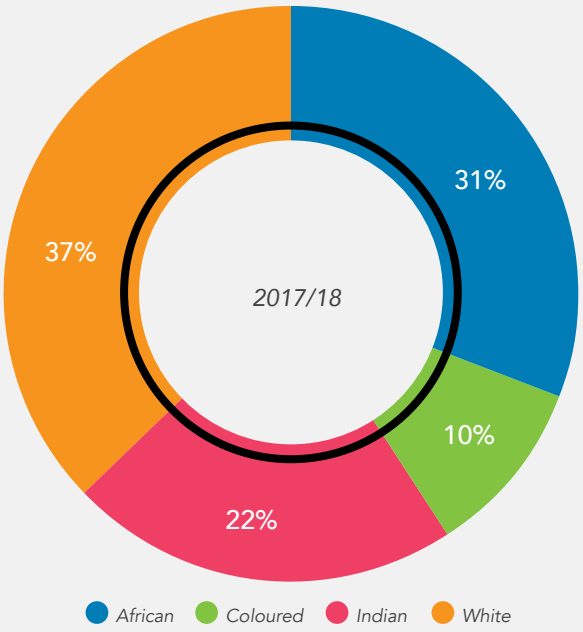
SELF-INITIATED RESEARCH GRANTS (SIR): TRANSFORMING OUR RESEARCH FUNDING STREAMS

For more than a decade, the SAMRC has supported these competitive investigator-initiated research projects, with approximately 45 new three-year awards being made each year. These are small awards specifically targeting early stage investigators and mid-career investigators to establish their careers while conducting nationally relevant science. The disease areas are diverse ranging from the most prevalent non-communicable diseases, through to communicable diseases, health systems, clinical research, social science, mental health, genomics, traditional medicine, environmental research, and water quality. Several major breakthroughs have resulted from this grant mechanism.

This is a vital grant mechanism for the SAMRC that has launched the careers of many prominent scientists, including the two most recent Presidents. Awards range from basic science to discovery and new drug targets at a molecular level, to public and environmental health, to small clinical trial studies.

Up to and including the 2013/14 financial year, the SIR grants were skewed with most grants awarded to white researchers (73%) and African researchers only securing 11% of the grants. Another systemic issue was that established researchers were competing with emerging researchers. By separating the researchers according to their level of experience, and by taking cognisance of the historical under-resourcing of selected universities, new SIR guidelines were applied when awarding the grants. This resulted in a shift in the demographics in 2017/18 with 37% of the SIR grants being awarded to whites and 31% to Africans.





COLLABORATIVE PROGRAMMES

The Grants, Innovation and Product Development (GIPD) Division also manages several collaborative programmes that include:

- Grand Challenges South Africa
- Bill & Melinda Gates Foundation (BMGF) Grant
- Anglo American Platinum
- The SAMRC Innovate UK joint call
- South Africa – India joint call in TB and HIV
- Joint Program In Anti-Microbial Resistance (JPIAMR)
- Global-Coalition in Preterm birth (G-CAPR)

Establishing the first Africa Genomics Centre

CASE STUDY

GRAND CHALLENGES SOUTH AFRICA

The SHIP Grand Challenges programme is partnered with the Grand Challenges programme of the Gates Foundation and partners in Canada, Brazil, India, Grand Challenges Africa and US. The focus is on Maternal and Child Health – essentially the last trimester and the first 28 days of life. The topic was specifically chosen to align with the Bill & Melinda Gates Foundation's "Saving Live's at Birth" programme by seeking to address the abnormally high mortality rate of babies and mothers in Africa who typically die through HIV, Haemorrhage, infection and hypertension.

The portfolio includes four projects:

- Development and validation of a sensitive, specific, one-time blood test for gestational diabetes
- Development and validation of progesterone impregnated cervical pessary with strain gauge sensors and linked electronic application to detect ongoing cervical shortening and dilation and improve prevention and prediction of preterm birth
- Advancing a protein-to-creatinine rapid test for determining proteinuria status as an onset indicator of preeclampsia/eclampsia
- Integrating a package of home-based early childhood interventions into existing community health work protocols in South Africa: A cluster-randomized trial. The scope of this project was expanded in the last financial year to include a sub-project titled *"Measuring infant Neurocognitive Development; EEG and Eye –Tracking in South Africa"*.

The contract with the Bill & Melinda Gates Foundation concerning the Grand Challenges South Africa programme will be extended to accommodate project extensions. Further to this, the Foundation has communicated its intention to collaborate with the SAMRC to co-fund research into improving antimicrobial resistance (AMR) surveillance in South Africa.

BILL & MELINDA GATES FOUNDATION (BMGF) GRANT

The SAMRC, DST and the BMGF entered into a pioneering partnership in 2014 to focus on TB and HIV vaccine research to enable local scientists to develop novel innovative approaches to combat these diseases. The main emphasis of these awards was to gauge a better understanding of the gaps in the TB Vaccine arena, and to discover new innovations in the HIV vaccine areas – especially broadly neutralising antibodies.

The portfolio currently consists of six projects:

- Defining the functional αβ and Y9δ2 T cell responses associated with protective TB immunity
- Systems immunology of ID93 vaccine-induced protection against recurrent TB disease
- A human lung-orientated approach to correlates of risk in tuberculosis - The TB-HART study
- Blood signature of recent tuberculosis infection or re-infection
- Broad neutralizing HIV antibodies, adjuvants and immunogens
- HIV-1 positive South African elite and long term controllers: viral and host targets for HIV functional cure strategies
- Tuberculosis Transmission: Host, Bacterium and Environment

The projects were recently reviewed and the outputs of several projects will drive the TB vaccine field forward.

ANGLO AMERICAN PLATINUM

The SAMRC entered into a partnership in 2014 with Anglo American Platinum to fund projects for beneficiation of platinum group metals. Calls were focused on funding medical device and drug projects where platinum group metals were key components in the innovations. Two projects were selected in the medical device area, both with private sector partners.

- Antimonia: Differential diagnosis of viral versus bacterial pneumonia using a CD-shaped point-of-care (POC) platform
- Balloon aortic Valvuloplasty (BAV) catheter

It is expected that both projects be soon taken into clinical trials.

STRATEGIC RESEARCH INITIATIVES (SRI)

Strategic Research Initiatives (SRI) is geared towards finding solutions for current and future health problems by creating and implementing innovative research models around partnerships that link researchers from different organisations and across research disciplines and sectors, both locally and internationally.

For the full list of key partnership programmes: *SAMRC Flagship Programme, SAMRC Intramural Research Grants, and the NIH Collaborative Projects, see the Appendix section on page 216.*

SAMRC Clinical Cancer Research Centres

- UCT Gynaecological Cancer Research Centre
- Wits Common Epithelial Cancer Research Centre

THE SAMRC – UK NEWTON FUND COLLABORATION

In October 2014, the Minister of Science and Technology signed a South African and UK collaborative agreement with the British Government's Newton Fund programme. The SAMRC and the UKMRC were actioned to set up collaborative programmes in health. The SAMRC announced the first of three open calls as part of a collaboration with the UK Medical Research Council. Under the umbrella of the Newton Fund, the goal of the joint research programme will be to promote collaboration between South African, African and British scientists. The first call focused on Non-Communicable Diseases (NCDs) in Africa, partnering with GlaxoSmithKline (GSK). Seven projects were chosen through an open call and peer review process. The total fund available is approximately R90m over 3 years.

NON-COMMUNICABLE DISEASES (PARTNERSHIP WITH GLAXOSMITHKLINE)

The call was specifically looking for proposals that target NCDs of high prevalence in Africa. As NCDs begin to impact on morbidity and mortality in Africa, there is an opportunity for public and private sector partners to work together to develop scientific expertise in this area. The key aspect of these projects will be on translational research that will integrate basic laboratory-based research, clinical research, and population-based research, with the long-term aim of improving scientific understanding of the unique attributes of NCDs in African populations.

RESEARCH PROJECTS

- African cardiomyopathy and myocarditis registry programme: The IMHOTEP study
- Improving timely diagnosis of symptomatic breast and cervical cancer in sub-Saharan Africa
- Genomic analysis of African oesophageal squamous cell carcinoma
- EVOLVING RISK FACTORS FOR CANCERS IN AFRICAN POPULATIONS: Lifestyle, infection, genetic susceptibility and cancer in South Africa: development of research capacity and an evidence base for cancer control
- Prevalence, characterisation and response to chronic kidney disease in South Africa
- Determinants of type 2 diabetes mellitus (T2D) risk in middle-aged black South African (SA) men and women: dissecting the role of sex hormones, inflammation and glucocorticoids
- African Prospective study on the Early Detection and Identification of Cardiovascular Disease and HyperTension (A-PREDICT)
- Decrypting the relationship between epigenetics and type 2 diabetes in sub-Saharan Africa
- Targeting the abnormal MicroRNA and Splicing Signatures in HIV-associated cancers

TB IMPLEMENTATION SCIENCE

The second SAMRC and UKMRC focused Newton call addressed tuberculosis implementation science. The R70 million funding will support Tuberculosis (TB) control implementation science research. Six projects were selected for funding to specifically address the challenges of the implementation to TB controls in South Africa.

- Improving TB outcomes by modifying life-style behaviours through a brief motivational intervention (PROLIFE)
- A household cluster randomised trial of active case finding for HIV and TB, preventive treatment against TB, and ART initiation to prevent TB disease and transmission (The HomeACF Study)

- Addressing challenges in scaling up TB and HIV treatment integration in public health settings in South Africa
- Optimising the efficiency of household contact tracing for TB control in South Africa
- Application of novel strategies in district-level TB hotspots to reduce pre-treatment loss to follow-up and improve successful patient outcomes of microbiologically confirmed TB
- Technology supported systems for rapid impact on TB control

ANTIMICROBIAL RESISTANCE

The third SAMRC and UKMRC grant focused on funding seed grants to address the challenges of antimicrobial resistance in Africa by investing in projects that address novel approaches for surveillance, point of care diagnosis and new drugs with novel mechanisms of action.

Six awards were made under this call:

- E–AMR: ICT Solutions for Real-Time Electronic Monitoring of Antimicrobial Use and Resistance in the one Health Approach
- Smart surveillance towards malaria elimination in Mpumalanga, South Africa: novel approaches for mapping antimalarial resistance
- Developing the Next Generation of β-lactamase Inhibitors and Monobactam Antibiotics
- Enhancing Appropriate Antimicrobialc use via mHealth and other techniques in the Republic of South Africa (ENAABLES Project) – Application for part 3 in humans – New technology innovations to improve surveillance and use of antimicrobials
- Using whole genome sequencing to develop Antimicrobial Microbial Resistance Reference Facility for One Health in South Africa
- A new look at an old disease: underexplored chemical space as a source of novel compounds active against multidrug-resistant M. tuberculosis

PRECISION MEDICINE

The fourth SAMRC and Innovate UK product development partnership focused on developing new affordable precision medicine solutions to address the South African non-communicable burden of disease and child health. The scope of non-communicable diseases included – cardiovascular, Diabetes and Cancer diseases. The call focused on partnering South African researchers or start-ups with British start-up firms to develop solutions that could be ready for market in three years. The total funding amount available was R35 million over three years. Two awards were made:

- Development of a rapid ParaDNA test kit for improved clinical management of patients with breast cancer and associated co-morbidities
- Precision management (PM) of Epilepsy in South African children

STRATEGIC PROJECTS

The SAMRC received several unsolicited project proposals during 2017/18. EMC considered these proposals and awarded funding for several of these projects from unspent funds in the 2017/18 financial year.

- SMU Pharmacovigilance Centre
- Preventative Chemotherapy Neglected Tropical Diseases (NTD) Mapping
- Development of a single dose malaria cure of Artemether-Lumefantrine through a nano-based drug delivery system
- Antimicrobial resistance (AMR) – Neonatal sepsis surveillance and STIs in South Africa
- Is there a genetic predisposition to death and disability after moderate-severe hypoxic ischemic encephalopathy (HIE) in cooled infants? A genome-wide association study in a South African cohort.

THE SOUTH AFRICAN AIDS VACCINE INITIATIVE (SAAVI)

SAAVI funding is used for a variety of activities that complement and contribute to the broader HIV programme of GIPD. These include projects focused on research capacity building, participation in global partnerships and various strategic projects, as listed below.

- Assessing the quality of cellular responses to the RV144/ HVTN 097 and HVTN 100 vaccine regimens
- Vaccine-mediated effects on immunological, viral and clinical factors in HIV breakthrough infections
- National Strategic Framework for Stakeholder Engagement in HIV Prevention Research South Africa
- The evidence for contraceptive options and HIV outcomes (ECHO)
- Immediate or Deferred Pre-exposure Prophylaxis for HIV Prevention: Safe Options for Pregnant and Lactating Women – An Open-Label Randomised Control Study
- SAMRC-WSU Research Capacity Development Programme
- Population based surveys for HIV in Eastern Cape accident and emergency departments
- Nelson Mandela Academic Hospital Clinical Research Unit

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SAMRC STRATEGIC RESEARCH

PROGRAMMES

GROWING THE KNOWLEDGE ECONOMY OF OUR COUNTRY

PROGRAMME 1

HEALTH PROMOTION & DISEASE PREVENTION

PURPOSE

To conduct research using a life course approach to healthy lifestyles, early diagnosis, and cost-effective prevention and management of diseases through health promotion.

UNITS

- Alcohol, Tobacco and Other Drug Research Unit
- Risk and resilience in mental disorders
- Non-Communicable Diseases Research Unit
- Environment and Health Research Unit
- Rural Public Health and Health Transition Research Unit
- Violence, Injury and Peace Research Unit
- Hypertension and Cardiovascular Disease Research Unit
- Microbial Water Quality Monitoring Research Unit

STRATEGIC OBJECTIVES

- To contribute towards the body of evidence by gaining a better understanding of how factors such as nutrition, physical activity, mental health, healthy behaviours, environment and stress factors affect life expectancy
- To be a leader in scientific research by contributing to new knowledge in the area of health promotion and disease prevention
- To train and mentor high-quality postgraduate students and postdoctoral fellows who are able to compete in the science, health and/or education sectors locally and abroad to advance the cause of health promotion and disease prevention
- To assist the National Cancer Registry in producing cancer surveillance statistics and cancer trend reports
- To translate research results into health and education policy, the practice of health-care professionals, and the configuration of health and education systems
- To develop interventions that affect and address poor nutrition, lack of physical activity, excessive alcohol intake, and risky sexual behaviours
- To add to evidence-based interventions that look into factors affecting life expectancy
- To train and educate healthcare staff and community members to manage, control and reduce the incidence of NCDs

UNIT NAME:

ALCOHOL TOBACCO AND OTHER DRUG RESEARCH UNIT

UNIT DIRECTOR: Charles Parry

STRATEGIC PURPOSE OF UNIT

Alcohol, tobacco and other drug (ATOD) ranked as the fifth, sixth and 21st leading risk factors, respectively, for death and disability in South Africa in 2015. They particularly contribute to infectious diseases (TB and HIV), intentional and unintentional injuries, non-communicable diseases (cardiovascular diseases, and cancers), other mental disorders, and neurological/genetic disorders (especially Fetal Alcohol Spectrum Disorders). The main global mandate to which the Unit is responding is the UN Sustainable Development Goals (SDGs), and specifically SDG3 (ensure healthy lives and promote well-being for all at all ages) and SDG16 (promote peaceful and inclusive societies for sustainable development). Good baseline data on ATODs are needed to inform and evaluate interventions, and translational and policy research is required to move evidence-based interventions from the field into practice and to guide effective policy.

Our current research focus is on better understanding the use of ATODs in South Africa and changes over time; studying the effects of alcohol use on HIV/AIDs and TB among patients in treatment settings and how best to reduce such effects; evaluating approaches for delivering mental health counselling within chronic disease care relative to treatment as usual, with depression and risky alcohol use as primary outcomes; testing interventions aimed at reducing alcohol and drug-related sexual HIV risk behaviour in vulnerable adult females and teens; engaging in primary and secondary research to evaluate the effectiveness of structural level interventions to reduce harmful drinking, and developing systems for monitoring the quality of services to reduce harmful ATOD use. Our research involves a variety of methodological approaches, including epidemiological studies, tracking treatment episodes, qualitative research, systematic reviews, cohort studies and randomised controlled trials.

DELIVERABLES	2016/17	2017/18
Number of publications	37	39
Number of publications published in journals with impact factor greater than 5	6	6
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	4	3
Number of postgraduate students receiving supervision under your unit	15	18
Number of postdoctoral fellows receiving supervision under your unit	3	3

MAJOR RESEARCH PROJECTS INCLUDING DIAGNOSTICS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Alcohol & HIV Flagship (ongoing)	SAMRC	Prof Charles Parry/Prof Neo Morojele
Project MIND (ongoing)	MRC-UK, Wellcome Trust, DFID	Prof Bronwyn Myers
The impact of alcohol consumption on TB treatment outcomes (TRUST Project) (ongoing)	National Institute of Allergy and Infectious Diseases (NIH)	Prof Bronwyn Myers
Codemisused (completed)	EU	Prof Charles Parry
Project PHIND (new)	MRC-UK	Prof Neo Morojele

MAJOR COMMUNITY ENGAGEMENT		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
TB Testing Campaign	Representing project TRUST we conducted door to door visits with HIV and TB workers in the Worcester community as part of World AIDS Day (2017) to raise awareness about TB and HIV Testing.	Worcester Multisectoral Action Team (MSAT)

CONTACT DETAILS

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UNIT NAME:

NON-COMMUNICABLE DISEASES RESEARCH UNIT

UNIT DIRECTOR: Andre Pascal Kengne

STRATEGIC PURPOSE OF UNIT

Non-communicable diseases (NCDs) are a leading cause of death worldwide and in South Africa; with many of these deaths resulting from cardiovascular and metabolic diseases. About one in three South African adult men, and two in three women are either obese or overweight, and there are indications that rates are already high in children and adolescents. After the age of 35 years, over half of South Africans have high blood pressure while at least one in ten suffers from diabetes mellitus. Even among those surviving from major infectious diseases like HIV/AIDS and tuberculosis, NCDs are emerging as a new threat to healthy survival. The cost of NCDs is very high, and evidence suggest that if left unaddressed, NCDs could have severe impact on the economies of developing countries. Therefore, action is needed on NCDs to prevent the devastating consequences on the health of the population and economy of South Africa. Most of the consequences of NCDs can be averted or postponed through prevention actions together with strategies to improve early detection and appropriate management of people with NCDs. For these to be effective in other settings however, locally relevant evidence is needed to contextualise the prevention and control knowledge from elsewhere. NCDRU positions itself at the forefront of knowledge generation to improve the understanding of the burden and determinants, and inform successful health service and policy solution to improve the prevention, detection, treatment and control of major NCDs in South Africa.

DELIVERABLES	2016/17	2017/18
Number of publications	69	62
Number of publications published in journals with impact factor greater than 5	24	15
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	3	5
Number of post graduate students receiving supervision	38	32
Number of postdoctoral fellows receiving supervision	3	2

MAJOR RESEARCH PROJECTS INCLUDING DIAGNOSTICS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Non-Communicable Diseases Risk factors Collaboration (NCD-RisC) – African chapter	SAMRC/Imperial College London	Andre Pascal Kengne
African Chronic Kidney Disease Consortium	SAMRC/National Research Foundation	Andre Pascal Kengne/Cindy George

MAJOR RESEARCH PROJECTS INCLUDING DIAGNOSTICS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Comorbidities of childhood obesity at tertiary hospitals in KwaZulu-Natal, South Africa: 1995-2016	SAMRC	Nasheeta Peer
South African Diabetes Prevention Project (SADPP)	SAMRC	Andre Pascal Kengne
Sickle Africa Data Coordinating Center (SADaCC)	NIH	Prof Ambroise Wonkam

COMMUNITY ENGAGEMENTS DURING THE REPORTING PERIOD		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
Vanguard Primary School Health Day 2017	870 primary school learners addressed on the topic "Healthy living/eating'	SAMRC, NCDRU and Vanguard Primary School

CONTACT DETAILS

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UNIT NAME:

ENVIRONMENT & HEALTH RESEARCH UNIT

UNIT DIRECTOR: Angela Mathee

STRATEGIC PURPOSE OF UNIT

Environmental factors are responsible for around one quarter of the global burden of disease. In South Africa some of the environmental hazards to health include pollution of air, water and soil, elevated community exposure to toxic substances in close proximity to some industrial sites and mining operations, and vehicular emissions. For people living in informal settlements, or in under-developed settings, the main environmental hazards to health include inadequate shelter, poor quality (or insufficient quantities of) water, ineffective systems for removing solid waste and waste-or storm-water, and polluted indoor or ambient air from the use of polluting fuels for daily cooking, space heating and boiling of water for bathing. The changing global climate, associated with an increase in the frequency and intensity of adverse weather events (such as the severe drought and deadly heat waves in South Africa in recent years), poses increased environmental risks to everyone's health. However, risks are elevated among people living in poverty, whose ability to adapt to a changing environment is limited.

The SAMRC's Environment & Health Research Unit manages two programmes of research. The first is public exposure to toxic metals such as lead, mercury arsenic, cadmium and uranium. In this regard studies have been undertaken in various groups and settings (around mining sites, in fishing villages and users of arms and ammunition). The second relates to climate and health adaptation, with particular emphasis on rising temperatures in South Africa, which have been predicted to exceed the global average.

DELIVERABLES	2016/17	2017/18
Number of publications	17	22
Number of publications published in journals with impact factor greater than 5	-	1
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	2	5
Number of postgraduate students receiving supervision	25	16
Number of postdoctoral fellows receiving supervision	0	0

CAPACITY DEVELOPMENT

During the past year, more than half of the staff in the E&HRU have undertaken further education and training programmes to build their capacity to conduct, and lead, research projects, as well as to strengthen administration within the Unit. These have included studies at the following levels:

- Doctoral studies
- Masters and MPH studies
- Bachelors degree
- Diploma courses

In addition, staff underwent training to improve their ability to work together as an E&HRU team.

External Capacity Development

Scientists in the Unit are supervising Doctoral, Masters and undergraduate students in a wide range of environmental health research topics. Through partnerships with the University of Johannesburg and Nelson Mandela University, we provide experiential learning opportunities in urban environmental health research for undergraduate students.

On request, we offer lectures at universities, as well as for government events, such as school career guidance programmes.

IMPACT

E&HRU staff engage with various government and ancillary organisations, to keep them abreast of research findings, and discuss policy outcomes:

- National Department of Health
- Gauteng Provincial Department of Health
- South African Weather Service
- Department of Environment Affairs

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD

PROJECT /RESEARCH TITLE	FUNDER	PRINCIPAL INVESTIGATOR
Exposure to toxic substances in communities living in close proximity to a mine tailings facility	SAMRC UNESCO NRF	Tanya Haman
The relationship between lead exposure and dementia in an elderly population	SAMRC	Prof Nisha Naicker
Evaluation of a weather-based Early Warning System for selected infectious diseases in Giyani, Limpopo	DST JICA	Prof Caradee Wright
Assessment of the impact of roof interventions on indoor temperature and thermal comfort in Groblershoop	SAMRC	Prof Caradee Wright
Assessment of exposure to toxic metals from the use of artisanal cookware	SAMRC	Prof Renee Street

COMMUNITY ENGAGEMENTS DURING THE REPORTING PERIOD

NAME OF EVENT	PURPOSE	PARTNERS/FUNDERS
Heat and health awareness materials	Development of public education materials to raise awareness of the risks to health from high temperatures and heat waves.	SAMRC National Department of Health National Department of Basic Education
Health risks in shooting ranges	Development of public education materials to raise awareness of the risk of lead exposure when using certain shooting ranges.	SAMRC National Department of Health South African Police Service Department of Labour

CONTACT DETAILS

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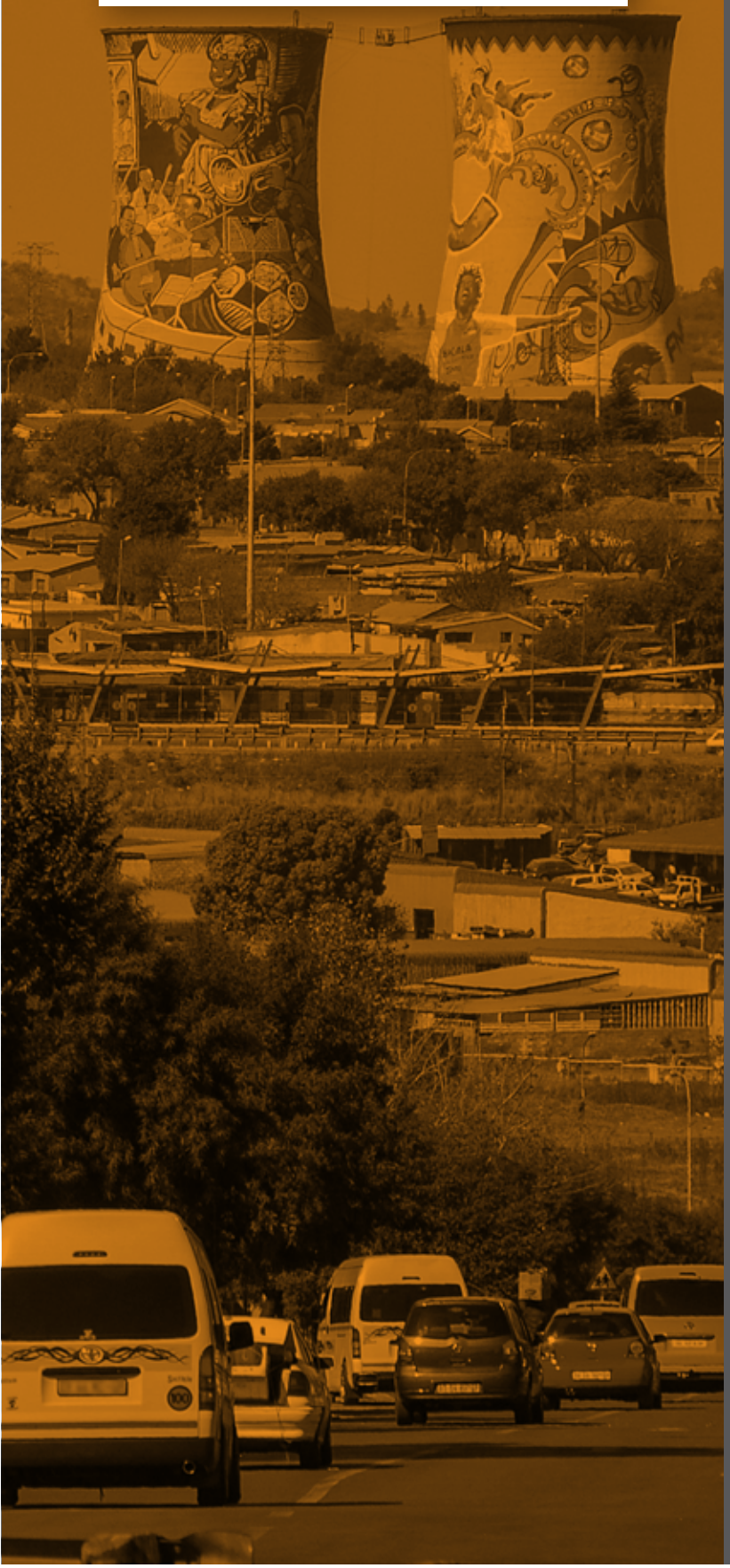
CASE STUDY



SOWETO MINING AND HEALTH STUDY

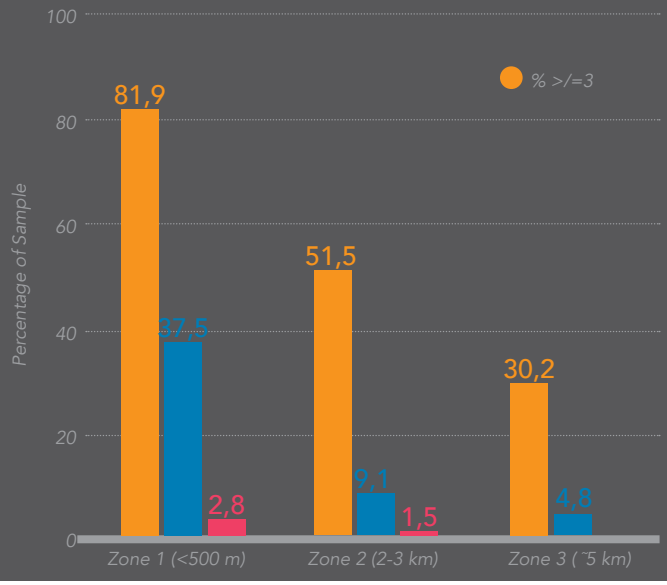
The gold rush from 1886 resulted in many imposing slag heaps and mounds of earth contaminated with heavy metals, such as uranium, which are within sight of the country's commercial capital - Johannesburg. In areas such as Grootvlei, Snake Park, an impoverished township on the periphery of the biggest mine dumps in Soweto, thousands of people live at the foot of mountains of waste.

Although some articles have been written about the health problems experienced by residents of Grootvlei, Professor Angela Mathee Director of the SAMRC's Environment and Health Research Unit says, "there are no studies that make a direct link, to our knowledge, to the exposure there and the health problems that the people are experiencing."

In an effort to understand the extent of the problem, Mathee and her team have embarked on a Soweto Mining and Health Study. The Study aims to determine the impact of mining-related exposures on neuro-cognitive development of children.

The sample group will include 220 adult-child pairs (7 to 14 years), living in three zones at increasing distance from mine to dump. Exposure will be measured through blood/urine concentrations of lead, mercury, arsenic, cadmium, and uranium. Environmental concentrations of toxic metals will also be investigated. The expected outcomes include an assessment of the general health status, growth/stature, and cognitive assessments.

ELEVATED CHILD (7-14 YEARS) BLOOD LEAD LEVELS BY DISTANCE FROM MINE TAILINGS DUMP (SOWETO)

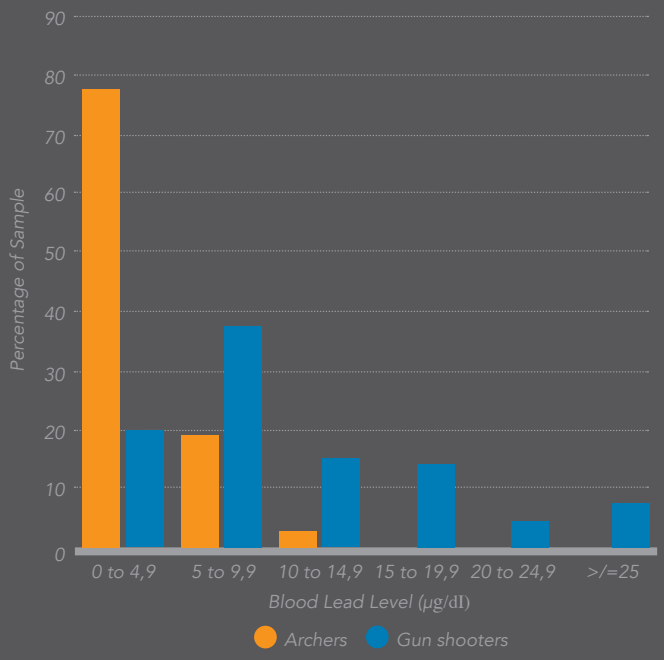


LEAD EXPOSURE AT SOUTH AFRICAN SHOOTING RANGES

For decades lead exposure at shooting ranges has been under scrutiny, but information about it is still lacking, in Africa and particularly in the South African context. In a first study of its kind, Professor Angela Mathee and co-authors studied lead exposure in an African setting.

The study aimed to determine the blood lead levels in the users at these private shooting ranges. The analytical cross sectional study included a sample group from four randomly selected shooting ranges and three archery ranges as a comparator group, in Gauteng, South Africa.

BLOOD LEAD DISTRIBUTION IN ARCHERS AND SHOOTERS



118 (87 shooters and 31 archers) included in the analysis. Shooters showed significantly higher blood lead levels (BLL) compared to archers with 36/85 (42.4%) of shooters versus 2/34 (5.9%) of archers found to have a BLL ≥10 µg/dl ($p<0.001$).

Mathee and co-authors conclude that shooting ranges may constitute an important site of increased lead exposure. Better ventilation, limited awareness of lead hazards, poor housekeeping, and inadequate personal hygiene facilities and practices at South African shooting ranges require attention.

UNIT NAME:

SAMRC/WITS RURAL PUBLIC HEALTH AND HEALTH TRANSITION RESEARCH UNIT

UNIT DIRECTOR: Stephen Tollman

STRATEGIC PURPOSE OF UNIT

Rural Public Health and Health Transitions' research seeks local and national relevance and impact, while interacting with and contributing to important regional and global questions.

In partnership with host communities and local institutions, to better understand and respond to the dynamics of health, population and social transitions in rural South and southern Africa, in order to mount a more effective public health, public sector and social response and thereby inform national, regional and global policy.

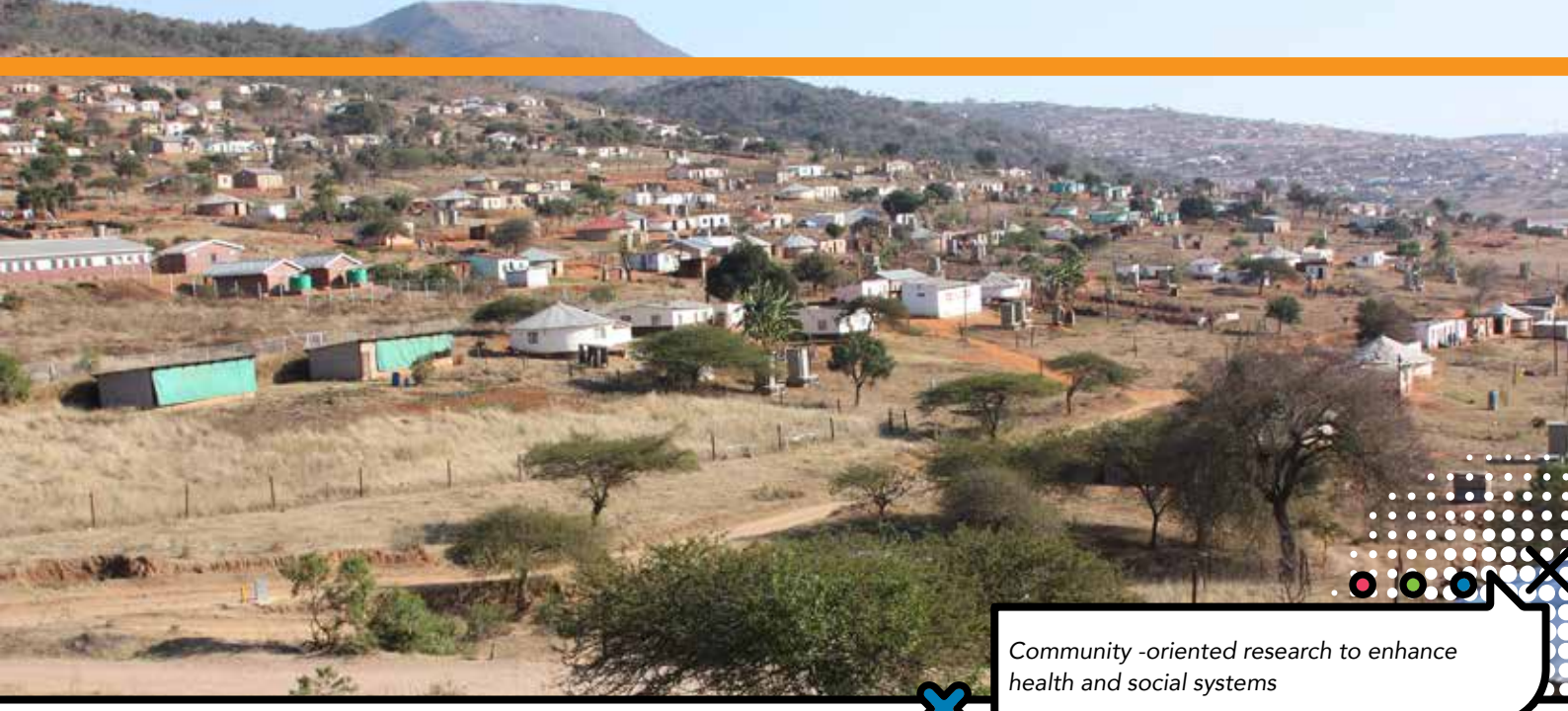
Situated in resource-poor rural environments, the Unit undertakes community-oriented research to elucidate causal pathways, test interventions across the life-course, inform health and social systems, and strengthen evidence to guide policy and programmes.

A portfolio of work examines household responses to shocks and stresses including the use of natural resources and available energy sources; and, critically, migration patterns and livelihood strategies including migrants' health status and their linkage to health services.

While the intensity of AIDS-related mortality is abating, the challenge of understanding, mapping and responding to colliding infectious and non-communicable disease epidemics and the ensuing multi-morbidities provokes new concerns:

- An ageing population invites questions about the meaning of 'a long and healthy life for all' in South Africa today
- The vulnerabilities and potential of adolescent and young adult years speak to the promise of the next generation and the perils of health, education and social systems fall short
- New technologies enable genomic and patient-oriented/ clinical research – yet whether these can meaningfully impact health and development in resource-poor rural settings is an open question.

In 2017, the South African Department of Science and Technology (DST) made a major investment in Agincourt and two sister research centres: the Dikgale Centre at University of Limpopo (modelled on Agincourt), and the Umkhanyakude Centre of the Africa Health Research Institute and University of KwaZulu-Natal.



Community -oriented research to enhance health and social systems

Observational work

Several new cohorts are underway, sampled from and articulating closely with the Agincourt population platform, and focusing on special populations or subgroups along the life course including adolescents, young adults, middle-aged and older persons, and temporary/labour migrants.

These cohorts support a range of sub-studies. For example, the HAALSI/Ageing cohort supports work on HIV-cardiometabolic disease interactions at cellular level; validation studies of the HbA1c biomarker; harmonisation of cognitive assessment instruments; and anthropological enquiry into caring and care-giving for the frail and elderly. Similarly, the cohort of young women arising from the Conditional Cash Transfer trial (HPTN 068) supports work on both depression and cognitive/executive function, and their association with HIV acquisition and markers of reproductive health.

Portfolio of intervention-research

Ongoing trials and evaluations target vital questions affecting the health and wellbeing of adolescents and young women, community mobilisation and linkage to primary care for HIV/AIDS management.

- *Tsima* is a theory-driven community mobilisation intervention, with eight intervention and seven control villages, to strengthen linkage to HIV testing and care in local clinics among young to middle-age adults. Outcome evaluation is based on the 'clinic-HDSS link' system, while there is also a strong process/implementation assessment. Partners include Sonke Gender Justice, UCSF and UNC
- *Testing Innovations* is an individually randomised study comparing the uptake of self-testing for HIV with clinic-based HIV testing and counselling (HTC). To better understand peer and male partner behaviour, and increase testing among the 'hard to reach', similar options are offered by the enrolled participants up to four peers or partners.
- The *Ntshembo* ('hope') pilot intervention: a multilevel approach to health & wellbeing in adolescent women and men. Primary outcome – limiting BMI variance – seeks to maintain body weight within an appropriate range as intervention against overweight and obesity to reduce risk of metabolic disease in adulthood and in offspring. Community health workers play a key role engaging adolescents, especially pre-pregnant adolescent girls, in a multi-level intervention that involves family, schools and community leaders. Collaboration with the SAMRC/Wits Developmental Pathways for Health Research Unit (DPHRU), Universities of Cambridge and Oxford UK

Over the period, high impact 'translational' research applies to:

- Agincourt's thorough-going, knowledge-based engagement with communities, building research 'smart' communities, contributing to local development efforts, and pioneering models of community engagement. These inform priority setting, study designs, process/implementation evaluations, ethical approaches and conduct of sophisticated assessments (such as cognitive status or microbiome investigation) – and increasingly are the subject of evaluation and publication
- Public sector/government 'demand' for Agincourt products and outputs which includes:
  * Sustained and growing interaction with parts of provincial government, notably the maternal-child-youth-nutrition sub-directorate and, to a lesser extent, the HIV/AIDS and NCD sub-directorates. This is important as, arguably, the greatest health development challenge is building provincial demand for evidence-based output
  * Strong national-level interactions, especially on 'integrated chronic care' (where Agincourt served as a national pilot site), govt. commissions on health data and monitoring indicators, and community-based maternal and child deaths (overlooked by the vital registration system)

- Of singular interest is the PRICELESS interaction/ contribution to the Department of Health and Treasury in formulating salt regulations and the case for a tax on sugar-sweetened beverages – with high media coverage. Beyond this, PRICELESS is playing a growing and significant role supporting government thinking on priority health interventions and gaining better returns on the health rand invested ('best buys')
- Engagement with Statistics-SA around documenting the scale and nature of migration, and validating the national vital registration system.

Illustrative examples at the interface with Discovery research and with Innovation:

- Enquiry into the cognitive status of adolescents and older adults – to establish effective instruments for population-based research and to better understand causal pathways (that help explain HIV acquisition in children or cognitive decline in elders)
- Application and assessment in LMIC populations, for the very first time, of the Oxford-developed (Humphreys et al) tablet-based, prototype cognitive screen in older adults – a cognitive assessment technology which limits the (otherwise major) influence of language and educational status
- Evaluating the application of advanced technologies in rural settings – including echocardiography and Magnetic Resonance Brain Imaging (MRI scanning)
- Software testing and innovation to enable 'clinic-HDSS link', and algorithmically-based verbal autopsy assessment that can be used in research environments and adapted to support routine vital registration.

Support by the Dept. of Science and Technology to establish SAPRIN – with Wits and Agincourt research leadership playing a pivotal role; along with the Universities of Limpopo/Dikgale and KwaZulu-Natal/AHRI – will, prove a 'game-changer' in terms of population-based research that is evidence-rich, informs policy and programmes and speaks at scale to national health and development priorities.

DELIVERABLES	2016/17	2017/18
Number of publications	54	76 peer reviewed articles 1 book chapter
Number of publications published in journals with impact factor greater than 5	9	16
Number of collaborative research projects completed	Ongoing	4
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	PhD – 5 Masters – 5	PhD – 6 Masters – 2
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	None	None
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	Postdocs – 2 PhD – 15 Masters – 4	Postdocs – 3 PhD – 18 Masters – 5
Number of postdoctoral fellows receiving co-/supervision	2	3
Number of early career scientists receiving co-/supervision	8	9
Number of PhD students receiving co-/supervision	15	18
Number of MSc students receiving co-/supervision	4	5

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING of UD AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UD AND CORE RESEARCHERS
Policies and guidelines – salt regulations and sugar sweetened beverage tax	SM Tollman: B2	Tollman – Scopus 34
Public access datasets	K Kahn: B3	Kahn – Scopus 32
System to link clinic data with population data		Collinson – Scopus 21
Triangulation of national census and HDSS data (with Stats South Africa)		Gómez-Olivé – Google Scholar 25

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Projects ended		
A life course approach to preventing cardiometabolic disease and enhancing wellbeing in a rapidly transitioning African setting. Grant 085477/B/08/Z	The Wellcome Trust, UK	Stephen Tollman
An innovative, language controlled, tablet-based cognitive test: harmonizing dementia screening across high and low literacy countries. 1RO1AG051144-01	National Institute on Aging, NIH, USA	Stephen Tollman (co-PI with Lisa Berkman, Harvard)
Genomic and environmental risk factors for cardiometabolic disease in Africans. 1U54HG006938-01 (Wits-INDEPTH)	National Human Genome Research Institute, NIH, USA	Michele Ramsay, Osman Sankoh (co-PI)
Projects started		
Agincourt node of the South African Population Research Infrastructure Network	Department of Science and Technology / SAMRC	Steve Tollman (Agincourt PI) Mark Collinson (SAPRIN PI)
Verbal Autopsy with Participatory Action Research (VAPAR): expanding the knowledge base through partnerships for action on health equity	Economic and Social Research Council (ESRC), The Wellcome Trust, Department for International Development (DfID), UK	Lucia D'Ambrouso

CONTACT DETAILS

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UNIT NAME:

SAMRC-UNISA VIOLENCE, INJURY AND PEACE RESEARCH UNIT

UNIT DIRECTOR: Mohamed Seedat

STRATEGIC PURPOSE OF UNIT

Despite South Africa's remarkable political transformation, the country has continued to experience staggering levels of morbidity and mortality arising from violence and injury. Annually, as many as 3.5 million people seek healthcare for nonfatal injuries, of which half are due to violence. The extent of disability and suffering as a result of injuries is extensive. For example, for every fatal motor vehicle accident, four crash survivors suffer from brain injuries. Many others are hospitalised for less severe but debilitating injuries. Injuries exacerbate health disparities and worsen health outcomes. Violent injury, in particular, is a risk factor for the country's most prevalent and serious health problems, including HIV and sexually transmitted infections, substance misuse, and common mental disorders such as post-traumatic stress disorder, depression and suicidality. At a social level, the threat and occurrence of violence, and exposure to harmful road, environmental and recreational spaces, undermine social cohesion.

The Violence, Injury and Peace Research Unit (VIPRU) is a partnership between UNISA (University of South Africa) and the SAMRC. The mandate of the Unit is to improve the

population's health status, safety and quality of life through transdisciplinary safety and peace promotion research aimed at preventing death, disability and suffering arising from violence and unintentional incidents of injury. VIPRU's key objectives are to:

(a) conduct transdisciplinary violence, injury and peace research;
(b) contribute to contextually-sensitive prevention sciences;
(c) cultivate innovations and technologies in support of research and knowledge applications;
(d) build safety and peace promotion, and prevention expertise;
(e) maintain demonstration initiatives to support research, capacitation and knowledge brokerage; and
(f) encourage the use of research to champion prevention and promotive policy and practice.

DELIVERABLES	2016/17	2017/18
Number of publications	19	10
Number of publications published in journals with impact factor greater than 5	-	-
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	2 commenced; 2 closed	1 commenced
Number of postgraduate students receiving supervision	10 PhDs 7 MAs	15 PhDs 5 MAs
Number of postdoctoral fellows receiving supervision	1	0

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
The Social Anatomy of (Non-) Violent Protest in Gauteng	SAMRC	Mohamed Seedat
Strengthening the Psychosocial Recovery of Paediatric Burn Victims	NRF	Ashley van Niekerk
Western Cape Water Safety Strategic Framework	Western Cape Department of Local Government and Lifesaving South Africa	Ashley van Niekerk

MAJOR COMMUNITY ENGAGEMENTS IN THE REPORTING PERIOD		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
Establishment of Building Bridges NPO in Erijaville Safe Community Demonstration Site	• Engaged Erijaville community members on Building Bridges NPO • Provide support and training for sustainability of NPO	SAMRC, ISHS
Ongoing networking in Erijaville Safe Community Demonstration Site	• Engaged with key safety and health stakeholders that work in the Strand communities • Established local Network of Care • Provided capacitation and training on networking • Plan for and arrange monthly coalition meetings	SAMRC, ISHS, City of Cape Town, Building Bridges NPO, Phambihle

CONTACT DETAILS

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UNIT NAME:

SAMRC/NWU HYPERTENSION AND CARDIOVASCULAR DISEASE RESEARCH UNIT

UNIT DIRECTOR: ALETTA E SCHUTTE

STRATEGIC PURPOSE OF UNIT

A recent systematic global analysis undertaken in 5.4 million participants indicated that global blood pressure has decreased since 1980. However, region-specific inspection of this data shows that in men and women from Africa, the mean systolic blood pressure actually increased. In addition, the highest mean blood pressures recorded worldwide were in African countries. The WHO's Study on Global Ageing and Adult Health including adults (aged > 50 yrs) in low and middle income countries, confirmed this by reporting that South Africa presented with the highest prevalence of hypertension ever reported in a nationally representative survey, with nearly 4 in 5 participants presenting with hypertension.

The overall strategic purpose of the Extramural Unit on Hypertension and Cardiovascular Disease is to directly contribute to new clinical and epidemiological knowledge within the field of hypertension development in black populations, particularly within South Africa, in order to facilitate more effective awareness, treatment and prevention programmes in the future.

Research Focus Areas and Identity

Within the Unit several transdisciplinary research programmes are undertaken which focus on a range of different aspects related to hypertension development. A significant component of the work forms part of longitudinal research projects, such as the PURE and African-PREDICT studies. Apart from the mentioned studies, other novel and more focused studies (such as the EXAMIN Youth and EndoAfrica studies) and collaboration with the WHO-SAGE study were also instigated within the Unit with a focus on HIV & hypertension, and hypertension development in the youth and the effect of South Africa's sodium legislation on sodium intake and blood pressure.

Summary of Research Impact

Over the past two years, this Extramural Research Unit has published almost 100 papers by large in international journals contributing to detailed new knowledge on several aspects of hypertension. Not only does this include epidemiological figures, but more specifically on pathophysiological and behavioural factors that play a role in the early development of hypertension and that could aid in more successful prevention of hypertension. These include publications such as the Report from the Lancet Commission of Hypertension, reports on South Africa's current salt intake, contributions to developing a new Africa Roadmap for Management of Hypertension and an invited on recent advances in understanding hypertension development in black populations.

DELIVERABLES	2016/17	2017/18
Number of publications	42	40
Number of publications published in journals with impact factor greater than 5	14	15
Total number of students (Doctoral and Masters) **graduated** in the entity during the reporting period	7	11
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	-	-
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	49*	53**
Number of postdoctoral fellows receiving co-/supervision	2	4
Number of early career scientists receiving co-/supervision	4	5
Number of PhD students receiving co-/supervision	16	20
Number of MSc students receiving co-/supervision	10	10

* (with some students counted twice being e.g. MSc in 2016 and PhD in 2017)
** (with some students counted twice being e.g. MSc in 2017 and PhD in 2018)

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING of UD AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UD AND CORE RESEARCHERS
Awards, AE Schutte:	UD: AE Schutte – B2	28
(1) Winner of the 2016/2017 NSTF (National Science and Technology Forum) South 32 Awards – in the Category: TW Kambule Award: Research and its outputs (2) Winner Distinguished Women Scientist Award in the category: Natural, Life and Engineering Sciences– Presented by Minister Naledi Pandor, Department of Science and Technology in 2017. (3) Voted President Elect of the International Society of Hypertension 2018-2020.	HW Huisman – C3	21
	L Malan – C1	20
	CMT Fourie – C2	16
	LJ Ware – C3	8
	R Schutte – C2	20
	JM van Rooyen – C3	23
	R Kruger – Y2	6
	CMC Mels – Y2	6
	W Smith – Y2	8
	HS Kruger – C2	21

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT / RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
African-PREDICT study (African Prospective study on the Early Detection and Identification of Cardiovascular disease and Hypertension)	DST/NRF SARChI; MRC Flagship Seedfunds; MRC SIR grants, MRC EMU Funds; Newton Fund (SAMRC, UKMRC, GlaxoSmithKline)	AE Schutte
PURE study (Prospective Urban Rural Epidemiology)	SANPAD, NRF, MRC SIR	Previously A Kruger, presently IM Kruger
EndoAfrica (Vascular endothelial dysfunction: The putative interface of emerging cardiovascular risk factors affecting populations living with and without HIV in sub-Saharan Africa)	DST and European Funding	For North West University Site: CMT Fourie
ExAMIN Youth (Exercise, arterial modulation and Nutrition in Youth South Africa)	NRF, MRC Unit	R Kruger
World Health Organization SAGE study – nested substudy on salt intake	Bloomberg Foundation	AE Schutte, K Charlton (Australia)

RESEARCH TRANSLATION

a) Number of new local/international policies and guidelines that reference SAMRC research technical fact sheets etc. developed (or contribution of research thereto):

1. Olsen MH, Angell SY, Asma S, Boutouyrie P, Burger D, Chirinos JA, Damasceno A, Delles C, Gimenez-Roqueplo A-P, Hering D, López-Jaramillo P, Martinez F, Perkovic V, Rietzschel ER, Schillaci G, **Schutte AE**, Scuteri A, Sharman JE, Wachtell K, Wang J-G. A call to action and a life-course strategy to address the global burden of raised blood pressure on current and future generations. The Lancet Commission on Hypertension. Lancet 2016; 388:2665-2712.
2. Dzudie A, Rayner B, Ojji D, **Schutte AE**, Twagirumukiza M, Damasceno A, Ba SA, Kane A, Kramoh E, Anzouan Kacou JB, Onwubere B, Cornick R, Sliwa K, Anisiuba B, Mocumbi AO, Ogola E, Awad M, Nel G, Otieno H, Toure AI, Kingue S, Kengne AP, Perel P, Adler A, Poulter N, Mayosi B on behalf of the PASCAR Task Force on Hypertension. Africa Roadmap to achieve hypertension control by 25% in Africa by 2025. Global Heart 2017 doi: 10.1016/j.gheart.2017.06.001.

b) Guidelines, technical fact sheets etc. developed (or contribution of research thereto):

1. Campbell NR, Lackland DT, Niebylski ML, Orias M, Redburn KA, Nilsson PM, Zhang XH, Burrell L, Horiuchi M, Poulter NR, Prabhakaran D, Ramirez AJ, Schiffrin EL, **Schutte AE**, Touyz RM, Wang JG, Weber MA; International Council of Cardiovascular Prevention and

Rehabilitation. 2016 Dietary Salt Fact Sheet and Call to Action: The World Hypertension League, International Society of Hypertension, and the International Council of Cardiovascular Prevention and Rehabilitation. J Clin Hypertens. 2016; 18:1082-1085.
2. Campbell NRC, Gelfer M, Stergiou G, Alpert BS, Myers M, Padwal R, Rakotz M, **Schutte AE**, O'Brien E. A call to regulate the automated blood pressure device industry. A position statement from the World Hypertension League, International Society of Hypertension and Supporting Hypertension Organizations. J Clin Hypertens. 2016: DOI: 10.1111/jch.12782.

CONTACT DETAILS

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UNIT NAME:

SAMRC/UFH MICROBIAL WATER QUALITY MONITORING RESEARCH UNIT

UNIT DIRECTOR: Anthony Okoh

STRATEGIC PURPOSE OF UNIT

The SAMRC Microbial Water Quality Monitoring Research Centre at the University of Fort Hare strives to be a highly profitable Centre of Excellence for the development of the next generation of microbial water resource specialists and to be primus inter pares in proffering solutions to the myriad of water quality challenges in South Africa and beyond. This mandate is driven by the serious problem of shortage of skilled manpower in the water and sanitation sectors especially amongst previously disadvantaged demographic groups in South Africa, and our research is mainly directed at finding solutions to this reality through primarily addressing the myriad of challenges in the water and sanitation sector in the Eastern Cape Province within the overarching aim of our research initiatives, which is "evaluating some key emerging challenges in microbial water quality and safety as a vehicle for skills and capacity development in water science especially amongst the previously disadvantaged demographic groups in the Province.

DELIVERABLES	2016/17	2017/18
Number of publications	52	5
Number of publications published in journals with impact factor greater than 5	-	-
Number of collaborative research projects completed	9	2
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	26	-
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	62	-
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	68	-
Number of postdoctoral fellows receiving co-/supervision	6	6
Number of early career scientists receiving co-/supervision	7	7
Number of Postdoc students receiving co-/supervision	6	6
Number of PhD students receiving co-/supervision	36	35
Number of MSc students receiving co-/supervision	21	27

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING of UD AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UD AND CORE RESEARCHERS
The Unit director (Prof AI Okoh) was elected and admitted into the following: 1. Member, Academy of Science of South Africa (ASSAf); 2. Fellow, African Academy of Sciences (AAS). 3. The UD (Prof AI Okoh) set a new publication record of the University of Fort Hare. He had 53 publications in 2017, thus breaking the publication record of 42 he set in 2012.	C2 (submitted application for re-rating in 2018)	37 (Google scholar citations)

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Cholera monitoring and response guideline	Water Research Commission	Prof AI Okoh
Development of efficient bioflocculants by exploring the microbial diversity of South African Eastern Cape Province for Novel Bioflocculants.	National Research Foundation (SANCOOP)	Prof AI Okoh
Molecular characterization of *Mycobacterium bovis* and *Mycobacterium tuberculosis* complex isolated from cattle in the ECP	National Research Foundation	Prof E Green
Staphylococcus as a cause of Mastitis in the Eastern Cape	UFH	Prof E Green
Exploration for novel xylanases and ligninases produced by actinobacterial species for biomass valorization. Funded under the South Africa-Tunisia Joint Science and Technology Research Programme	National Research Foundation	Prof UU Nwodo
Porcine circovirus: an emerging enzootic pathogen with huge economic impact on piggery business yet understudied in South Africa	National Research Foundation	Prof CL Obi
Climate Change and tick-borne bacteria (*Rickettsia* spp., *Anaplasma* spp., and *Ehrlichia* spp.) in ticks collected in the Karoo regions of Eastern Cape, South Africa	AAS/UK AID	Dr B Iweriebor
Genetics characterisation of Human Immunodeficiency Virus-1 and Hepatitis C Virus and parameters of their co-morbidity with Diabetes Mellitus in the Eastern Cape, South Africa	Discovery	Dr V Adeniyi
Molecular characterization of *Streptococcus agalactiae* isolated from pregnant women in Windhoek, Namibia and the Eastern Cape, South Africa, and the effect of phage based lysine on those isolates	National Research Foundation	Prof CL Obi
Diversity and drug-resistance profile of HIV in breast milk: an assessment of risks of mother-to-child transmission in women with suppressed versus non-suppressed serum viral load	Discovery	Dr V Adeniyi

CONTACT DETAILS

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UNIT NAME:

SAMRC/UCT RISK AND RESILIENCE IN MENTAL DISORDERS RESEARCH UNIT

UNIT DIRECTOR: Dan Stein

STRATEGIC PURPOSE OF UNIT

The rationale for a Unit on mental disorders lies on a number of key assertions. First, mental disorders are a major contributor to the local and global burden of disease; they are highly prevalent across the globe and yet they remain under-diagnosed and under-treated in comparison to physical illness – indeed they contribute disproportionately to the disease burden in low and middle income countries, and this burden is predicted to grow in future decades. Second, despite advances in our understanding of the neurobiology of mental disorders much remains to be understood about risk factors for and resilience to mental disorders. Third, understanding the pathogenesis and management of mental disorders has become increasingly tractable, given advances in methods such as brain imaging and neurogenetics, and given opportunities provided by local cohorts and international collaborations. Fourth, collection and analysis of "big data" from (mostly longitudinal) cohorts locally, and from (mostly cross-sectional) international collaborations, contributes to our ability to make real advances in our understanding of risk for and reliance to mental disorders, and so ultimately to their prevention and treatment.

We would emphasise that the work of the Unit is consistent with national priorities, with the South African Medical Research Council (SAMRC) goals, and with systematic international research priority setting exercises. For example, our projects advance the SAMRC strategic goal of leading the generation of new knowledge and facilitating its translation into policies and practices to improve health; we have produced and disseminated new scientific findings and knowledge on health, we have promoted scientific excellence and the reputation of South African health research; and we have provided leadership in the generation of new knowledge in health; we have facilitated the translation of SAMRC research findings into health policies and practices. Furthermore, our projects support innovation and technology development to improve health, and have built capacity for the long-term sustainability of the country's health research, other key SAMRC strategic goals. The country's national Medium Term Strategic Framework prioritises activities that can lead to a "healthy life for all South Africans"; these must include mental health efforts.

DELIVERABLES	2016/17	2017/18
Number of publications	84	96
Number of publications published in journals with impact factor greater than 5	17	31
Number of collaborative research projects completed	Projects are ongoing. >5 sub-projects completed.	Projects are ongoing. >5 sub-projects completed.
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	6	7
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	5	5
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	14	15
Number of postdoctoral fellows receiving co-/supervision unit	7	7
Number of early career scientists receiving co-/supervision	1	3
Number of PhD students receiving co-/supervision	18	17
Number of MSc students receiving co-/supervision	3	4

Identity & Mandate

The SAMRC /UCT Risk & Resilience in Mental Disorders Research Unit was established in April of 2017 as a new unit (albeit drawing on the expertise and experience of the previous MRC Unit on Anxiety & Stress Disorders).

The scope of the research spans a broad range from bench to bedside to beyond (community), and back. The proposed Unit undertakes research that encompasses two inter-linked areas:

Promoting clinical research and the translation of basic science into clinical research, to improve diagnosis, prevention and management of mental disorders in South Africa with a focus on risk and resilience factors, as they apply to key conditions in the local context.

Translating clinical evidence into population-level interventions to improve mental health through primary health care and community initiatives that can be applied in diverse settings across the country and the continent, with a focus on priority illnesses given the local burden of disease.

Specific objectives are:

1. To strengthen existing research and multi-disciplinary collaboration in mental disorders and mental health to improve health in South Africa and the region.
2. To develop research programmes specifically focused on translational research and new collaborations addressing major African mental disorders.
3. To provide a platform for the training and support of clinician-scientists working in the area of mental disorders and mental health, including women and African scientists.
4. To promote implementation of research findings from the fields of psychiatry and mental health into policy and practice.

Research Focus

The Unit focuses on key areas of mental health that contribute to South Africa and Africa's burden of disease in mental health, using methods that range from molecular neuroscience through to public health interventions to address **risk for and resilience to mental disorders**. In brief, key **clinical areas** addressed by the Unit include:

1. Risk and resilience factors,
2. Compulsive and impulsive disorders, and
3. Other key areas in mental health including both common mental disorders and serious mental disorders.

Key **research methods** employed by the Unit include:

1. Longitudinal cohort studies,
2. Neuro-imaging-Neuro-genetic studies, and
3. Clinical and public health interventions.

Impact

The impact of the Unit's research is evidenced by its contributions to research and policy in a number of different areas (such as those outlined in the previous section). One way to describe this impact, is to list some of the past barriers to research on mental disorders in South Africa, and to note how the Unit's work is addressing these:

First, there has been a **considerable lack of research capacity** in psychiatry and mental health. Some research efforts in psychiatry have been perceived as comprising "safari research", where data were gathered locally, but investments in capacity were not made. The Unit's research focuses on building research capacity, and on establishing collaborative research relationships nationally and internationally that further promote capacity building with all partners.

Second, **lack of funding** has been a significant barrier to local research in psychiatry and mental health. Only a very small proportion of SAMRC funding goes to mental health. However, support to the SAMRC Unit on Anxiety & Stress Disorder was crucially important in allowing leveraging of further funding; we have colleagues who used it to obtain substantive funding from the NIH, Wellcome Trust, and other sources. The Unit, by continuing to provide and expanding ongoing support for such leveraging capacity, allows further solidification and expansion of these efforts.

Third, the development and maintenance of infrastructure for large-scale psychiatric research requires **long-term collaborative relationships**. By training the next generation of leaders at collaborating institutions, we have the opportunity to create infrastructure that will endure. We have in the past established enduring relationships with local institutions; we continue to bring further partners on board and to ensure future sustainability.

Fourth, we continue to face relative **constraints in infrastructure** (and funding for purchase, maintenance, and operations) that are needed to conduct large-scale psychiatry research, e.g. refrigeration for blood samples, cloud-based technology for phenotypic data collection. We have developed considerable infrastructure and continue to work with our local partners in South Africa and Africa and with interested foundations to help address infrastructure needs.

Fifth, there are low levels of **mental health literacy and high stigmatisation of mental disorders**, not only in the community, but also amongst research-funders and policy-makers locally. Unit members have made significant efforts to address these issues, for example, by initiating a Mental Health Information Centre, and by influencing practices and policies locally and globally.

Global March for Science

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
Publications in 2017	Unit Director: A-rated	Unit Director has a Google scholar h-index of 121
A key publication in 2017 concerned brain imaging in OCD: ENIGMA-OCD, which is co-led by the Unit Director published the largest ever study of cortical volumes in OCD, delineating the neuroanatomy of this condition.	Prof Christine Lochner: C-rated	Prof Lochner has a Google scholar h-index of 38
Together with collaborators, we published the first global study of the prevalence of social anxiety disorder: showing that this condition is common and impairing across the globe.		
In terms of interventions, we published a paper on the use of cognitive interventions in methamphetamine dependence, suggesting that these decrease impulsivity.		

MAJOR RESEARCH PROJECTS STARTED AND COMPLETED IN THE REPORTING PERIOD		
PRPOJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
In 2017 we received several new NIH grants, including: 1) work on OCD brain imaging, 2) work on the effects of fetal alcohol exposure on brain, 3) work on gene expression in infants exposed to a range of stressors, and 4) work on a psychotherapeutic intervention in HIV-infected adolescents.	NIH	Stein et al

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PROGRAMME 2

MATERNAL, CHILD AND WOMEN'S HEALTH

PURPOSE OF PROGRAMME

To improve the health status and quality of life of women and children through high-quality scientific research that informs policy and practice, improves health services and promotes health.

UNITS

- Gender and Health Research Unit
- Maternal and Infant Health Care Strategies Research Unit
- Development Pathways Research Unit
- Child and Adolescent Lung Health Research Unit

STRATEGIC OBJECTIVES

- To conduct and promote research for the improvement of maternal, child and women's health, while also making an impact on gender inequity and gender-based violence To train and mentor high calibre postgraduate students in the field of maternal, child and women's health
- To synthesise evidence, optimise information and knowledge flow, influence policy and practice within the health sector and other sectors of government in relation to issues affecting maternal, child and women's health
- To develop interventions for prevention of gender-based violence for testing and evaluation of effectiveness in affected communities
- To test or evaluate interventions (programmes) to prevent gender based violence (GBV) and reduce maternal and neonatal deaths in primary and secondary levels of care

RESEARCH HIGHLIGHTS

UNIT NAME:

GENDER AND HEALTH RESEARCH UNIT

DIRECTOR: Naeemah Abrahams

STRATEGIC PURPOSE OF UNIT

The prevalence and impact of violence against women and girls are increasingly recognised as a huge burden on health and development. The health burden of violence against women and girls (VAWG) is also well recognised such as mortality due to femicide, as a driver of the HIV epidemic in

women and the multiple adverse mental health outcomes. The Gender and Health Research Unit (GHRU) recognises that quality research is the basis for action and to effect change and are leading national and global research that focuses on generating evidence to effect positive change in the lives of women and girls, their families, and communities to ensure that they reach their full potential.

The Unit has multiple research streams: a focus on describing the epidemiology of violence against woman and girls such as the national studies on femicide, child homicide and rape; developing and testing multiple interventions for prevention across the globe to impact on policy and programming and describing the long term health impact.

DELIVERABLES	2016/17	2017/18
Number of publications	22	32
Number of publications published in journals with impact factor greater than 5	2	3
Number of policy briefs produced	-	7
Number of collaborative research projects completed	1	-
Number of research projects commenced	5	9
Number of postgraduate students receiving supervision	17	18
Number of postdoctoral fellows receiving supervision	-	1

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CASE STUDY

SEXUAL VIOLENCE A COMMON FEATURE IN THE MURDERS OF WOMEN AND CHILDREN

A study detailing the prevalence of sexual homicides in South Africa shows that one in five (494 of 2670) women who were killed in 2009 died in the context of sexual violence. Similarly, for the same period, one in twelve (104 of 1277) child homicides had evidence of sexual violence as part of the murder.

Conducted in 2009, the mortuary-based study is the second of its kind following a similar study in 1999 which shows the relationship between sexual violence and murder in South Africa. The study, is among the few reporting on sexual homicide and has revealed that a decade later, sexual violence homicide incidents among women and children have increased from 16% in 1999 to 19% in 2009. The study showed a higher rate of sexual homicides in female children as opposed to male children.

2009 MORTUARY-BASED STUDY RESULTS

Although male children represented a 64.2% proportion of all children murdered over the period, female children were the majority among the child sexual homicide victims (8% male children and 92% female children). The age profile of the child victims showed that children between the ages 13 and 18 represented more than 50% of child sexual homicide cases.

"The increase in sexual homicide cases in South Africa is an indictment of the gender inequality and social norms that continue to condone violence against women and children, it is even more unacceptable that despite an overall decrease in female homicides, sexual homicides of women and children has increased," says lead author and Unit Director at the SAMRC's Gender and Health Research Unit Professor Naeemah Abrahams.

Globally, sexual homicide has been described as a rare event in many countries such as the United States where under 1% of all homicides (male and female) are identified as sexual homicides and in the United Kingdom where 3.7% of those found guilty of homicide included a sexual violent component. However sexual homicides are not rare events in South Africa with approximately 500 adult female cases and 104 children cases in 2009.

UNIT NAME:

SAMRC/UP MATERNAL AND INFANT HEALTH CARE STRATEGIES RESEARCH UNIT

UNIT DIRECTOR: Robert C Pattinson

STRATEGIC PURPOSE OF UNIT

The Unit runs three national clinical audit programmes:

a. Maternal Morbidity and Mortality Audit System (for maternal deaths),
b. Perinatal Problem Identification System, and
c. Child Health Care Problem Identification Programme.

These audit programmes have been adopted by the three ministerial committees and are part of their databases for their reports. From these reports problems are identified and evidence based solutions sought. In finding solutions we use various research methods and then test the implementation strategies in various parts of the country. Examples of these are:

- The Basic Antenatal Care (BANC) plus programme developed and tested by the Unit is now the standard practice used throughout the country for antenatal care.
- The ESMOE programme has been scaled-up to all districts in the country and its algorithms are being taught to pre-service students, all interns and doctors and midwives in the district, regional and tertiary hospitals.
- Kangaroo Mother Care (KMC) has also been introduced in all provinces and the Unit has helped introduce it and evaluate its functioning in a number of low-and-middle income countries
- Intrapartum care guidelines are being revised and tested currently

Unit's research focus areas

Developing and implementation of effective interventions in maternal, newborn and child healthcare at primary and secondary levels of care:

a. Ascertaining the prevalence of abnormal resistance indices determined by continuous wave Doppler (Umbiflow) performed in a low risk population of pregnant

women between 28 and 32 weeks pregnant and prevent stillbirths. The initial study demonstrated that using the Umbiflow in low risk pregnant women reduced the number of antenatal stillbirths by half. This finding is now being tested in nine new sites in South Africa and four other low-and-middle income countries.

b. Designing and testing ways to train healthcare professionals in emergency obstetric care by adapting the Essential Steps in Managing Obstetric Emergencies (ESMOE) programme.
c. Improve basic antenatal care by new strategies of providing novel referral systems.
d. Operational research on and evaluation of the implementation and scale-up of KMC and other maternal and newborn health interventions at different health-system levels.
e. To provide on-going information on the quality of perinatal and child health care services, identify the missed opportunities in these services and provide evidence based recommendations which if implemented would reduce perinatal and child deaths.
f. Revise the national guidelines for managing the care of women in labour.

Impact:

a. Analysis of the impact of the ESMOE-EOST programme in 12 health districts found a 29.3% reduction in maternal deaths overall and a 17.5% reduction in direct maternal deaths.
b. The introduction of the new BANC Plus programme has led to an approximately 50% increase in detection of pregnant women with hypertension. This hopefully will lead to a reduction in maternal deaths due to hypertension as prior to the introduction of BANC Plus the hypertension in these women would have been missed.
c. The scaling up of screening women classified as having low risk pregnancies with the Umbiflow can potentially reduce the number of antenatal stillbirths by half; around 4000 stillbirths per year.
d. Data from the three clinical audit programme (MaMMAS, PPIP and Child PIP) has been used in the triennial reports of the three ministerial committees (NCCEMD, NaPeMMCo, and CoMMiC) and these reports influence the strategic plans of the National Department of Health.

DELIVERABLES	2016/17	2017/18
Number of publications	23	14
Number of publications published in journals with impact factor greater than 5	3	3
Number of collaborative research projects completed	1	-
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	-	1 PhD
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	4PhDs, 4 MSc	3 PhD
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	-	2
Number of postdoctoral fellows receiving co-/supervision	-	2
Number of early career scientists receiving co-/supervision	-	-
Number of Postdoc students receiving co-/supervision	-	2
Number of PhD students receiving co-/supervision	-	3
Number of MSc students receiving co-/supervision	-	4

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
Significant reduction in maternal mortality following the implementation of the ESMOE-EOST Programme	Pattinson B1	Pattinson 42 Bergh 15
Significant reduction in antenatal stillbirths following the introduction of screening women classified as having low risk pregnancies using the Umbiflow apparatus	Pattinson B1	
Significant increase in the number of women detected antenatally with hypertension following the introduction of the BANC Plus programme	Pattinson B1	

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Scale-up of ESMOE	DFID	RC Pattinson
Scale-up EOST	Discovery Foundation	RC Pattinson
Siyakhula	Canadian MRC	U Feucht
LEAP for Quality (Lesotho action plan for improving quality of care for mothers, newborns and children)	World Bank	RC Pattinson
Umbiflow in Mamelodi	SAMRC/CSIR	BS Nkosi

CONTACT DETAILS

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UNIT NAME:

SAMRC /WITS DEVELOPMENTAL PATHWAYS FOR HEALTH RESEARCH UNIT

UNIT DIRECTOR: Shane Norris

STRATEGIC PURPOSE OF UNIT

Summary: The SAMRC/Wits Developmental Pathways for Health Research Unit (DPHRU) was established in 2011. This is DPHRU's seventh year, and in 2015 the Unit had its first five-year review, which was successful and a renewal for another five years (2016-2021).

The research activities of DPHRU align with two national priorities:

(i) Improving maternal and child health; and
(ii) Reducing obesity and metabolic disease risk.

Research vision: To improve the health of South Africans by reducing the risk of metabolic disease.

Research mandate: To investigate genetic, physiological, psychosocial and lifestyle determinants of growth and development, risk of metabolic disease, and healthy ageing through innovative multi-disciplinary methodologies across the life-course so as to improve health in South Africa.

Research structure: We utilise a life-course and intergenerational epidemiology framework to investigate:

(i) maternal and child health and nutrition,
(ii) growth, psychosocial and physical development, and
(iii) obesity and metabolic disease risk in South Africa.

Lifestyle, growth & development pathways

From both scientific research and policy perspectives, confronting the developmental origins of disparities in physical and psychological development and metabolic risk early in life, is an important strategy to healthy ageing. South African formative and intervention research in the area of developmental origins of health and disease is critically needed in order to address research gaps and provide evidence for policy formulation to help deal with the complex burden of disease in South Africa. DPHRU is well positioned to address this need through its research programme and scientific expertise in this area.

DELIVERABLES	2016/17	2017/18
Number of publications	69	57
Number of publications published in journals with impact factor greater than 5	11	14
Number of collaborative research projects completed	3	4
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	6	12
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	36	37
Total number of students (Postdoctoral, Doctoral and Master) **directly working** on SAMRC funded or co-funded projects	15	37
Number of postdoctoral fellows receiving co-/supervision	3	5
Number of early career scientists receiving co-/supervision	1	3
Number of PhD students receiving co-/supervision	28	30
Number of MSc students receiving co-/supervision	8	7

UNIT DIRECTOR AND CORE RESEARCHERS	CURRENT NRF RATING	H- INDEX
Professor Shane Norris (UD)	Re-rating in 2018/19	33
Professor John Pettifor	A2	37
Associate Professor Lisa Micklesfield	C2	19
Dr Catherine Draper	C2	15
Dr Lisa Ware	C3	11
Dr Rihlat Said Mohamed	First rating application in 2018/2019	5

CASE STUDY

SAMRC /WITS DEVELOPMENTAL PATHWAYS FOR HEALTH RESEARCH UNIT

MAJOR BREAKTHROUGHS AND HIGHLIGHTS

Gestational Diabetes Mellitus (GDM) unmasked in urban South Africa

Little data exists on GDM in Africa with GDM prevalence figures existing for only 11% of the African continent. Our Soweto GDM screening study is the largest GDM prevalence study in South Africa to date. We found a GDM prevalence of 9.1% amongst black South African women living in urban Soweto. Whilst universal screening for GDM may be unrealistic in South Africa's heavily burdened public healthcare system, the use of a fasting plasma glucose screen was shown to be highly sensitive (83.3%) in identifying women with GDM and should be considered as a possible screening tool. Additionally, repeated ultrasound measures identified the effects of GDM as early as 16-18 weeks gestation, with GDM-exposed male fetuses having larger abdominal circumferences than unexposed fetuses. This highlights that sexual dimorphism in relation to *in utero* exposure to GDM exists with male fetuses being particularly susceptible to the hyperglycaemic environment and abdominal circumference being an indicator of increased fetal growth. A low rate of macrosomia and large-for-gestational age neonates was observed amongst the GMD-exposed group of neonates compared to historical GDM populations.

Paediatric hypertension in South Africa: an underestimated problem calling for action

The prevalence of hypertension (>95th percentile for age, sex and height) in Birth to Twenty cohort at age five years was 22%. In addition, 60% of the five year olds with elevated blood pressure maintained that status at 18 years of age. Distinct blood pressure trajectories are set as early as from five years of age, which are predicted by rapid weight gain and linear growth, older maternal age, parity and socioeconomic status.

Early child development in rural South Africa

Work done at UCT in collaboration with SAMRC/Wits DPHRU investigated executive function in preschool children from low-income urban and rural settings, using the Early Years Toolbox. This is some of the first research to assess executive function in typically developing South African children. Preliminary findings indicate that the sample of children performed better than the Australian children on whom the Early Years Toolbox norms are based. Preliminary findings also indicate a significant positive association between executive function and school readiness, as well as executive function and gross motor skills in the study sample, which confirms research from other global settings. These results are informing the development of intervention strategies to optimise cognitive development in preschool children from low-income settings.

Increasing obesity in adolescent females

We found that there was an upsurge in the prevalence of overweight and obesity in females during adolescence peaking at 29.5% in urban black females at 17 years. Males had a greater prevalence of undernutrition in early childhood than their female peers. Taller final attained adult height was associated with lower adult BMI. Faster adolescent pubertal development and growth was associated with greater adult fat mass in females.

Physical activity across the life-course

Highlights over the past year have contributed to understanding what determines physical activity at the different life-stages, and how this is associated with various outcomes including non-communicable diseases.

It is clear from our work in urban and rural communities that physical activity patterns differ between these communities with young adult women from Soweto participating in nearly double the amount of time in leisure time activities compared to their rural counterparts (four vs two hours per week), but also approximately six hours of sitting time a day compared to five hours a day in young adult women from rural Agincourt. This study also showed that the role of physical activity in the association between socio-economic status and BMI differs in these young adult women from different communities. Other highlights have included understanding the patterns and correlates of objectively and subjectively measured physical activity and sedentary behaviour in pregnant black South African women and developing a methodology to objectively measure physical activity in infants.

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT/RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Soweto First 1000 Days Cohort: Impact of maternal health on fetal, delivery and infant outcomes – *Completed*	UK MRC; Gates; SA MRC	Prof Shane Norris
Prevalence of gestational diabetes mellitus (GDM) in Soweto, South Africa Study - Completed	World Diabetes Foundation and SAMRC	Prof Shane Norris
H3Africa Collaborative Centre research study: genomic and environmental risk factors for cardiometabolic disease in Africans - *Completed*	NIH	Prof Michele Ramsay (Profe Shane Norris Soweto Site PI)
Evaluating a portable near-infrared device to assess body composition in African infants - *Completed*	Gates Foundation	Professor Alistair McEwan
Project IINDIAGO: Integrated Intervention for Diabetes Risk after Gestational diabetes - *Started*	International Development Research Centre (Canada)	Professor Shane Norris; Professor Dinky Levitt
Project NTSHEMBO (HOPE): improving the health and nutrition of adolescents and their infants to reduce the intergenerational risk of metabolic disease - Started	UK MRC	Professor Shane Norris
Impact of early child development on adult human capital and wellbeing: Birth to Twenty Plus Cohort - *Started*	Gates Foundation	Professor Aryeh Stein (Professor Shane Norris Birth to Twenty Plus Cohort PI)
Determining the drivers of infant growth to prevent stunting in urban South Africa - *Started*	DST-NRF Centre of Excellence in Human Development; DST-NRF Centre of Excellence in Food Security and International Atomic Energy Agency	Dr Rihlat Said Mohamed
Healthy Lives Trajectory (HeLTI) Cohorts (Canada, China, India and South Africa) - *Started*	SAMRC and Canadian Institute of Health Research	Professor Shane Norris South Africa (PI)
Longitudinal study of dietary and sugar-sweetened beverage intake in urban adolescents and adults - *Started*	International Development Research Centre (Canada)	Professor Karen Hofman & Professor Shane Norris
GDAR (Global Dietary and Activity Research Network)- *Started*	UK MRC	Professor Shane Norris & Associate Professor Lisa Micklesfield Co-Investigators
SAMSON (Sub-Saharan Musculo-skeletal Network) - *Started*	UK MRC	Associate Professor Lisa Micklesfield Co-Investigator
TALENT (Transforming Adolescent Lives through Nutrition) Network - *Started*	UK MRC	Professor Shane Norris Co-investigator

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UNIT NAME:

SAMRC/UCT CHILD AND ADOLESCENT HEALTH RESEARCH UNIT

UNIT DIRECTOR: Heather Zar

STRATEGIC PURPOSE OF UNIT

The SAMRC/UCT Child and Adolescent Health Research Unit focuses on key health concerns affecting children and adolescents in South Africa and in Africa. A primary focus is on child lung health and the intersection of infection with emergence of chronic non-communicable diseases, addressing lung health from birth through adolescence. Studies focus on the epidemiology, aetiology and risk factors for acute and chronic lung disease and the impact of acute disease on child health and on the development of chronic disease. Research encompasses a broad range of methodologies from epidemiology to clinical science to laboratory-based methods.

Goals and objectives of intended research:

- **To promote clinical research and the translation of basic science into clinical research** to improve diagnosis, prevention and management of specific priority childhood diseases that shape child health in South Africa with a focus on pneumonia, tuberculosis, HIV-associated lung diseases and chronic illnesses such as asthma.
- **To translate clinical evidence into population-level interventions** to improve child health through primary healthcare and community initiatives that can be applied in diverse settings across the country and the continent, with a focus on priority illnesses.

Specific Objectives:

- To expand and strengthen research and collaboration in child health to improve health in South Africa and the region.
- To develop a translational, cutting edge research programme focused on childhood diseases including national priorities such as pneumonia, HIV and TB.
- To investigate the impact of early exposures including infectious diseases on child health and on the development of chronic diseases.
- To increase understanding of the risk factors, host responses and long term outcome of early childhood illness.
- To enhance the health of children and adolescents by developing new strategies for diagnosis, management and prevention of diseases.
- To provide a platform for the training of clinician scientists in child health.
- To promote implementation of research findings into policy and practice.

DELIVERABLES	2016/17	2017/18
Number of publications	39	37
Number of publications published in journals with impact factor greater than 5	12	7
Number of collaborative research projects completed	-	-
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	5	8
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	6	7
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	27	51
Number of postdoctoral fellows receiving co-/supervision	8	10
Number of early career scientists receiving co-/supervision	-	-
Number of Postdoc students receiving co-/supervision	8	10
Number of PhD students receiving co-/supervision	22	22
Number of MSc students receiving co-/supervision	18	25

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
Findings from the Unit are the first to report on the sensitivity of the Xpert MTB/RIF Ultra assay as compared to the Xpert assay test in induced sputum samples from children	Prof Heather Zar: A-1 -rated	Prof Heather Zar: H-index: 52 Prof Mark Nicol: H-index: 42
(1) Findings from CTAAC are amongst the first to report that lung function in HIV-infected adolescents is lower than that of uninfected matched controls, and that pneumonia or TB reduce lung function (2) Antiretroviral therapy (ART) is cardioprotective in perinatally infected adolescents. Left ventricular hypertrophy is associated with late start of ART and left ventricular diastolic dysfunction is related to advance stage of HIV (3) Abacavir exposure is associated with insulin resistance. (4) Bone density in HIV-infected appears significantly different from uninfected matched controls especially in late puberty. Lopinavir/Ritonavir exposure and high viral load are risk factors for low bone density and exposure to Efavirenz seems to be associated with better bone density	Prof Heather Zar: A-1 -rated	Prof Heather Zar: H-index: 52

OTHER MAJOR HIGHLIGHTS

Novel findings from the Drakenstein child health study include:
(1) very high incidence of TB disease and infection and strong association with childhood pneumonia
(2) identification of toluene as a novel environmental exposure associated with severe pneumonia and hypoxia
(3) identification of antenatal exposures to tobacco smoke or indoor air pollution rather than postnatal exposures as a major determinant of pneumonia or wheezing in infants
(4) patterns of nasopharyngeal colonisation in first year of life and impact of vaccination
(5) association of maternal psychosocial stress and an increased risk of wheezing in infants
(6) impact of hazardous alcohol use during pregnancy and infant growth indicators at birth
(7) increased child risk of early life developmental delays whether mothers are exposed to post-traumatic stress disorder
(8) early life lower respiratory tract illness impairs lung function at one year, independent of baseline lung function

MAJOR RESEARCH PROJECTS THAT WERE STARTED or COMPLETED IN THE REPORTING PERIOD

PROJECT /RESEARCH TITLE	FUNDER	PRINCIPAL INVESTIGATOR
Longitudinal analysis of nasopharyngeal colonisation and pneumonia – *Started*	Bill & Melinda Gates Foundation	Heather Zar/Mark Nicol
The Global Asthma Network: Global Surveillance Phase One: Prevalence, Severity, Management, and Risk Factors in Cape Town, South Africa – *Started*	Allergy Society of SA	Heather Zar
Validation of Biomarkers of Paediatric TB and further development for use in diagnosis of childhood TB - Started	National Institutes of Health (NIH)/NIAID	Heather Zar/Mark Nicol
Center for Research on the Respiratory Microbiota of African Children (ReMAC) – *Started*	National Institutes of Health (NIH), National Human Genome Research Institute	PI: Mark Nicol Co-PI: Heather Zar
Transgenerational Effects of Maternal Stressors: Investigating the Role of Infant Gene Expression – *Started*	National Institutes of Health (NIH), National Institutes of Mental Health (NIMH)	PIs: Dan Stein, Koen, Ressler, Wingo

MAJOR RESEARCH PROJECTS THAT WERE STARTED or COMPLETED IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Limited Chest MRI for Detection of Intrathoracic Lymphandenopathy in Children with Suspected TB – *Started*	National Institutes of Health (NIH)	PI: Tanyia Pillay, Co-Is: Savvas Andronikou, Heather Zar
Non-invasive Tuberculosis Diagnosis – *Started*	Bill & Melinda Gates Foundation	PI: Gerard Cangelosi, Co-I: Mark Nicol, Heather Zar
RSV Vaccination Trial, Paarl: *A phase 3, randomized, observer-blind, placebo-controlled, group-sequential study to determine the immunogenicity and safety of a Respiratory Syncytial Virus (RSV) nanoparticle vaccine with aluminium in healthy third-trimester pregnant women; and safety and efficacy of maternally transferred antibodies in preventing RSV disease in their infants (RSV-M-301) – Started*	Novavax Inc.	PI: Heather Zar, Sub-I: Attie Stadler, Michelle du Plessis, Adil Khan
RSV Vaccination Trial, Red Cross War Memorial Children's Hospital: *A Phase 2B Randomised, Double- Blinded, Placebo-Controlled Study to Evaluate the Safety and Efficacy of MED18897, A Monoclonal Antibody with an Extended Half-Life against Respiratory Syncytial Virus. In Healthy Preterm Infants (Site 1) – Completed*	Medimmune	PI: Heather Zar

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Addressing key health concerns in children

PROGRAMME 3

HIV,AIDS, TB AND OTHER COMMUNICABLE DISEASES

PURPOSE OF THE PROGRAMME

To conduct research on preventing HIV and related co-morbidities including TB and other infectious diseases, such as malaria. It seeks to contribute to the national and international science system by testing TB drugs and malaria insecticides, carry out the AIDS Vaccine project through coordinating development and test HIV vaccines in South Africa, in partnership with our funders and our regional counterparts.

UNITS THAT CONSTITUTE THIS PROGRAMME

- HIV Prevention Research Unit
- Centre for Tuberculosis Research Unit
- Office of Malaria Research (MOMR)
- HIV-TB Pathogenesis and Treatment Research Unit
- Molecular Mycobacteriology Research Unit
- Respiratory and Meningeal Pathogens Research Unit
- Diarrhoeal Pathogens Research Unit

Engaging learners through science

STRATEGIC OBJECTIVES

- To increase the body of knowledge informing the development of the response to prevention and curative interventions for HIV, AIDS, TB and other communicable diseases
- To increase the contribution to the national health system by maintaining national health research facilities that provide services for the prevention of HIV and related co-morbidities, including TB
- To provide research grants to principal investigators responsible for HIV research in line with European and Developing Countries Clinical Trials Partnership (EDCTP) TESA mandate, provide financial support to researchers within neighbouring countries for training in laboratory and research techniques, utilising funds from sponsors and Unit savings
- To provide leadership and coordinate activities for training and development of young scientists and employees at different levels and to work towards retention of critical skills and talent management thereof
- To ensure appropriate training of clinical, laboratory and other research staff, and communities in and around the research sites
- To increase the body of scientific knowledge through research translation into products, patents, papers, policy practice and health promotion (including to the general public) by organising meetings, seminars, workshops and conferences
- To design and construct the most appropriate and promising HIV candidate vaccines for southern Africa and to increase the number of interventions developed for TB and HIV
- To increase the body of scientific evidence that relates to testing and evaluating medical equipment and devices that are developed for the prevention of HIV and related co-morbidities.

RESEARCH HIGHLIGHTS

UNIT NAME:

HIV PREVENTION RESEARCH UNIT

UNIT DIRECTOR: Gita Ramjee

STRATEGIC PURPOSE OF UNIT

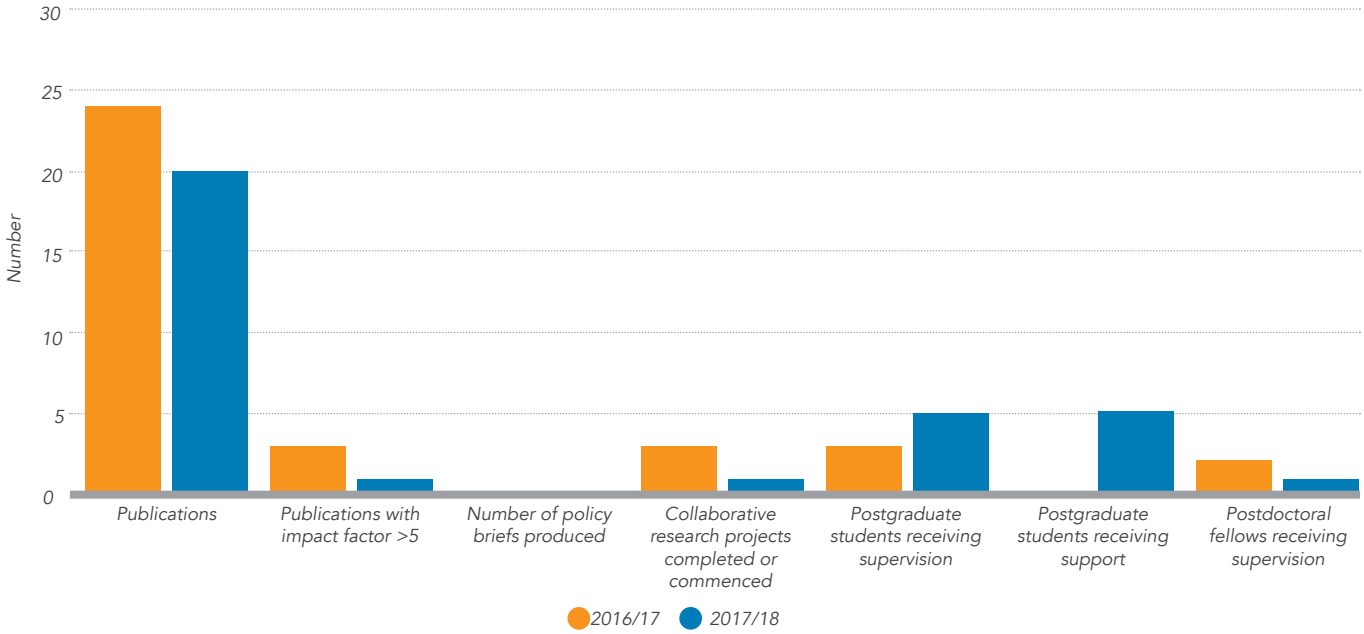
The HIV Prevention Research Unit (HPRU) is one of the largest units of the South African Medical Research Council and is located in Durban, KwaZulu-Natal. The Unit is uniquely placed to address the HIV burden of disease in South Africa. KwaZulu-Natal is also the epicentre of the global HIV epidemic leading to an enormous global and national interest to address the high HIV infection rates seen among men, women and adolescents in this region. HPRU is involved in cutting-edge research to address the HIV epidemic in sub-Saharan Africa as part of the global initiative to curb the epidemic.

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD

FUNDER	PROJECT /RESEARCH TITLE	PRINCIPAL INVESTIGATOR
MTN microbicide trials network	MTN 025: A Phase 3B Open-Label Follow-on Trial to Assess the Continued Safety of and Adherence to a Vaginal Ring Containing Dapivirine in Women. The project is a follow-up trial to the ASPIRE trial, which showed for the first time in the history of the HIV epidemic among women, that a intravaginal ring containing an antiretroviral agent called Dapivirine can reduce HIV acquisition by 29% among women at high risk of HIV. The data from the trial are currently under review by drug registration authorities to register the first product for HIV prevention controlled by women.	Prof Gita Ramjee

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
FUNDER	**PROJECT /RESEARCH TITLE**	**PRINCIPAL INVESTIGATOR**
HIV VACCINE TRIALS NETWORK	**HVTN 702:** A pivotal phase 2b/3 multi-site, randomized, double-blind, placebo-controlled clinical trial to evaluate the safety and efficacy of ALVAC-HIV (vCP2438) and Bivalent Subtype C gp120/MF59 in preventing HIV-1 infection in adults in South Africa. This trial builds on the success of the Thai RV144 trial which showed a 31% effect in HIV prevention. The vaccine currently being tested is modified to the circulating HIV strain in South Africa. The primary objective is to evaluate efficacy with the secondary objectives assessing safety and tolerability. The HPRU sites will be contributing the largest number of participants to this study. A total of 931 women out of 5400 healthy women will be enrolled at HPRU sites making HPRU one of the largest contributors to this research.	Dr Nishanta Singh Dr Vaneshree Govender
	HVTN 703: A phase 2b study to evaluate the safety and efficacy of VRC01 broadly neutralizing monoclonal antibody in reducing acquisition of HIV-1 infection in women in sub-Saharan Africa. The current trend in HIV prevention is to test broadly neutralizing antibodies as a potential passive immunization modality in HIV prevention. 1500 HIV negative women aged between 18 to 50 years will be included in sub-Saharan Africa. HPRU contributed a total of 195 women. Enrolment is complete and the women are currently being followed –up.	Dr Logashvari Naidoo Dr Elizabeth Spooner
	HVTN 705: A multicentre, randomized, double-blind, placebo-controlled phase 2b efficacy study of a heterologous prime/boost vaccine regimen of Ad26. Mos4. HIV and aluminium phosphate-adjuvanted Clade C gp140 in preventing HIV-1 infection in women in sub-Saharan Africa. The study has commenced and HPRU will contribute a total of 382 women.	Dr Logashvari Naidoo Dr Vimla Naicker
saMRC advancinglife	**Epidemiological studies to map the HIV epidemic among women in Durban over the last decade:** The objective of this study funded by the SAMRC are to a) evaluate the geographic spread of HIV epidemic among the greater Durban area over the last decade. The final outcomes suggested that we have had very little impact on HIV incidence among women; b) Evaluate the sociodemographic and behavioural characteristics among various recruitment areas to better understand the risk factors for HIV seroconversion- the study is ongoing; c) To assess the common risk factors for HIV seroconversion to develop a validated risk assessment tool for targeted HIV prevention. Outcome: The tool has been developed and validated.	Prof Gita Ramjee

DELIVERABLES



MAJOR COMMUNITY ENGAGEMENT/S		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
Clinical Trial Participant Workshops on Oral PrEP	• Engage participants on PrEP and other available HIV prevention methods (MMC, test and treat etc.) • Inform and provide participants oral PrEP in clinical trials • What are some of the barriers to oral PrEP uptake (acceptability, adherence, cost) • How can we overcome these challenges	SAMRC, HPRU, KZN Department of Health, Community stakeholders from all CRS (CWG, CAB, peer-educators)
Advocacy, civic society and community stakeholders in the science agenda	How are advocates engaged in the top ten causes of disease and mortality in the country (via conferences, workshops, training sessions, summits, etc). The HPRU has several community working groups that comprises advocates and key stakeholders in the community who partner with HPRU and serve as the link between scientists and the community. The CWG members are involved in scientific protocol training and participate in National and International meetings. In addition, they advise on the content of the study specific informed consents. Workshops and training sessions occur every quarter.	Community stakeholders across the greater Durban region, NGOs, CBOs, Provincial Department of health, health clinics and local hospital representatives
Youth Engagement in Research and access to prevention modalities	HPRU is the process of developing protocols targeting young men and women. The project aims to understand HIV prevention as well as challenges in linkage to care. Additional research will be undertaken to assess interest in vaccine and other HIV prevention modalities.	SAMRC, HPRU Ethekweni youth council, youth ambassadors, Operation Sukuma Sakhe (OSS)

CONTACT DETAILS

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UNIT NAME:

CENTRE FOR TUBERCULOSIS RESEARCH UNIT

UNIT DIRECTOR:

Rob Warren

STRATEGIC PURPOSE OF UNIT

Strategic Objectives:

- To produce and disseminate new scientific findings and knowledge on health
- To promote scientific excellence and the reputation of South African health research
- To provide leadership in the generation of new knowledge in health
- To facilitate the translation of SAMRC research findings into health policies and practice

Unit Purpose

- To be a Centre of Excellence that will foster knowledge-based solutions to health challenges facing Africa through fundamental and translational research and quality training of students.
- To expand our research focus areas without weakening current strengths, i.e. develop expertise outside of TB and to diversifying through collaboration.
- To achieve societal impact by engaging with communities – to ultimately change the health of the nation.
- To transform and decolonise – i.e. to develop a healthy student and staff pipeline by increasing the diversity of the unit.
- To implement training programmes and upskill staff and students (to graduate BSc Honours, MSc and PhD candidates).
- To attain accreditation.
- To develop and strengthen networks to promote collaboration and skills transfer.
- To diversify and grow income base by attracting funding to increase outputs (and impact) and to develop capital for investment in infrastructure.
- To generate knowledge that can be used to improve indirect factors affecting the health of the nation; i.e. food insecurity, environmental changes; zoonotic diseases.

DELIVERABLES	2016/17	2017/18
Number of publications	90	96
Number of publications published in journals with impact factor greater than 5	35	30
Number of policy briefs produced	1	1
Number of collaborative research projects completed or commenced in reporting period	26	32
Number of postgraduate students receiving supervision	89	86
Number of postdoctoral fellows receiving supervision	29	30

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Usability evaluation of Stool Processing Kit (SPK) prototypes for use in conjunction with Xpert MTB/RIF (Ultra) assay for improved diagnosis of TB and detection of rifampicin resistance in children	FIND	Grant Theron
Pharmacokinetic and clinical correlates of M. tuberculosis micro-heteroresistance in HIV-associated multidrug resistant TB	NIH	Robin Warren
Using Biomarkers to Predict TB Treatment Duration	EDCTP and Bill & Melinda Gates Foundation	Gerhard Walzl
Isolation and characterisation of *Mycobacterium tuberculosis* persisters	NRF	Samantha Sampson
Human genetics of TB resistance in HIV-infected persons	NIH	Eileen Hoal van Helden

MAJOR COMMUNITY ENGAGEMENTS DURING THE REPORTING PERIOD		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
Community Engagement	• Engage clinic staff at Khayelitsha Site B about recruitment and progress for the ResisTB study, which investigates HIV positive individuals who seem to be resistant to TB infection. • TB under the microscope - A collaborative exhibition between Scientists from the SAMRC CTR and social scientists, that form part of a greater collective called "Swallowing the World: A Multidisciplinary Curatorial Project on Tuberculosis in South Africa. The project birthed from the desire to share scientific research on TB with the broader public. Through collaboration with a number of scientific researchers from the SAMRC CTR and DST/NRF CBTBR, the body of work consists of enlarged microscopic images of *Mycobacterium tuberculosis* – the bacteria that causes the disease, Tuberculosis. The first exhibition was held as an initiative of the "First Thursdays" in Cape Town CBD. Since its inception in December 2017, the art was showcased at the CRICK AFRICAN NETWORK Scientific symposium on the 26 January 2018. • Elsies River Food Drive: - Provide healthy meals to community members in need on a weekly basis. • Mandela Day TB and HIV awareness drive – Adriaanse Clinic. Provided music and activities for children, provided 500 meals to community members and presented an informative presentation and had a question and answer session in Adriaanse community hall, attended by approximately 500 community members.	Khayelitsha Site B clinic staff Wellcome Centre Infectious Diseases Research in Africa SAMRC, DST/NRF Centre of Excellence for Biomedical TB Research, SU, Wellcome Trust and SAMRC SU Immunology Research Unit, Molecular Biology Clinical Research Unit, Bruce's Catering, Community Advisory Board, Investec Social Investments and Elsiesriver community members
Student Engagement	• Gave a talk entitled "A new vision for Genetics in the Biology Curriculum". The aim was to engage with teachers and suggest new genetics topics that should be included in the school curriculum. • Promoting public engagement within the Centre to engage the public. Presentations promoting Science and Research were given to the following schools: Somerset College, Fairmont High, Bishops High, Bridge House, Harry Gwala High Rondebosch Boys, Stellenbosch High, Westerford High, Rustenburg Girls High, Paul Roos Boys High and Bloemhof Girls High. This platform has resulted in over 1500 student interactions. • Winelands Community Engagement Project - This Project was established based on the "TB under the microscope" project. During March and April 2018, three towns in the winelands were visited to exhibit the Art as well as to showcase how the SAMRC CTR is contributing to the knowledge base of TB research in South Africa. We visited Worcester, Robertson and Stellenbosch. During these expos, learners between the ages of 10 and 18 from all the schools in the area were transported to the venues. For the Expo, 4 stations were on display to depict various themes in TB Research. These include: Signs and Symptoms, Diagnosis, Laboratory Science etc. All Scientists from the SAMRC CTR actively participated in this project.	Western Cape Education Department, Teachers, SU Centre for Medical Ethics & Law SAMRC, DST/NRF Centre of Excellence for Biomedical TB Research, SU Department of Education, SAMRC CTR, DST/NRF CBTBR, SU, SATVI, UCT.

MAJOR COMMUNITY ENGAGEMENTS DURING THE REPORTING PERIOD		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
Translational Research	• The Animal TB group have been part of a number of meetings with DAFF and the National Animal Health Forum regarding the amendment of policies for TB management in buffalo and rhino. In addition, the group is liaising with private wildlife veterinarians to assist with their TB management plans. • Collaborations with provincial veterinarians (state) regarding research priorities. • The animal TB group have shared communication regarding their research and impact through media (recent radio; German film crew in Dec, and Danish film crew-March 2018) on TB in wildlife. • The group have been successful in sharing research outputs with stakeholders through reports and interactions with the vets /owners /state vets /SANParks / Ezemvelo Wildlife folks involved in various projects and they have expressed their gratitude for all the reports. • In March 2018, the group presented research findings to interested stakeholders at conferences including the South African Veterinary Association Wildlife Congress.	Department of Agriculture, Forestry and Fisheries (DAFF). National Animal Health Forum, SANParks, Ezemvelo Wildlife, Private and State Veterinarians.
	• The Clinical Epidemiology group recently completed or initiated several important translational research projects. In the TB diagnostics arena, this includes a study that documented how many diagnostic laboratories worldwide do the only molecular test for multidrug resistant TB incorrectly and that this negatively affects performance. This study's findings are being incorporated into guideline documentation, including that produced by the Global Laboratory Initiative led by the World Health Organization. • Relatedly, we also showed how the widely-used Xpert MTB/RIF cartridge can be "hacked" to do further drug susceptibility testing; thereby potentially obviating the need for additional specimen collection that causing diagnostic delays. In terms of ongoing projects, we are evaluating new TB diagnostics (Xpert Ultra) in a routine context in special patient populations as part of the SAMRC Flagship BAR-TB project, as well as patients with suspected extra pulmonary TB. This is generating valuable data on how the potential effect of these technologies can be maximised in a programmatic context. Importantly, our diagnostics projects often involve reporting novel test results for patient management. There is hence a critical service delivery aspect where hundreds of patients have received a standard of care that exceeds that routinely available. Other recently launched diagnostics projects include collaborations with commercial (Vision Biotech, Quidel) and academic entities (Stanford University, University College London). • Another recently launched initiative with high translational potential is the human aerosol chamber (HAC) study. Here, we use a unique custom-made device to measure TB patient infectiousness. We are collaborating with the City of Cape Town to use this platform to investigate if alternative, less-stigmatising forms of respiratory control (e.g., buff) are effective at reducing infectious aerosol generation and hence potentially transmission. The City is planning a campaign to promote respiratory control in high TB communities, and alternative (and effective) forms of respiratory control are needed to gain patient acceptability. • In collaboration with Harvard University, we are evaluating if personal carbon dioxide monitors, which are a proxy of rebreathed air, predict TB infection in health workers and can be used to improve occupational health.	WHO, SAMRC, Vision Biotech, Quidel, Stanford University, University College London and City of Cape Town

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UNIT NAME:

OFFICE OF MALARIA RESEARCH

UNIT DIRECTOR: Rajendra Maharaj

STRATEGIC PURPOSE OF UNIT

Although the case numbers has steadily decreased in the past few years, malaria is still a disease of the poor and 10% of the population live in a malaria risk area. Over 90% of the reported cases are a result of Plasmodium falciparum infections by *An. arabiensis*, the principal mosquito vector. Malaria is endemic in the provinces of KwaZulu-Natal, Mpumalanga and Limpopo.

The role of the Office of Malaria Research is to generate new knowledge and tools to further the malaria elimination agenda and to develop a platform for malaria scientists in the country and sub-region to share research information that contributes to the National Department of Health's elimination agenda.

The objectives of MOMR is to:

- to conduct and support research that generates new knowledge and tools to further the malaria elimination agenda;
- to encourage the development of a network of scientists and create a platform for malaria scientists in the country and sub-region to share limited resources and expertise; and
- to raise funding to conduct essential, relevant research focusing on the parasite and vector that contributes to the regional elimination agenda.

DELIVERABLES	2016/17	2017/18
Number of publications	4	3
Number of publications published in journals with impact factor greater than 5	-	-
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	4	4
Number of postgraduate students receiving supervision	1	3
Number of postdoctoral fellows receiving supervision	-	-

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD

PROJECT /RESEARCH TITLE	FUNDER	PRINCIPAL INVESTIGATOR
Laboratory and field evaluation on a new insecticide formulation – SumiShield	Sumitomo Chemicals	Prof R Maharaj
Laboratory evaluation of a new insect growth regulator – Dimilin	WEFCO	Prof R Maharaj
Field and laboratory trials on insecticide - Fludora Fusion	Bayer (concluded January 2018)	Prof R Maharaj
Eliminating residual malaria transmission in KZN through Winter Larviciding	SAMRC (concluded February 2018)	Prof R Maharaj
Laboratory and field evaluation of possible insecticide – Mozsol	IDC – Completed June 2018)	Prof R Maharaj

MAJOR COMMUNITY ENGAGEMENTS DURING THE REPORTING PERIOD

NAME OF EVENT	PURPOSE	PARTNERS/FUNDERS
Information sharing and education on malaria control	Inform and educate communities on the tools used to control malaria.	Office of Malaria Research, KZN Department of Health

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UNIT NAME:

SAMRC/CAPRISA/UKZN HIV-TB PATHOGENESIS AND TREATMENT RESEARCH UNIT

UNIT DIRECTOR: Salim S. Abdool Karim

STRATEGIC PURPOSE OF UNIT

The purpose of the SAMRC-CAPRISA HIV-TB Pathogenesis and Treatment Research Unit is to undertake research to reduce morbidity and mortality from HIV-TB co-infection. The unit addresses the primary cause of death among people living with HIV, in a setting where HIV infection is the largest single contributor to South Africa's mortality burden and is among the highest research priorities in the current SAMRC Strategic Plan.

The overarching research focus of this unit is the interaction between HIV and TB, focusing on treatment and pathogenesis. HIV-infected patients are highly susceptible to TB in the general population and it is widely recognised that TB is the most common opportunistic infection and the leading cause of death among people living with HIV. Given the scale of these epidemics and the magnitude of the impact of HIV-TB co-infection in South Africa, the research mandate of the Unit is directed towards:

(i) Enhancing the translation of clinical trial evidence into effective integrated HIV-TB services through implementation science and thereby improve survival of HIV-TB co-infected patients
(ii) Improving the survival of HIV-TB co-infected patients by optimising their treatment
(iii) Generating new knowledge on the pathogenesis and biological interaction between HIV and TB, specifically focusing on identifying immunological mechanisms associated with the high risk of TB recurrence in HIV-infected patients
(iv) Impacting policies and practices aimed at reducing the burden of the dual epidemics in South Africa
(v) Building research capacity in South Africa.

The research agenda for the Unit includes the disciplines of clinical medicine, epidemiology, biostatistics, immunology, microbiology and public health with five focus areas that target HIV-TB co-infection.

DELIVERABLES	2016/17	2017/18
Number of publications	12	16
Number of publications published in journals with impact factor greater than 5	1	3
Number of collaborative research projects completed	2	-
Total number of students (Postdoctoral, Doctoral and Masters) graduated in the entity during the reporting period	4	3
Total number of students (Postdoctoral, Doctoral and Masters) sponsored, partially or fully, by the SAMRC funding	24	1
Total number of students (Postdoctoral, Doctoral and Masters) directly working on SAMRC funded or co-funded projects	-	-
Number of postdoctoral fellows receiving co-/supervision	2	2
Number of early career scientists receiving co-/supervision	2	2
Number of Postdoc students receiving co-/supervision	-	-
Number of PhD students receiving co-/supervision	2	2
Number of MSc students receiving co-/supervision	2	-

Key stakeholder engagements to further our mission

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
Research published in *Clinical Infectious Disease* describe the immune correlates of TB recurrence in a cohort of HIV–infected individuals on antiretroviral therapy with a history of prior TB cure. Pro-inflammatory cytokines, Interleukin 6 (IL6), interleukin 1b (IL1b) and interleukin 1Ra (IL1Ra) were associated with increased risk of TB recurrence while Type I interferon, IFNb was associated with decreased TB risk. Because all HIV -infected individuals now qualify for ART, but ART does not completely ameliorate HIV-associated TB risk, the population for this study is important for defining TB risk factors. Research published in the International Journal of Tuberculosis and Lung disease on Implementing isoniazid preventative therapy in a tuberculosis treatment-experienced cohort on ART shows that there was Good IPT uptake and completion and effective integration of TB prevention with ART. However, TB incidence was unchanged after six months of IPT and there was a re-emergence of TB risk post-IPT completion.	Sivro A (Not rated)	5
	McKinnon LR (Not rated)	18
	Yende-Zuma N (Not rated)	9
	Gengiah S (Not rated)	5
	Samsunder N (Not rated)	9
	Abdool Karim SS (Not rated)	56
	Naidoo K (Not rated)	14
	Maharaj B	-
	Gengiah TN (Y-rated)	12
	Yende-Zuma N	9
	Gengiah S	5
	Naidoo A	4
	Naidoo K	14

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Improving Retreatment Success - Completed	EDCTP	Dr N Padayatchi
SAMRC-SHIP - Completed	SAMRC/ Bill & Melinda Gates Foundation	Dr T Scriba/Dr K Naidoo
New Projects		
Does HLA-A expression affect TB risk?	SANTHE	Dr K Naidoo/Dr V Ramsuran
Innate Cell Phenotypes and TB recurrence	NRF	Dr K Naidoo/Ms S Rambaran

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UNIT NAME:

SAMRC/NHLS/UCT MOLECULAR MYCOBACTERIOLOGY RESEARCH UNIT

UNIT DIRECTOR: Valerie Mizrahi

STRATEGIC PURPOSE OF UNIT

According to the most recent WHO report, a staggering 10.4 million people developed tuberculosis (TB) in 2016 and 1.7 million lives were lost to this disease; of these, 374 000 deaths occurred among people co-infected with HIV. Having recently surpassed HIV/AIDS in total deaths per year, TB is now the leading killer from a single infectious agent.

The steady rise in drug resistance has added an ominous new dimension to this global health crisis with an estimated 490 000 cases of multidrug resistant (MDR)-TB having been reported in 2016, of which 6.2% were extensively drug-resistant (XDR). Although significant strides have been made in the fight against TB over the past 10 years, South Africa remains the seventh most highly TB burdened country in the world and the rate of decline in incidence falls far short of the target needed to reach the 2020 milestones of the End TB Strategy. The need for innovation in the discovery, development, evaluation and implementation of new tools for TB control cannot be over-stated: achieving the aspirational goal ending the TB epidemic by 2030 – a health target of the Sustainable Development Goals – demands nothing less than transformative tools development.

As a high-burden country with well-developed scientific, technical and clinical research infrastructure coupled with high-level expertise, South Africa has a special role to play in contributing to this global endeavor. Against this background, the strategic purpose of the Unit is to **contribute to the development of new tools for the control of tuberculosis (TB) by providing insight into the biology of its causative agent, *Mycobacterium tuberculosis*.**

New tools for the development of TB control – in particular, new TB drugs – is critically reliant upon an understanding of the biology of *M. tuberculosis* during the various stages of its life cycle from transmission, to infection and disease. To this end, the MMRU has established a world-class research programme that is located at the interface of microbial genetics, biochemistry and physiology, and employs technologies drawn from the fields of chemical biology, genomics and advanced imaging. The MMRU's research programme has provided the vehicle for capacity development, which has continued to produce well trained, and highly sought-after biomedical researchers, the majority of whom have moved into positions in biomedical research locally and abroad. The Unit's cohort of trainees currently comprises two early-career researchers, eight postdoctoral fellows, 11 doctoral and three Masters students.

Research focus areas:

The research programme of the MMRU comprises a highly integrated suite of projects that are aimed at investigating aspects of the physiology and metabolism of *M. tuberculosis* of relevance to TB drug discovery, TB drug efficacy, mycobacterial persistence and TB transmission.

The research programme falls under three broad thematic areas:

(1) mycobacterial metabolism and physiology;
(2) TB drug discovery; and
(3) TB transmission.

The projects in Theme 1 are built on areas of fundamental mycobacterial metabolism and physiology research; this thematic area has grown considerably over the past year with some exciting new projects having been initiated that take advantage of new developments in high-throughput genetic technologies for mycobacteria coupled with the establishment of advanced imaging capabilities in the MMRU and other laboratories in the IDM (time-lapse fluorescence, confocal and super-resolution microscopy).

Critically, the projects in this theme are of direct relevance to the MMRU's work on TB drug discovery and TB transmission. Thus, the research pursued under Theme 2 is based on application of the MMRU's capabilities in mycobacterial genetics and physiology in the area of drug discovery. The topic of TB transmission pursued under Theme 3 represents another major growth area for the MMRU. The MMRU's research on this topic forms an integral component of larger interdisciplinary studies on the aerobiology and genomics of TB transmission, funded by UCT's Flagship 1 grant from the SAMRC and a grant from the Bill & Melinda Gates Foundation (BMGF).

Identity/status and the research mandate of the entity:

The MMRU is a joint research unit of the SAMRC, NHLS and UCT and is based in the Institute of Infectious Disease and Molecular Medicine at UCT. The MMRU is currently entering the fifth and final year of its current funding cycle as an extramural research unit of the SAMRC and will undergo an end-of-cycle review in August 2018. The mandate of the entity is to investigate aspects of the metabolism and physiology of *M. tuberculosis* of relevance to TB drug resistance, TB drug discovery, mycobacterial persistence and TB transmission.

Impact of the MMRU's research South Africa's challenges and contribution made to date:

The Unit's research programme is positioned at the interface of basic and translational research. The Unit is internationally renowned for its basic research in DNA metabolism, cofactor metabolism nucleotide metabolism, cell wall metabolism energy metabolism and stress physiology of *M. tuberculosis* underpins the MMRU's more applied research in TB drug discovery and TB transmission by enabling translation of fundamental discoveries as well as adoption of new technologies. As an example, the genetic and chemical genomic technologies developed and applied in elucidating molecular mechanisms of *M. tuberculosis* pathogenesis formed the basis of the work on identifying and validating new TB drug targets. Similarly, the establishment of advanced genomic and imaging technologies in support of basic research have enabled the development of an exciting and rapidly advancing aerobiology programme on the detection, identification, and genomic and physiological characterisation of aerosol-borne *M. tuberculosis* produced by TB patients. The Unit has contributed significantly to major international programmes in the translational research space of TB drug discovery and transmission, and remains a highly sought-after partner in these endeavours, which are poised to impact on the TB epidemic in South Africa in the medium-term.

DELIVERABLES	2016/17	2017/18
Number of publications	12	12
Number of publications published in journals with impact factor greater than 5	4	3
Number of collaborative research projects completed	3	2
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	2	3
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	1	2
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	22	22
Number of early career scientists receiving co-/supervision	1	2
Number of Postdoc students receiving co-/supervision	7	8
Number of PhD students receiving co-/supervision	12	11
Number of MSc students receiving co-/supervision	3	3

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
In an important advance that builds on more than a decade of fundamental research, researchers in the Unit established the capacity of the new TB drug candidate, griselimycin, to inhibit DNA replication and to prevent the induction of mutations in *Mycobacterium tuberculosis* that can confer resistance to existing TB drugs. This effect was shown to be attributable to disruption of the assembly and function of the "mycobacterial mutasome", a mutagenic DNA repair system discovered in the Unit in 2010. Notably, this funding differentiates griselimycin from other inhibitors of DNA metabolic function which carry the often unavoidable liability of accelerating drug resistance by inducing mutagenic DNA repair. In turn, it suggests the potential application of griselimycin as an" anti-evolution" agent in novel therapeutic regimens designed to protect existing TB drugs.	Prof. Valerie Mizrahi: A1 A/Prof. Digby Warner: C1	37 (Mizrahi) 17 (Warner)
In partnership with collaborators at Cornelius University in Bratislava, our researchers provided compelling validation of the mycobacterial phosphoglycosyltransferase enzyme, WecA, as a new TB drug target. WecA initiates arabinogalactan biosynthesis in *M. tuberculosis*, and has been proposed as a target of the caprazamycin derivative CPZEN-45, a new preclinical drug candidate for the treatment of TB.	Prof. Valerie Mizrahi: A1 A/Prof. Digby Warner: C1	37 (Mizrahi) 17 (Warner)
In a related study, done in collaboration with researchers at the NIAID (NIH) and AHRI (Durban), our researchers validated two enzymes as targets for potentiating the efficacy of a new class of TB drugs that inhibit energy metabolism in *M. tuberculosis*.	Prof. Valerie Mizrahi: A1 A/Prof. Digby Warner: C1	37 (Mizrahi) 17 (Warner)
In a new advance, a robust experimental system was developed for monitoring the uptake, growth, persistence and drug susceptibility of *M. tuberculosis* in foamy macrophages, a common cell type found in TB granulomas, but whose function in TB pathogenesis and response to therapy are unknown and the subject of considerable interest.	Prof. Valerie Mizrahi: A1 A/Prof. Digby Warner: C1	37 (Mizrahi) 17 (Warner)
Over the past year, outstanding progress was made on the design, construction, and validation of a CRISPRi-based library targeting *M. smegmatis* homologues of *M. tuberculosis* genes by an exceptionally talented first-year PhD student who is enrolled in the Intercalated MBBCh/ PhD programme at UCT. The plasmid library was introduced into *M. smegmatis*, and a pooled negative selection screen performed, which identified the majority of known essential genes and validated the library and techniques. Having obtained a proof of principle, the next phase of this project will focus on high-throughput microscopy screening of the inducible CRISPRi library to identify mutants with impaired ability to filament (elongate) in response to specific stresses. This approach is expected to revolutionise our work in all areas of mycobacterial physiology and metabolism through targeted combinatorial screens.	Prof. Valerie Mizrahi: A1 A/Prof. Digby Warner: C1	37 (Mizrahi) 17 (Warner)

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PRPOJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Identification of High-Quality Hits for Tuberculosis (HIT-TB) (completed)	Bill & Melinda Gates Foundation	Prof. Mizrahi (UCT PI)
Developing Leads to Shorten Duration of TB Chemotherapy (SHORTEN-TB) (started)	Bill & Melinda Gates Foundation	Prof. Mizrahi (UCT PI)
Tuberculosis Transmission: Host, Bacterium and Environment (CCAMP) (completed)	SAMRC (Flagship 1)	Prof. Robin Wood (PI) Prof. Warner & Prof. Mizrahi (co-investigators)
Growth, persistence and antibiotic susceptibility of *M. tuberculosis* in foamy macrophages (started)	Howard Hughes Medical Institute	Prof. Mizrahi

CONTACT DETAILS

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UNIT NAME:

SAMRC/NHLS/WITS RESPIRATORY AND MENINGEAL PATHOGENS RESEARCH UNIT

UNIT DIRECTOR: Shabir Madhi

STRATEGIC PURPOSE OF UNIT

The Respiratory and Meningeal Pathogens Research Unit is mandated to study the epidemiology, aetiology, management and prevention of pneumonia and meningitis infections. The Unit focuses on the leading pathogens (bacteria and viruses) associated with under-five morbidity and mortality which are vaccine preventable; as well as pathogens for which vaccines are in clinical development. This includes having expanded the Unit's focus to vaccination of pregnant women, aimed at protecting the mother, fetus and young infants; all of which dovetails into the strategic goal of ensuring promotion of healthy life from conception into late childhood.

The Unit is at the forefront of epidemiological, translational and laboratory research in the prevention of major vaccine preventable diseases causing severe disease and death in young children; i.e. pneumonia, diarrhoeal disease and neonatal sepsis. Also, the Unit has expanded research activities to develop and evaluate vaccines targeted at pregnant women, aimed to protect the mother, her fetus and young infant from vaccine preventable diseases.

The Unit was established in 1997, with an original research mandate to investigate pneumococcal diseases at the molecular, epidemiological, clinical and pharmacological levels. Over time, the Unit has evolved to include investigating the clinical and molecular epidemiology of other bacteria and respiratory viruses that are associated with pneumonia and meningitis; and which are vaccine preventable. Also, the Unit has established itself to be a premier clinical facility for the clinical development of vaccines; including being in the forefront in the clinical development of pneumococcal conjugate vaccine (PCV, which targets the most common cause of severe pneumonia; as well as of rotavirus vaccine that targets the most common cause of severe diarrhoeal disease and death in children. Over the past five years, the Unit has expanded its focus to characterising the potentially vaccine preventable causes of hospitalisation and death in the first month of life, with the objective of vaccinating women during pregnancy to prevent these diseases; for which young infants will not otherwise be protected against through active immunisation. The programme aimed at vaccinating pregnant women also has the spinoff of potentially protecting pregnant women against the targeted pathogens (including Group B streptococcus, respiratory syncytial virus and influenza virus), as well as influencing a favourable pregnancy outcome by reducing preterm birth or stillbirth.

The Unit undertook pivotal studies on the clinical development of PCV, targeted at the leading bacterial cause of pneumonia deaths, which informed WHO recommendation on the use of this vaccine in low-to-middle income countries. This work culminated in South Africa becoming the first African country to introduce PCV into its public childhood immunisation programme in 2009. Since then, the Unit has remained involved in assessing the public health impact of the infant PCV immunisation programme in children and adults; and have reported 40% reduction in all-cause pneumonia

hospitalisation in children, as well as reductions in invasive pneumococcal disease in children who were vaccinated and also an indirect protection among unvaccinated adults. The Unit is now engaged in studies aimed at reducing the cost of this highly expensive vaccine, by investigating rationalised dosing schedules.

Similarly, the Unit was at the forefront of the clinical development of rotavirus vaccine, targeted at the most common cause of diarrhoeal hospitalisation and death in low- and middle-income countries, which also informed the WHO policy for the introduction of this vaccine into public immunisation programmes. This study also led to South Africa being the first country in Africa to introduce the rotavirus vaccine into its childhood public immunisation programme in 2009. The impact of rotavirus vaccine introduction on diarrhoea hospitalisation has also been evaluated which reported a 45% reduction in all-cause diarrhoea hospitalisation and 75% reduction in rotavirus diarrhoea hospitalisation. Furthermore, factors that might affect the immunogenicity and efficacy of this vaccine in low- and middle-income countries to be investigated; as well as clinical development of new generation rotavirus vaccines.

Over the past five years, the Unit has evolved to focus specifically on the epidemiology and prevention of infections during the neonatal period. This is pertinent, as deaths during the first month of life, one-third of which are due to infections, are responsible for 40% of all under-five mortality. Included in the portfolio of work on neonatal infections are the clinical and molecular epidemiology and prevention of Group B Streptococcus; and identification of potential vaccine targets. GBS is the leading cause of neonatal sepsis in South African neonates. Furthermore, the Unit has embarked on programmes aimed at vaccinating pregnant women to confer passive immunity and protect infants during their first few months of life. These include studies in pregnant women evaluating the efficacy of influenza vaccine; and the clinical development of GBS conjugate vaccine and RSV vaccines also targeted at pregnant women with the aim of protecting the mother during pregnancy, her fetus and her young infant. The studies on influenza vaccination of pregnant women are being pursued by the WHO in deciding whether this strategy should be prioritised in low- and middle-income countries, in addition to which the data generated resulted in the South African National Advisory Group on Immunisation recommending that pregnant women be prioritised for influenza vaccination in South Africa.

The Unit has also embarked on improving the understanding on the specific causes of stillbirths and under-five deaths in South Africa, through participation in the multi-country CHAMPS (Child Health and Mortality Prevention Surveillance) programme. This programme includes establishing a nested Health Demographic Surveillance Site (HDSS) in Soweto, which will be the first of its kind in an urban area in South Africa. The HDSS site will serve as a barometer in tracking the socio-economic factors influencing the health of pregnant women and their children. Furthermore, the Programme will investigate both in-facility and community deaths using minimal invasive tissue sampling (MITS) to ascertain the specific causes of death in children and stillbirths; which will help inform on what future research and interventions are required to assist South Africa in achieving the Sustainable Development Goal of reducing under-five mortality by 25 per 1000 live births by 2030, compared to the current mortality rate of 43 per 1000 live births.

DELIVERABLES	2016/17	2017/18
Number of publications	46	83
Number of publications published in journals with impact factor greater than 5	17	45
Number of collaborative research projects completed	-	-
Total number of students (Postdoctoral, Doctoral and Master) **graduated** in the entity during the reporting period	5 PhD	7 PhD
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	2 PhD (ongoing)	2 PhD (ongoing)
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	1 MSc 5 PhD	1 MSc 5 PhD
Number of postdoctoral fellows receiving co-/supervision	5	4
Number of early career scientists receiving co-/supervision	3	3
Number of Postdoc students receiving co-/supervision	As above for postdoc fellows	As above for postdoc fellows
Number of PhD students receiving co-/supervision	13	10
Number of MSc students receiving co-/supervision	3	3

The art of medicine consists in amusing the patient while nature cures the disease

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
Graduated 7 PhD students	Shabir Madhi – A2	Shabir Madhi
Published 83 articles in peer-reviewed articles	Michelle Groome – C1	Marta Nunes
Identified two novel common GBS proteins with vaccine potential		Clare Cutland
Demonstrated 40% reduction in all-cause pneumonia hospitalisation with PCV immunisation		Michelle Groome: 16 Jeff Dorfman: 17

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Study on establishing association of Group B Streptococcus (GBS) surface protein antibodies against invasive GBS disease in infants and maternal colonization during pregnancy	Bill & Melinda Gates Foundation	Shabir Madhi
Group B Streptococcus colonization in mother-newborn dyads and association with serotype-specific capsular antibodies in low-and middle-income South Asian and African countries	Bill & Melinda Gates Foundation	Shabir Madhi
Child Health and Mortality Prevention Surveillance	Emory University/ CDC (BMGF)	Shabir Madhi
Evaluation of an alternate pneumococcal conjugate vaccine dosing schedule in South Africa	Bill & Melinda Gates Foundation	Shabir Madhi
Estimating a sero-correlate of protection against invasive Group B Streptococcus disease in newborns and young infants aged 90 days	GSK (Investigator driven)	Shabir Madhi

CONTACT DETAILS

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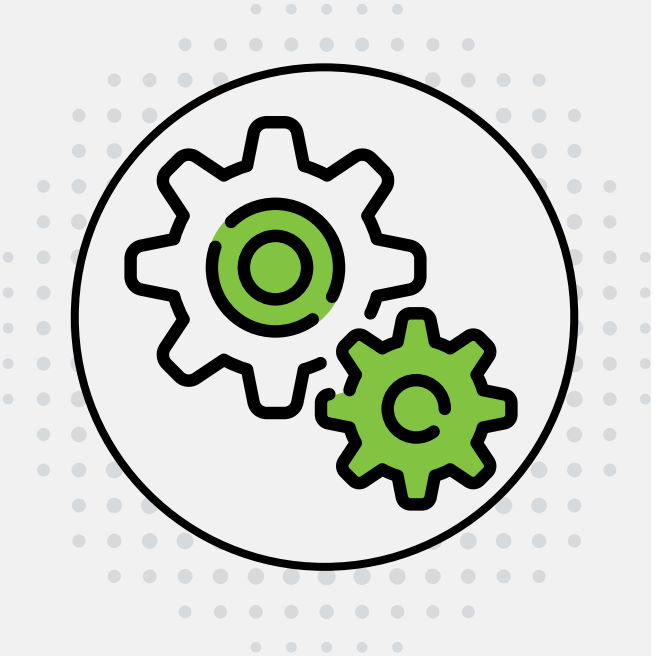
PROGRAMME 4

HEALTH SYSTEMS STRENGTHENING



PURPOSE

To contribute to health systems strengthening by undertaking systematic reviews, health policy and health systems research to provide evidence for policy-makers, stakeholders and researchers seeking to address today's most pressing health challenges. The programme aims to take advantage of information and technology by exploring and expanding the role of eHealth (health informatics, digital health, tile health, telemedicine, eLearning and mobile health) in strengthening health systems.

UNITS

- Burden of Disease Research Unit
- Biostatistics Research Unit
- Cochrane South Africa
- Health Systems Research Unit
- Health Policy Research Unit
- Health Services to Systems Research Unit

STRATEGIC OBJECTIVES

- To contribute towards the evidence base for national, regional and international healthcare decision making by conducting high-quality systematic reviews, and health systems and health policy research reviews to improve health systems effectiveness
- To strengthen research and development through training and mentoring postgraduate students (MSc, PhD, Postdoctoral fellows) in eHealth, health policy, health systems research and biostatistics
- To contribute to capacity development and training in the use and conduct of systematic reviews, and support of clinical trial registration for the African region
- To synthesise evidence, optimise information and knowledge flow through ICT and other means to ensure that research results are translated into policy, practice, cost-effective products and health promotion
- To develop and enhance health information systems and surveillance through systematic evaluation and identification of processes for improvement
- To provide statistical analysis to ensure scientific validity, relevance and efficiency of health systems interventions and/or service delivery models, and engage in health systems strengthening activities
- To carry out biostatistical support training projects to assist SAMRC researchers and postgraduate students within the SAMRC

UNIT NAME:

BURDEN OF DISEASE RESEARCH UNIT

UNIT DIRECTOR: Debbie Bradshaw

STRATEGIC PURPOSE OF UNIT

The mission of the Burden of Disease Research Unit is to assess and monitor the country's health status and determinants of disease; to project the future burden of disease in order to provide planning information to improve the health of the nation and to evaluate health information systems. Inequalities have been identified to be of particular importance, given the legacy of Apartheid in South Africa and the current macro-economic trends arising from globalisation. Multidisciplinary approaches are used in the Unit, drawing on epidemiology, demography and biostatistics. Expertise has been developed in the area of summary health measures, health surveys, the analysis of mortality data, cancer registration and health informatics. Monitoring the country's health status and determinants of disease is an essential foundation for guiding policy and programmes to improve life expectancy and quality of life.

DELIVERABLES	2016/17	2017/18
Number of publications	IF: 20 Articles Books:12 Non IF: 1 Book Section: 1	IF: 11 Articles Books: 7 Non IF: 3 Book Section: 2
Number of publications published in journals with impact factor greater than 5	6	5
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	Commenced: 1 Ongoing: 9	Commenced: 1 Ongoing: 10
Number of postgraduate students receiving supervision	13	14
Number of postdoctoral fellows receiving supervision under your unit	-	-

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Second South African Comparative Risk Assessment (SACRA-2)	SAMRC Flagship	Prof Debbie Bradshaw Dr Victoria Pillay-van Wyk Dr Jané Joubert
Linkage to care	Centers for Disease Control and Prevention	Prof Debbie Bradshaw Dr Edward Nicol Dr Nika Raphaely
National Cause-of-death Validation Project (NCOD validate)	Centers for Disease Control and Prevention	Prof Debbie Bradshaw Dr Jané Joubert Dr Pam Groenewald
Evaluation of Morbidity Data in Routine Health Information Systems (MbHIS-EVAL)	SAMRC and NRF	Dr Lyn Hanmer, Dr Edward Nicol Prof Debbie Bradshaw
Evolving risk factors for cancers in African populations (ERICA)	Newton Fund	Prof Debbie Bradshaw Prof Chris Mathews

MAJOR COMMUNITY ENGAGEMENTS DURING THE REPORTING PERIOD		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
CANSA - Multi-Experts Cancer Awareness Seminar, 16 August 2017	Empowering community of Queenstown with facts on the journey after cancer diagnosis, care continuum including patient/client dynamics that hinder successful care.	SAMRC and CANSA
Community entry key role players meetings in setting up a study entitled "Improving timely diagnosis of symptomatic breast and cervical cancer in sub-Saharan Africa" 12-15 March 2018	Meeting with NCD Manager and oncology trained nurses at Qaukeni Local Service Area (LSA), Clinical Governance, CEO and Nursing Service Manager of St Elizabeth Hospital area, four chiefs in administrative areas of Lusikisiki. These key figures in community health were engaged to understand the study soon to be started in Lusikisiki community to address breast and cervical cancers.	SAMRC/Newton

CONTACT DETAILS

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UNIT NAME:

BIOSTATISTICS UNIT

UNIT DIRECTOR: Samuel Manda

STRATEGIC PURPOSE OF UNIT

The SAMRC's Biostatistics Unit provides a source of biostatistics methodological and application expertise and support to the SAMRC's network of medical and health researchers as well as government departments and national and international research bodies. It is an interdisciplinary unit with expertise in Biostatistics, GIS, Data Management and Food Science, and these different but related research entities contribute to the clinical and health research conducted by the SAMRC. Biostatistics plays a key role in the statistical design, planning and analysis of a variety of studies conducted by the SAMRC. These range from nationally representative household and population health surveys (e.g. HIV, TB, Demographic and Health (DHS) and PMTCT), sport sciences interventions, epidemiological studies to pragmatic health systems trials. The input of the biostatisticians has been critical and impacted in ensuring the scientific validity of the studies and the results from which most public health policies are derived.

Our science contributions also cover collaborating with several universities in building and sustaining biostatistics capacity and training through postgraduate supervision and specialised courses in South Africa. These have ensured that the statistical and analytical skills resource base is maintained, for continued support to several biomedical studies, in the country.

The Health Geographical Information Systems adds value by incorporating demographic and health specific spatial information at the design, planning and analysis stages of these studies. This has been instrumental in addressing and positively impacting on several priority health outcomes for example, hotspots analysis of HIV; transmission of XDR-TB in KZN and NDoH/WHO malaria elimination initiatives. The South African Food Composition Database (SAFOODS) has a strategic importance in maintaining and developing the national database of nutritional values of food consumed in South Africa. A recent project involved updating the Database and publishing the fifth edition of the Food Composition

Tables of South Africa (2017), which resulted in updating of the Infant and Paediatric Feeds and Food groups, increasing the number of baby food items from 70 to 250. The impact thereof translates to reporting paediatric dietary intake more accurately, as this food composition data are used widely by nutritional and dietary researchers in the country; for example; in randomised control feeding trials.

The impact of the Malawi Food Composition project will lead to the first ever Edition of a Food Composition Table for Malawi that will enable quantification and evaluation of dietary intake, dietary prescriptions and nutritional policy guidance. Moreover, this project involved capacity development of food composition compiling in Malawi for the sustainability of the Country specific Food Composition Tables.

As the Country Focal Point within AFROFOODS, SAFOODS impacts and contributes on an international level, through strengthening food composition activities on the African continent.

Impact of SAFOODS as a member of the NDoH Food Fortification Working Group, leads to the contribution of food composition data that will be used for labelling of key staple foods, as an interim measure once updated regulation takes effect. These overlapping three entities make the Biostatistics Research Unit a truly collaborative unit, whose research and support services significantly contribute to biomedical research capacity and enhance the relevance and applicability of health and biomedical studies conducted by the SAMRC, including several national and research bodies.

DELIVERABLES	2016/17	2017/18
Number of publications	58	51
Number of publications published in journals with impact factor greater than 5	10	9
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	25	25
Number of postgraduate students receiving supervision	10	10
Number of postdoctoral fellows receiving supervision	-	-

SAMRC COLLABORATIONS

1. The South African Medical Research Council through the Biostatistics Research Unit is collaborating with several universities and research institutions including of Witwatersrand, KwaZulu-Natal, Namibia, Malawi, Nairobi, Zambia, Kilimanjaro Christian Medical University College, Stellenbosch, Makerere, Human Sciences Research Council, Centre for the AIDS Programme of Research in South Africa; Julius Center for Health Sciences & Primary Care (Utrecht, Netherlands), KEMRI-University of Oxford (Kenya), London School of Hygiene & Tropical Medicine (UK), Northumbria (UK) under the Africa Sub-Saharan Africa Consortium for Advanced Biostatistics (SSACAB) in developing and strengthening capacity in Biostatistics in sub-Saharan Africa.

   SACCAB is one of the eleven projects under the Developing Excellence in Leadership, Training and Science (DELTAS) Initiative: with funding from the Wellcome Trust and the Department for International Development to establish cutting-edge research and training programmes across the continent. DELTAS Africa is managed by the Alliance for Accelerating Excellence in Science in Africa (AESA) in partnership with the funders. Prof Samuel Manda is the lead on the SAMRC SACCAB.

2. The SAFOODS Unit of the Biostatistics Research Unit in collaboration with Tufts University (USA) and the Lilongwe University of Agriculture & Natural Resources (Malawi) is developing the Malawi National Food Composition Database. This is a USAID funded-Feed the Future Food Security Innovation Lab. The impact of the Malawi Food Composition project will lead to the first ever Edition of a Food Composition Table for Malawi that will enable quantification and evaluation of dietary intake, dietary prescriptions and nutritional policy guidance. This project involves capacity development of food composition compiling in Malawi for the sustainability of the Country specific Food Composition Tables.

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
1. Malawi National Food Composition Database	Sub-award: Tufts University Funder: USAID funded-Feed the Future Food Security Innovation Lab	Dr Averalda van Graan
2. Impact Evaluation of the DREAMS Programme in adolescent girls and young women in South Africa	Centers for Disease Control and Prevention & PEPFAR	Dr Tarylee Reddy (co-investigator)
3. Geo-spatial mapping of cardiovascular co-morbidities in South Africa: A novel approach to assess disease burden, hotspots and resource allocation	SAMRC with funds from National Treasury	Prof Samuel Manda
4. South African IOC Centre in Health of Athletes	International Olympic Committee	Ms Esme Jordan (co-investigator)
5. South African Prevention of Mother-to-Child HIV Transmission (SA-PMTCT)	PEPFAR/Centers for Disease Control and Prevention; UNICEF, SA National Dept. of Health, South African National AIDS Council, EEC, NRF, and the Global Fund	Prof Carl Lombard and Dr Steve Olorunju (statisticians/ co-investigators)

MAJOR COMMUNITY ENGAGEMENTS DURING THE REPORTING PERIOD		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
1st SA National TB Prevalence Survey	Community awareness for the optimal uptake of the survey	NICD, HSRC and National Department of Health, Tuberculosis Research Platform
School Career Expo	Promoting Biostatistics as a career at schools through the SAMRC's schools programme.	SAMRC Office of Public Outreach

CONTACT DETAILS

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UNIT NAME:

COCHRANE SOUTH AFRICA

NAME OF UNIT DIRECTOR: Charles Shey Wiysonge

STRATEGIC PURPOSE OF UNIT

Cochrane South Africa is part of the global independent network of healthcare researchers, practitioners, patient advocates and others, responding to the challenge of making the vast amounts of evidence generated through research useful for informing decisions about health. Cochrane collects and summarises the best health evidence from research to help policymakers and health professionals to make informed choices about healthcare. We do this by preparing systematic reviews of the effects of healthcare interventions and diagnostics; training and developing capacity in conducting systematic reviews throughout Africa; and by promoting access to the best available evidence; and facilitating the use evidence-based healthcare decision making across Africa. Our current research focus areas include immunisation, infectious diseases, nutrition, and clinical guideline development and implementation in South African primary care.

Unit staff made significant contributions to 10 national and international guidelines in 2017/2018.

Unit staff play leading roles in international scientific and policy advisory committees at the World Health Organization, Global Alliance for Vaccines and Immunisation, Clinical Research Initiative for Global Health, Programme for Appropriate Technology in Health, and other global agencies. These committees include, but are not limited to, Strategic Advisory Group of Experts on immunisation, Guideline Development Group on communication interventions for childhood vaccination in Africa, Immunization and Vaccine-related Implementation Research Advisory Committee, International Collaboration on Vaccine Acceptance, and African Advisory Committee on Health Research and Development.

DELIVERABLES	2016/17	2017/18
Number of publications	31	45
Number of publications published in journals with impact factor greater than 5	8	24
Number of policy briefs produced (and guidelines)	3	10
Number of collaborative research projects completed or commenced in reporting period	3	5
Number of postgraduate students receiving supervision	20	19
Number of postdoctoral fellows receiving supervision	1	2

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD

PROJECT /RESEARCH TITLE	FUNDER	PRINCIPAL INVESTIGATOR
Health systems arrangements for health systems in low-income countries: an overview of systematic reviews	SAMRC	Charles Wiysonge
Evidence-based research for improving the performance of immunisation programmes in Africa	NRF	Charles Wiysonge
South African Guidelines Excellence Project	SAMRC	Tamara Kredo
Global Evidence Summit	SAMRC, Doris Duke Charitable Foundation, WHO's TDR, WHO's Alliance for Health Policy and Systems Research, Wellcome Trust, NRF	Tamara Kredo
Collaboration for Evidence Based Healthcare and Public Health in AfriCA (CEBHA+)	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	Tamara Kredo Solange Durao

MAJOR COMMUNITY ENGAGEMENT/S		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
Global Evidence Summit	Engagement with Indoni Dance Academy in advance of the Global Evidence Summit (GES) performance to ensure choreography and presentation was in line with the theme of the conference.	Indoni Dance Academy
Global Evidence Summit	Engagement with Children's Radio Foundation to allow access of student reporters to the GES and in particular to conduct radio interviews with plenary speakers.	Children's Radio Foundation

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UNIT NAME:

HEALTH SYSTEMS RESEARCH UNIT

UNIT DIRECTOR: Catherine Mathews

STRATEGIC PURPOSE OF UNIT

The SAMRC's Health Systems Research Unit aims to understand how healthcare systems function to strengthen health policy, to improve the impact and efficiency of health systems and services and to enhance person-centred care. We use a range of research methodologies, quantitative, qualitative, mixed -method and evidence synthesis and work with local, national, regional and global health institutions.

We work in five thematic areas:

Thematic area 1:	Maternal, family and child health, nutrition
Thematic area 2:	Adolescent health; well-being; sexual and reproductive health
Thematic area 3:	Infectious and non-communicable diseases
Thematic area 4:	Social and economic policy and health
Thematic area 5:	Knowledge synthesis for strengthening health systems

DELIVERABLES	2016/17	2017/18
Number of publications	48	62
Number of publications published in journals with impact factor greater than 5	3	15
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	29	29
Number of postgraduate students receiving supervision	23	22
Number of postdoctoral fellows receiving supervision	-	2

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Process and early effectiveness evaluation of PMTCT Option B+ in South Africa, 2016-2017	Centers for Disease Control and Prevention	Ameena Goga and Witness Chirinda
New models of care for drug-resistant TB in South Africa	Eli Lilly Foundation through United World Wide Way	Marian Loveday
A proof of concept feasibility study of an outreach mentorship approach for disseminating the updated 2016 WHO HIV and infant feeding guidelines	WHO	Ameena Goga, Tanya Doherty
Impact evaluation of the Global Fund Young Women and Girls Intervention in 10 South African Districts (HERStory Study)	Centers for Disease Control and Prevention	Catherine Mathews
The Community Health Worker Investment Case	Broadreach	Emmanuelle Daviaud

CONTACT DETAILS

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UNIT NAME:

SAMRC/UWC HEALTH SERVICES TO SYSTEMS RESEARCH UNIT

UNIT DIRECTOR: Helen Schneider

STRATEGIC PURPOSE OF UNIT

The strategic purpose of the SAMRC/UWC Health Services to Systems Research Unit is to strengthen the capacity of health systems to address health priorities through research, by generating evidence, and building capacity to generate evidence, on health system strengthening relevant to South Africa's health system, whilst contributing to international knowledge and debates.

The Unit is located within the field of health policy and systems research (HPSR) which "encompasses how societies plan, manage and finance health services as well as the investigation of the role and interests of different actors in the health system. In particular, it focuses on:

1) the contexts, mechanisms and processes through which initiatives to improve the access, quality and equity of health services become integrated into the everyday practices of the routine institutional environment ("real-world" settings), and achieve sustainable coverage and impacts at scale; and
2) building HPSR research capacity through doctoral and post-doctoral level training.

The Unit has been in existence for three years, since April 2015. It is based at the UWC School of Public Health and its Director is Professor Helen Schneider, who also holds a SARChI (South African Research Chair Initiative) Chair in Health Systems Governance.

The work of the Unit has focused on the functioning of frontline health systems – from community based to primary healthcare (PHC) and district health systems (DHS), as the most decentralised building blocks of South Africa's public health system. These foundational elements of health systems are regaining attention globally as central to the achievement of the sustainable development goals (SDGs). The unit has documented emergent forms of delivery (particular in community health systems), evaluated various policy initiatives to strengthen and regulate local health systems, and developed methodologies for assessing access and equity at district level. Cross cutting themes in this research have been health system change and the "black box" of policy implementation, the mechanisms of governance of local health systems, and the interactions between the "hard core" of technical interventions and the "soft periphery" of implementation.

The research of the Unit is conducted in close collaboration with health systems decision makers in South Africa, from district to provincial and national levels, and addresses issues of national priority, as follows:

1. We collaborated with researchers for the evaluation on the impact of a national Department of Health initiative to address high maternal, neonatal and child mortality through a health systems strengthening approach in four South African districts. Through relatively resource-light but strategic facilitation focused on strengthening

governance and accountability, the evaluation documented significant declines in mortality in these districts. The lessons learnt and implications of this system level intervention have impacted on the revised processes of district planning and the findings of evaluation will be presented to the Technical Committee of the National Health Council.

2. Whole System Change in South Africa: Understanding the experience of health system transformation in the Western Cape Province (WholeSyst-SA). This collaborative project with the University of Cape Town and the provincial Dept. of Health documented the development of the Western Cape's health system since 1994, to indentify the factors that account for its status as a relative "pocket of effectiveness" in South Africa's health system. On the basis of this historical analysis, which includes comparisons with other provinces, a framework for prospective monitoring of "whole system change" has been developed jointly with provincial stakeholders.

DELIVERABLES	2016/17	2017/18
Number of publications	7	9
Number of publications published in journals with impact factor greater than 5	1	-
Number of collaborative research projects completed	2	2
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	1	3
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	3	3
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	-	1
Number of postdoctoral fellows receiving co-/supervision	1	2
Number of early career scientists receiving co-/supervision	2	2
Number of PhD students receiving co-/supervision	8	7
Number of MSc students receiving co-/supervision	5	5

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
Special series of papers in the International Journal for Equity in Health on Health Systems Governance. Unit Director co-authored editorial, and led one of the papers in the series. An international webinar was hosted by WHO entitled: Health System Governance: from frameworks to practices.	NRF Rating Unit Director: C1 (will be re-evaluated in 2018)	H Index Unit Director: 20 (Scopus)
Member of the WHO Health System Governance Collaborative and part of the core delegation to the UHC Forum in Tokyo in December 2017. Member of Task Team on Health Systems Governance convened by the WHO Regional Office (AFRO).		

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Evaluation of health systems strengthening initiatives for improving the quality and outcomes of maternal, neonatal and child healthcare in four South African districts.	EMU, SARChI, UNICEF	Helen Schneider
Whole System Change in South Africa: Understanding the experience of health system transformation in the Western Cape Province (WholeSyst-SA).	UK MRC	Lucy Gilson (PI), Helen Schneider (Co-PI)
Systematic review of patterns of authorship on community health workers in low-income or middle-income countries.	SARChI	Nelisiwe Maleka (postdoc)

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Improving health awareness through health services and systems research

PROGRAMME 5

PUBLIC HEALTH INNOVATION

PURPOSE OF THE PROGRAMME

To promote the improvement of health and quality of life (impact prevention of ill health, improvement of public health and treatment) in South Africa through innovation, and technology development and transfer.

UNITS

- Drug Discovery and Development Research Unit
- Primate Unit and Delft Animal Centre
- Medical Imaging Research Unit
- The Biomedical Research and Innovation Platform
- Herbal Drugs Research Unit

STRATEGIC OBJECTIVES

- To establish key modern technology (enabling) platforms to facilitate generation of new drug discovery knowledge through world-class applied research
- To establish and manage research laboratories and facilities as state-of-the-art national research facilities for research and development
- To train and mentor a new generation of high-quality postgraduate students and Postdoctoral fellows in multi-disciplinary research, and in so doing, equip them to compete in the science and/or education sectors, nationally and internationally
- To strengthen research and development, to build on and enhance public health innovation
- To increase the body of scientific knowledge through research translation into products, patents, research papers, policy, practice and health promotion (including to the general public)
- To increase the number of healthcare innovations and produce patents based on new discoveries and new research methodologies

UNIT NAME:

SAMRC/UCT DRUG DISCOVERY AND DEVELOPMENT RESEARCH UNIT

NAME OF UNIT DIRECTOR: Kelly Chibale

STRATEGIC PURPOSE OF UNIT

The purpose of the Unit is primarily, but not limited to, the establishment of a sustainable, state-of-the-art, integrated drug discovery platform, which, in addition to the design and development of novel, bioactive chemical entities, also creates the facilities and opportunities for the training of young, "home-grown", competent, innovative and versatile drug discovery scientists. The research is important to the R&D needs of South Africa as it builds capacity in the discovery of new medicines and supports the South African Bio Economy Strategy (BioEconomy SA).

The research focus area is delivering drug leads for *communicable diseases.*

The SAMRC/UCT Drug Discovery and Development Research Unit underwent a second five-year review on 23 August 2017. The Unit was found to have performed well in the period under review. On this basis, the SAMRC will renew funding for another five years from 1 April 2019 until 31 March 2024. The research mandate continues to include:

- Discovery of new chemical entities as drug leads for malaria, tuberculosis and drug resistant infections of bacterial origin towards addressing the threat of antimicrobial resistance (AMR)
- Attracting young South African scientists, and scientists from elsewhere on the African continent, and in so doing, make a concerted effort for transformation and capacity building
- Providing career development opportunities for independent academic and/or research careers

Health innovation:

The Unit is positioned to contribute directly to health innovation, defined as the delivery of tangible outcomes useful for the improvement of health. The research findings will be solution-oriented and focus on delivering new malaria and tuberculosis drug leads, which would result in disease control and elimination (in case of malaria), if and when they are successfully developed into safe and efficacious medicines.

South Africa's activities within the value chain of drug discovery, drug development and clinical testing of medicines are fragmented. There is a limited knowledge economy in pharmaceutical drug discovery in the country. The Unit continues to train a new generation of researchers (staff scientists and postgraduate students) in integrated team-based inter-disciplinary drug discovery research and development (R&D) for socially important diseases and in this manner extend the knowledge base in South Africa and provide the much needed skills in a local R&D Biopharmaceutical industry that is currently being seeded and/or in development.

Job creation:

The Unit is embedded within the UCT Drug Discovery and Development Centre, H3D, of which the Unit Director is both the Founder and Director. H3D has been contributing immensely to reversing the brain drain by providing an absorptive capacity to attract and retain drug discovery staff scientists in South Africa. H3D has also been creating jobs while also providing career opportunities and contributing to reversing the brain drain. In 2017, H3D had a total of fifty eight (58) staff members and postdoctoral fellows.

DELIVERABLES	2016/17	2017/18
Number of publications	13	13
Number of publications published in journals with impact factor greater than 5	3	6
Number of collaborative research projects completed	-	-
Total number of students (Postdoctoral, Doctoral and Masters) **graduated**	5	6
Total number of students (Postdoctoral, Doctoral and Master) **sponsored**, partially or fully, by the SAMRC funding	10	12
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	26	30
Number of postdoctoral fellows receiving co-/supervision	4	8

DELIVERABLES	2016/17	2017/18
Number of Postdoc students receiving co-/supervision	See above (post doc Fellows)	See above (post doc fellows)
Number of PhD students receiving co-/supervision	16	12
Number of MSc students receiving co-/supervision	6	10

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
The full profile and elucidation of the mechanism of action of the malaria clinical candidate MMV048 (i.e. how this drug works or kills the malaria parasite) was published in the prestigious journal *Science Translationa Medicine*. MMV048 was discovered by an international team led by the Unit Director and disclosed in 2012 as a preclinical drug development candidate. A significant milestone was that MMV048 entered Phase II human clinical trials in 2017.	Prof Kelly Chibale - A rating	29

CONTACT DETAILS

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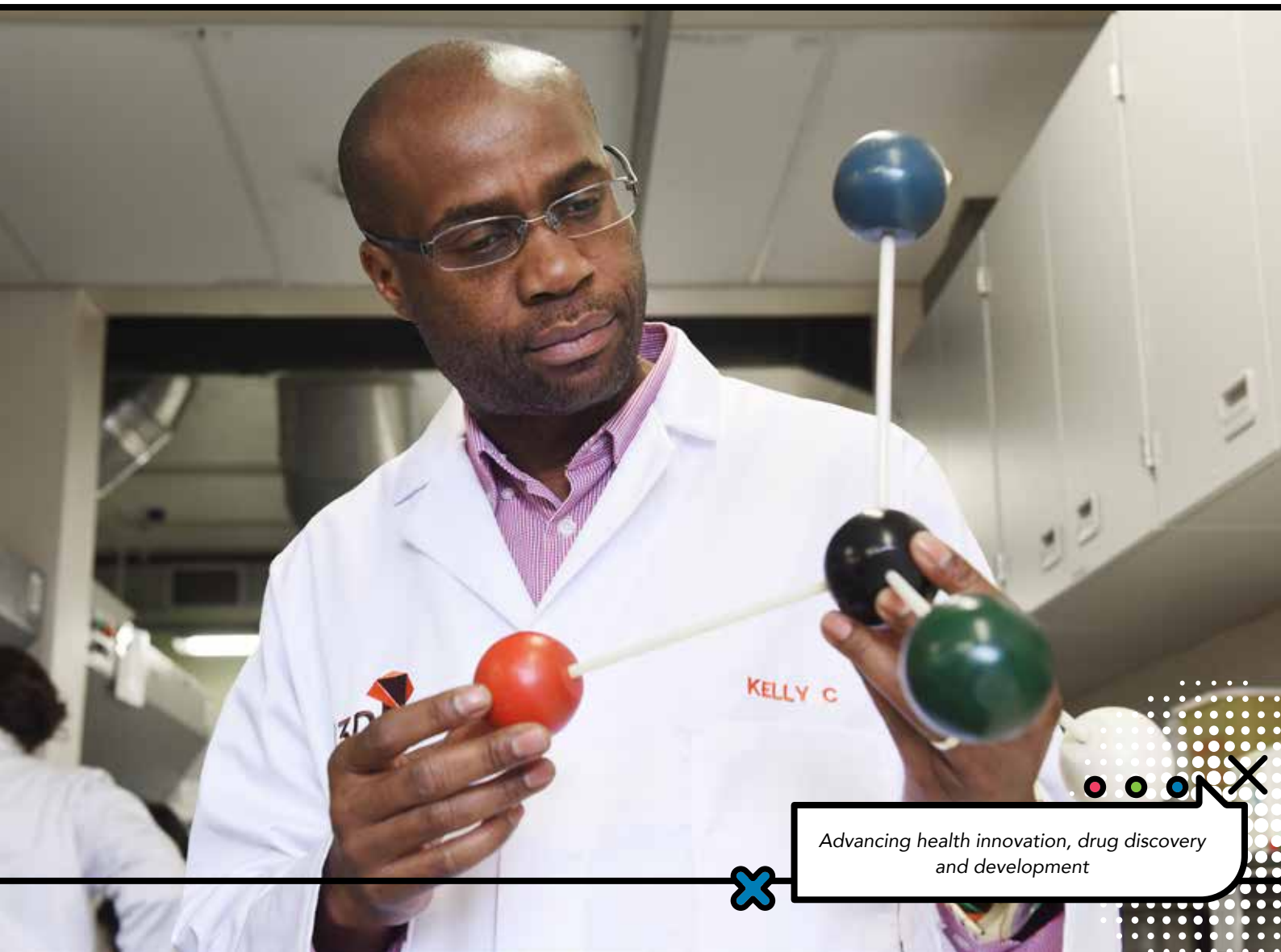

Advancing health innovation, drug discovery and development

UNIT NAME:

PRIMATE UNIT AND DELFT ANIMAL CENTRE

UNIT DIRECTOR: Chesa Chauke

STRATEGIC PURPOSE OF UNIT

The Primate Unit and Delft Animal Centre (PUDAC) is a research support platform that provides the infrastructure to conduct pre-clinical research; scientific and technological research support; the capacity to maintain and utilise animal models (nonhuman primates, horses and rodents) and biomedical research (collaborative and contract). PUDAC's research is important as it contributes to research by generating new in-house research to define and validate animal models; laboratory animal science and technology; providing skilled laboratory scientific and technological support.

The platform's research focus is on the following fields: nutrition and non-communicable diseases; metabolic diseases (obesity/Type 2/3 Diabetes, cardiovascular and hypertension); environmental factors (diet/stress induced models); physiological factors (geriatric models); gene-environment interaction (epigenetics); reproductive toxicology and other emerging factors (gut microbiome and HIV/SHIV studies).

DELIVERABLES	2016/17	2017/18
Number of publications	2	5
Number of publications published in journals with impact factor greater than 5	-	-
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	-	11
Number of postgraduate students receiving supervision	1	2
Number of postdoctoral fellows receiving supervision	-	-

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD

PROJECT /RESEARCH TITLE	FUNDER	PRINCIPAL INVESTIGATOR
Hyperglycinemia in captive-bred vervet monkeys with cataracts: genetic dynamics and associations	SAMRC	Zandisiwe Magwebu
Autosomal recessive congenital cataract in captive-bred vervet monkeys	SAMRC	Zandisiwe Magwebu
A comparison between the semen and sperm parameters from the captive-bred Vervet monkey (Chlorocebus aethiops) and Rhesus monkey (*Macaca mulatta*)	SAMRC	Charon de Villiers
Type I and II Gonadotropin-Releasing Hormone receptor transcript expression in Vervet monkey (*Chlorocebus aethiops*) sperm	SAMRC	Charon de Villiers
The *in vitro* effect of gonadotropin-releasing hormones, GnRH-I and GnRH-II, on the motility, vitality and acrosome integrity of Vervet monkey *(Chlorocebus aethiops)* spermatozoa	SAMRC	Charon de Villiers

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NAME OF UNIT:

BIOMEDICAL RESEARCH AND INNOVATION PLATFORM

UNIT DIRECTOR: Johan Louw

STRATEGIC PURPOSE OF UNIT

Chronic conditions such as obesity, type 2 diabetes mellitus, cardiovascular and cancer places a huge health and economic burden on South Africa. The early detection, prevention, and development of therapeutics against these disorders may significantly decrease their burden on the health system.

Research at the Biomedical Research and Innovation Platform (BRIP) is focused on three central themes:

1) The identification of new diagnostic/prognostic biomarkers of disease progression, which could facilitate intervention strategies in high risk individuals, thus contributing to decreasing the disease burden;
2) Studying these conditions in the pancreas, muscle, liver, heart, intestines and adipose tissue, thus enabling a holistic approach to elucidate the molecular and pathophysiological mechanisms that underpin these diseases, and possibly leading to the identification of new therapeutic targets; and
3) Investigating the therapeutic potential of indigenous South African plants against metabolic disorders. In addition, we also investigate their bioavailability, hepatotoxicity and potential adverse drug-herb interactions, particularly in patients using chronic medication.

Furthermore, BRIP is actively engaged in capacity development. Our aim is to develop and empower young scientists with the specialised and scarce skills required to become the next generation of scientists, and who are leaders nationally and internationally. Postgraduate students are trained in various skills ranging from analytical and critical thinking, presentation, time and project management, and extensive practical training thus equipping them with a wide array of experimental scientific skills.

DELIVERABLES	2016/17	2017/18
Number of publications	16	21
Number of publications published in journals with impact factor greater than 5	1	2
Number of policy briefs produced	-	-
Number of collaborative research projects completed or commenced in reporting period	10	18
Number of postgraduate students receiving supervision	29	33
Number of postdoctoral fellows receiving supervision	1	4

MAJOR COMMUNITY ENGAGEMENTS DURING THE REPORTING PERIOD		
NAME OF EVENT	**PURPOSE**	**PARTNERS/FUNDERS**
Television documentary (Food Unwrapped, UK) Series 11, Episode 5 (Summer Diet Special)	Engage international community about current updates in research surrounding Rooibos and metabolic disease	Ricochet television; SARC; ARC
CapeTalk Radio Interview – 8 February 2018 SAFM Radio Interview – 10 February 2018	Engage the local community about current updates in research surrounding Rooibos and metabolic disease	SARC; ARC

CONTACT DETAILS

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NAME OF UNIT:

SAMRC/TUT HERBAL DRUGS RESEARCH UNIT

UNIT DIRECTOR: Alvaro Viljoen

STRATEGIC PURPOSE OF UNIT

Herbal medicine has not been officially recognised in most countries, despite the continued use of medicinal plants over many centuries and an upsurge in the popularity and use of these natural resources throughout the last decade. Consequently, education, training and research in this area has not been rendered due attention and support. The quantity and quality of the safety and efficacy data on phytomedicines are far from sufficient to meet the criteria needed to support their use worldwide. This lack of research data can be attributed partly to the fact that healthcare policies have neglected to adequately address phytomedicines. However, the absence of appropriate or accepted research methodology for evaluating traditional and herbal medicines remains the biggest stumbling block to the commercial development of phytomedicines. It is envisaged that the Unit will use modern technology to add substantial value to assist in developing some of South Africa's botanical assets into commercial products. In this way, the Unit may be instrumental in unlocking and advancing the possible socio-economic value of our indigenous resources to the benefit of all South Africans.

The main aim of the Unit is to conduct technologically advanced scientific research, and to make basic knowledge readily available to stakeholders, in order to promote the quality, safety and efficacy (QSE) of herbal medicines.
The following aims have been identified to achieve this goal:

- Create a repository of authentic voucher material for reference purposes.
- Optimise extraction techniques for herbal materials to produce superior botanical extracts in terms of total and biomarker yield.
- Document the chemotypic variation of the most important medicinal plants in South Africa through extensive field work and in situ sampling.
- In addition to authentic raw material standards, biomarkers will be isolated using a range of preparative techniques from the most important medicinal plants. These compounds will be used as reference standards to develop quality control protocols.
- Establish an online chromatographic database of all commercially important indigenous medicinal plants. Access to such a database, to rapidly retrieve analytical methods and chromatographic fingerprints, will contribute immensely to the quality assessment of herbal drugs and further stimulate and accelerate research on South African medicinal plants.
- To establish a fast and reliable zebrafish assay to document the potential toxicity of herbal extracts and isolated constituents.

The research completed in the Unit straddles various aspects of herbal drugs, which by definition is a multidisciplinary field. The main focus is to perform both basic and applied research to address aspects relating to the quality, safety and efficacy of herbal medicines. Although focus is placed on African traditional medicines, the scope is broadened to also include internationally imported botanicals used in the preparation of phytomedicines. This approach is aimed at increasing the global exposure and relevance of the Unit.

Academic impact:
The primary objective remains the training of postgraduate students and developing human capital. The Unit managed to attract and train a large cohort of postgraduate students. Currently the Unit is a research incubator accommodating 26 postgraduate students whose projects are directly related to the aims and objectives of the Unit. Almost all students have managed to publish work emanating from their postgraduate studies and the research has been widely presented at national and international meetings. The students have managed to secure several awards and prizes during the completion of their studies. Judging by the citations and downloads statistics the completed research enjoys local and international recognition.

Contribution to society:
The herbal medicines industry delivers products fortified with extracts of natural origin that are known to have beneficial active ingredients. Despite the common belief that phytocompounds are safe, they pose the same inherent risks as synthetic xenobiotics. Not surprisingly, associations between the consumption of herbal products and instances of toxicity have been made. Although the adverse effects of phytotherapeutic medicines are recorded less frequently compared to synthetic drugs, such effects have been reported. A serious and valid concern to regulators, health professionals and users is that most herbal medicines are sold as food supplements, therefore circumventing regulations regarding their quality, safety and quality (QSE).

As of November 2013, all herbal medicinal products, packaged as a pharmaceutical dosage form (tablets, capsules etc.) or marketed as natural health products (NHP), will now be subject to regulation by The South African Health Products Regulatory Agency (SAHPRA), previously the South African Medicines Control Council (MCC). African Traditional Medicines will for now not be regulated, but it is envisaged that those that are available in pharmaceutical dosage forms will soon also face regulation. The success of any herbal medicine hinges on three crucial aspects, namely quality, safety and efficacy (QSE). It is only when these three components are confirmed that consumer trust and confidence are ensured.

DELIVERABLES	2016/17	2017/18
Number of publications	10	12
Number of publications published in journals with impact factor greater than 5	-	-
Number of collaborative research projects completed	4	5
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	4	4
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	20	33
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	20	33
Number of postdoctoral fellows receiving co-/supervision	3	3
Number of early career scientists receiving co-/supervision	4	5
Number of Postdoc students receiving co-/supervision	3	3
Number of PhD students receiving co-/supervision	4	9
Number of MSc students receiving co-/supervision	15	23

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
Developing quality control protocols for various important indigenous traditional medicines	A. Viljoen: B3 B. S. Combrinck: C2	*h* = 34 *h* = 15
Establishing a Zebrafish Research Unit at Tshwane University of Technology	A. Viljoen: B3 B. S. Combrinck: C2 C. I. Vermaak: pending	*h* = 34 *h* = 15 *h* = 14

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PRPOJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
1. Collect authentic and taxonomically verified plant material: Field work was continued to collect material from medicinal plants. In most cases, collections have been made from multiple sites to capture the botanical and phytochemical variation. Several field workers have also been used to supply important botanical samples from remote areas.	SAMRC / NRF	Prof Alvaro Viljoen Prof Sandra Combrinck
2. Create a national repository of authentic voucher material for reference purposes: The material mentioned above has been photographed and voucher material has been prepared for all collections.	SAMRC	Prof Alvaro Viljoen Supported by: Dr Guy Kamatou Dr Ilze Vermaak Mr Thabiso Bhili
3. Establish a virtual herbarium and online chromatographic database as a readily accessible online resource: We have engaged in discussions with the National Herbarium (SANBI, Pretoria) who will provide high-resolution images for this aspect of the project. A website has already been created which will be free and accessible to all to identify medicinal plants.	SAMRC	Prof Alvaro Viljoen Supported by: Dr Ilze Vermaak Dr Paul Godard
4. Document the chemotypic variation for important medicinal plants in South Africa: A comprehensive chemotypic variation study has been completed and now published for: *Harpagophytum procumbens* (Devil's Claw), *Athrixia phylicoides* (bush tea), *Sceletium tortuosum* and *Sutherlandia frutescens*. The results are being processed and prepared for publication.	SAMRC / NRF / Tshwane University of Technology	Prof Alvaro Viljoen Supported by: Prof Sandra Combrinck Dr Ilze Vermaak Dr Weiyang Chen
5. To determine the biological activity and/or toxicity of plant extracts. To achieve this objective we have established a new zebra fish facility at Tshwane University of Technology, the first in South Africa to assess the bioactivity and toxicity of SA medicinal plants. Currently students in the Unit are receiving training in Europe on zebrafish husbandry and toxicity testing.	SAMRC / Tshwane University of Technology	Prof Alvaro Viljoen Supported by: Prof Sandra Combrinck Dr Ilze Vermaak Dr Maxleene Sandasi

CONTACT DETAILS

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PROGRAMME 6

BIOMEDICAL RESEARCH

PURPOSE OF THE PROGRAMME

To conduct basic research, applied research and transactional research to determine predisposition to disease. This understanding is important for planning effective intervention and disease control.

UNITS

- Bioinformatics Capacity Development Research Unit
- Immunology of Infectious Diseases Research Unit
- Stem Cell Research and Therapy Unit
- Antiviral Gene Therapy Research Unit

STRATEGIC OBJECTIVES

- To generate scientific knowledge in the field of biomedical science, which will provide insights into various diseases of national priority. This in turn will lead to novel diagnostic, preventive and therapeutic strategies
- To undertake original research of high quality, which will provide novel insights into acute and chronic inflammatory diseases of national priority, thus leading to novel diagnostic, preventive and therapeutic strategies
- To train and mentor high-quality postgraduate students who are able to compete in the science, health and/or education sectors locally and abroad
- To strengthen biomedical research through a policy of enabling researchers from other academic institutions to have access to sophisticated laboratory equipment and supervision. In addition, to provide assistance to national research funding agencies with respect to evaluating applications for research funding
- To translate research data into policy and practice regarding prevention, diagnosis, treatment and management of diseases
- To develop and test biomedical innovations that will address various conditions
- To develop healthcare management systems and plan a 'gene therapy' intervention programme for retinal degenerative diseases

UNIT NAME:

SAMRC/SANBI/UWC BIOINFORMATICS CAPACITY DEVELOPMENT RESEARCH UNIT

UNIT DIRECTOR: Alan Christoffels

STRATEGIC PURPOSE OF UNIT

Bioinformatics is a specialist discipline straddling the fields of biology, mathematics and computer science and is integral to modern biological research. Biomedical Research utilises genomic methods to understand the diseases that impact South Africa. In turn the biomedical data calls for the development of research skills that can respond to the data analytics needs. The bioinformatics Unit contributes to the training of biomedical scientists in South Africa.

Our primary focus is the development and implementation of computational methodologies that allow biomedical researchers to accelerate their genomics data analyses. As an Extramural Research Unit of the SAMRC, our research profile comprise four research laboratories that span both communicable and non-communicable diseases, namely:

- Development of tools to respond to communicable diseases with a focus on M.tuberculosis: these tools include tools to detect drug resistance, non-coding RNA functions and platforms that allow researchers to deploy these tools to other bacterial pathogens like listeriosis
- Development of tools for studying non-communicable diseases: these tools include variant calling for next generation sequencing data, and an exome based genetic diagnosis framework for diabetes
- Evolution and molecular epidemiology of single-stranded DNA and RNA viral pathogens
- Genomics of South African Medicinal Plants
- Molecular dynamics of HIV
- Development of Biobanking informatics tools

The South African National Bioinformatics Institute (SANBI) is situated at the University of the Western Cape in Cape Town (UWC). SANBI aims to heighten awareness of bioinformatics in South Africa and to assist the country in making optimal use of this technology. As the leading bioinformatics entity in Africa, we continue to foster local and regional collaborations on health-related topics that cover both communicable and non-communicable diseases.

SANBI provides a focus for biological research located in Africa and as such, is dedicated to:

- the development of online specialised resources for genomics and genome informatics;
- capacity development in genomics and bioinformatics in South Africa; and
- the development and implementation of genome annotation methods.

The SAMRC Bioinformatics Unit aligns with the following national mandates:

- National Strategic Plan for HIV/AIDS, STIs and TB (2017 - 2022)

The vision and mission of SANBI/SAMRC Bioinformatics Unit align with the National Strategic Plan (NSP) 2017 – 2022 that outlines how the country will respond to the prevention and treatment of HIV and AIDS, TB and STIs. Specifically the NSP aims to "…*Strengthen strategic research activities to create validated evidence for innovations, improved efficiency and enhanced impact…*".

- The Department of Science and Technology's 10-Year Innovation Plan (2008 - 2018)

One of the five Grand Challenge areas specified in this Plan is the "Farmer to Pharma" value chain to strengthen the bioeconomy. SANBI/SAMRC Bioinformatics Unit genomics programme, which straddles both communicable and non-communicable diseases, aligns clearly with this Grand Challenge.

As a bioinformatics capacity development Unit, we use our research environment to ensure that postgraduate students receive state of the art training in the context of our collaborative research projects. Our bioinformatics students have taken up postdoctoral positions at neighboring universities or academic positions elsewhere.

Our research and development of computational tools has had regional impact. The current reporting period saw significant impact in the use of Exatype HIV drug resistance pipeline through the spinoff company Hyrax Biosciences. One of the largest diagnostic laboratories in the USA is now using Exatype for its routine HIV drug resistance testing. Additionally, the Kenyan Medical Research Institute (KEMRI), the Clinton Health Access Initiative in Kenya and an industry partner have been facilitating the rollout of routine HIV drug resistance testing in Kenya.

Additionally, Exatype was expanded to support TB drug susceptibility testing. In parallel with this is a complete TB resistance scoring for which an algorithm was developed. In order to undertake validation of this TB solution, partnerships were established with researchers at Stellenbosch University as well as the Critical Path to TB Drug Regimens and partners in the US Center for Diseases Control and Prevention (CDC).

The COMBAT TB project that was initiated by SANBI in 2014, in participation with Stellenbosch University, UCT and University of KwaZulu-Natal, made significant progress in 2017. The project has developed two main components: a set of workflows for *M. tuberculosis* data analysis that operate on the Galaxy platform and the COMBAT TB Explorer, a database of *M. tuberculosis* genome annotation.

Thoba Lose presented this work and its utility in variant characterisation at the Neo4j Life Sciences and Healthcare workshop in Berlin in June. The value of the COMBAT Software lie in the ability to deploy the software for other bacterial pathogen surveillance.

During this reporting period we have expanded our open-source Biobank LIMS software user base to research registers in South Africa, Kenya, Uganda, the Gambia and Ivory Coast. The role of biobanks to ensure reproducible archival biospecimens is becoming more accepted in Africa. To this end, we have seen the development of South African Biobanking best practice guidelines. The Boabab LIMS provides genetic labs with the tools to track biospecimens in their laboratory – a function previously not possible because of exorbitant license fees for commercial Biobank LIMS software.

DELIVERABLES	2016/17	2017/18
Number of publications	11	15
Number of publications published in journals with impact factor greater than 5	-	-
Number of collaborative research projects completed	-	1
Total number of students (Postdoctoral, Doctoral and Master) graduated in the entity during the reporting period	2	2
Total number of students (Postdoctoral, Doctoral and Master) sponsored, partially or fully, by the SAMRC funding	3	2
Total number of students (Postdoctoral, Doctoral and Master) directly working on SAMRC funded or co-funded projects	13	11
Number of postdoctoral fellows receiving co-/supervision	7	4
Number of early career scientists receiving co-/supervision	-	-
Number of Postdoc students receiving co-/supervision	7	4
Number of PhD students receiving co-/supervision	12	13
Number of MSc students receiving co-/supervision	12	12

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
One of the largest diagnostic laboratories in the USA is now using Exatype for its routine HIV drug resistance testing. Kenyan Medical Research Institute (KEMRI), the Clinton Health Access Initiative in Kenya and an industry partner have been facilitating the rollout of routine HIV drug resistance testing in Kenya.	Simon Travers: C1	Simon Travers H-index: 13
Baobab LIMS has been implemented in a genetic services laboratories and biobanks in South Africa, Uganda, Tunisia and Ivory Coast.	Alan Christoffels: C1	Alan Christoffels H-index: 26

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT/RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
B3Africa: Building biobank informatics tools - Completed	EU Horizon2020	EU PI: Erik Bongcam-Rudloff SA PI: Alan Christoffels
COMBAT-TB - Completed	SAMRC Flagship project	Alan Christoffels
Baobab LIMS translation to French	Ivory Coast Biobank	Alan Christoffels

CONTACT DETAILS

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UNIT NAME:

SAMRC/UCT IMMUNOLOGY OF INFECTIOUS DISEASE RESEARCH UNIT

UNIT DIRECTOR: Frank Brombacher

STRATEGIC PURPOSE OF UNIT

MISSION STATEMENT

To be a relevant and comprehensive multidisciplinary team in a centre of excellence embracing basic and applied research, improve capacity, teaching and training in immunology of infectious diseases with focus on tuberculosis and other important human infectious diseases.

GOALS

- To strengthen research expertise in infectious diseases
- To improve host protective mechanisms
- To enhance research of infectious diseases nationally and in Africa
- To improve research by international collaboration
- To increase finance by international shareholders
- To generate and provide relevant animal models
- To teach graduate, postgraduate students and clinicians
- To reduce morbidity and improve quality of life of the community
- To promote the knowledge of infectious diseases and their prevention in the population

MOTIVATION

Infectious diseases continue to be a leading cause of childhood and adult morbidity and mortality in many parts of the world, including South Africa, where it affect predominantly disadvantaged communities. Of significance are the following:

- Infectious disease such as TB, HIV, Malaria, Schistosomiasis and other opportunistic diseases are devastating to the African population and economy
- The Western Cape has the highest incidence of tuberculosis
- Presently, we have a deficiency in the understanding of host protective mechanisms
- Appropriate animal models for the study of human infectious diseases are missing
- A gap between research and clinical applications exist.

DELIVERABLES	2016/17	2017/18
Number of publications	8	23
Number of publications published in journals with impact factor greater than 5	5	13
Number of collaborative research projects completed	4	12
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	5	7
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	1	2
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	10	29

DELIVERABLES	2016/17	2017/18
Number of postdoctoral fellows receiving co-/supervision	10	11
Number of early career scientists receiving co-/supervision	4	5
Number of Postdoc students receiving co-/supervision	10	11
Number of PhD students receiving co-/supervision	6	15
Number of MSc students receiving co-/supervision	1	3

MAJOR BREAKTHROUGHS/ HIGHLIGHTS*	CURRENT NRF RATING OF UNIT DIRECTOR AND CORE RESEARCHERS	H- INDEX (SCOPUS) OF UNIT DIRECTOR AND CORE RESEARCHERS
Frank Brombacher	A1	70
Muazzam Jacobs/Tuberculosis	C2	-
Reto Guler/Tuberculosis	Submitted	18
Ramona Hurdayal/Leishmania	Not rated	8
Suraj Parihar/Tb & Listeriosis	Not rated	8
Justin Nono/Schistosomiasis	Not rated	4
Tiro Brombacher/Neuroimmunology	Not rated	3
Sabelo Hadebe/Allergy	Not rated	2

* Further details on specific research projects has been provided under Major Research Projects below.

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT/RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Allergy/House dust mite induced allergic airway disease is attenuated in CD11c$_{cre}$IL-4Rα mice.	SAMRC, NRF, SARChI, ICGEB	F. Brombacher
Leishmania/Interleukin-4 Receptor Alpha: From Innate to Adaptive Immunity in Murine Models of Cutaneous Leishmaniasis.	SAMRC, NRF, SARChI, ICGEB	F. Brombacher
Leishmania/IL-4Rα Signaling in Keratinocytes and Early IL-4 Production Are Dispensable for Generating a Curative T Helper 1 Response in Leishmania major-Infected C57BL/6 Mice.	SAMRC, NRF, SARChI, ICGEB, Swiss funds	F. Tacchini-Cottier
Macrophage Biology\Genome-wide profiling of transcribed enhancers during macrophage activation.	SAMRC, NRF, SARChI, ICGEB, New Zealand funds	S. Schmeier
Macrophage Biology\ Alternatively activated macrophages do not synthesize catecholamines or contribute to adipose tissue adaptive thermogenesis.	SAMRC, NRF, SARChi, ICGEB, NIH funds	C Buettner
Tuberculosis/ Evaluation of minor groove binders (MGBs) as novel anti-mycobacterial agents and the effect of using non-ionic surfactant vesicles as a delivery system to improve their efficacy.	SAMRC, NRF, SARChI, ICGEB, UK funds	R. Guler
Tuberculosis/ An evaluation of Minor Groove Binders as anti-fungal and anti-mycobacterial therapeutics.	SAMRC, NRF, SARChI, ICGEB, UK funds	CJ Suckling
Tuberculosis/ Protein kinase C-delta (PKCδ), a marker of inflammation and tuberculosis disease progression in humans, is important for optimal macrophage killing effector functions and survival in mice.	SAMRC, NRF, SARChI, ICGEB,	F. Brombacher

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PROJECT/RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Helminth/Interleukin 4 promotes the development of ex-Foxp3 Th2 cells during immunity to intestinal helminths.	SAMRC, NRF, SARChI, ICGEB, UK	F Wilson
Schistosomiasis/Interleukin-4 receptor alpha is still required after Th2 polarization for the maintenance and the recall of protective immunity to Nematode infection.	SAMRC, NRF, SARChI, ICGEB	F. Brombacher
Leishmanias/Schistosomiasis/. IL-4-producing B cells regulate T helper cell dichotomy in type 1- and type 2-controlled diseases.	SAMRC, NRF, SARChI, ICGEB,	F. Brombacher
Neuroimmunology\Sensory Neurons Co-opt Classical Immune Signaling Pathways to Mediate Chronic Itch.	SAMRC, NRF, SARChI, ICGEB,	BS. Kim
Bioinformatics/ FANTOM5 CAGE profiles of human and mouse samples.	SAMRC, NRF, SARChI, ICGEB, Japan	FANTOM Consortium

CONTACT DETAILS

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UNIT NAME:

SAMRC/WITS ANTIVIRAL GENE THERAPY RESEARCH UNIT

UNIT DIRECTOR: Patrick Arbuthnot

STRATEGIC PURPOSE OF UNIT

The SAMRC/WITS Antiviral Gene Therapy Research Unit aims to develop use of therapeutic nucleic acids (gene therapy) to counter serious viral infections of public health importance in sub-Saharan Africa. As gene therapy is based on rational drug design, the technology is very powerful and potentially applicable to many previously 'undruggable' diseases of South African importance. The Unit focuses mainly on advancing a cure for persistent infection with hepatitis B virus (HBV). Chronic infection with HBV is hyperendemic to sub-Saharan Africa and continues to be a significant cause of public health problems. Carriers of the virus are at high risk for cirrhosis and liver cancer. Currently licensed anti-HBV drugs are poorly effective and there is a need for improved treatment to prevent complicating cirrhosis and hepatocellular carcinoma. Research completed to date in the Unit shows that gene therapy has the potential to eliminate the virus from infected cells. Advancing our technology to use in patients is now being undertaken in partnership with large US-based partners in the pharmaceutical industry.

Expertise in gene therapy within South Africa is currently modest. The Unit is one of the only laboratories in the country with the range of skills that are required to advance gene therapy to a stage of completion of preclinical evaluation. Training of young scientists is a fundamental purpose of this unit. We are pursuing this activity vigorously to grow expertise and ensure that internationally competitive and relevant research is carried out in the Unit. Many postgraduate students and postdocs have and are being trained in gene therapy. Particular emphasis is placed on ensuring that demography of the team reflects the broader South African community. Members of historically disadvantaged backgrounds are now established as career scientists in the Unit and are making significant contributions to research in gene therapy.

In addition to developing capacity and addressing important health problems, the Unit aims to develop commercialisable technology. Attention is being paid to ensuring that valuable intellectual property is generated, which will enable advancement of new treatments. Although gene therapy is currently considered to be a 'frontier technology', significant advances are being made and the field is rapidly maturing. Drugs based on use of gene therapy are being licensed and now meet the highest standards of efficacy and safety. It is likely that gene therapy will soon form part of the main stream of modern drug development, and it is vitally important that South African medical scientists be well positioned to participate fully in the exciting developments of this exciting new field.

DELIVERABLES	2016/17	2017/18
Number of publications	16	12
Number of publications published in journals with impact factor greater than 5	8	5
Number of collaborative research projects completed	2	2
Total number of students (Postdoctoral, Doctoral and Masters) **graduated** in the entity during the reporting period	3	5
Total number of students (Postdoctoral, Doctoral and Masters) **sponsored**, partially or fully, by the SAMRC funding	4	9
Total number of students (Postdoctoral, Doctoral and Masters) **directly working** on SAMRC funded or co-funded projects	14	10
Number of postdoctoral fellows receiving co-/supervision	3	2
Number of early career scientists receiving co-/supervision	2	3
Number of Postdoc students receiving co-/supervision	3	2
Number of PhD students receiving co-/supervision	3	3
Number of MSc students receiving co-/supervision	8	6

MAJOR BREAKTHROUGHS/ HIGHLIGHTS	CURRENT NRF RATING OF UNIR DIRECTOR AND CORE RESEARCHERS	H- INDEX OF UNIT DIRECTOR AND CORE RESEARCHERS
• Continuation of collaborative project with Johnson & Johnson Innovation. Work has been aimed at developing novel gene editing-based therapy for cure from infection with hepatitis B virus.	Patrick Arbuthnot: B (re-rating submitted Jan 2018)	Patrick Arbuthnot: 34
• Appointment of Patrick Arbuthnot to serve on the scientific advisory board of the European Union and Czech government-funded project 'FIT', which aims to build nanotechnology for healthcare in central Europe.	Abdullah Ely: Y	Abdullah Ely: 12
• Continued appointment to the International Coalition to Eliminate HBV infection (ICE-HBV). This group is the first of its kind and comprises a team of scientists from countries all over the world. The aim is to promote awareness of the importance of HBV infection and to drive support to achieve a cure for HBV infection.		Betty Maepa: 6
• Continued appointment as chairman of the Research Committee of the Cancer Association of South Africa (CANSA) and deputy chairman (non-exec.) of the board of directors of CANSA.		
• Continued appointment as editor of the journal Gene Therapy (Springer Nature).		

MAJOR RESEARCH PROJECTS IN THE REPORTING PERIOD		
PRPOJECT /RESEARCH TITLE	**FUNDER**	**PRINCIPAL INVESTIGATOR**
Evaluation of synthetic formulations encoding gene editors that disable replication of hepatitis B virus.	Johnson & Johnson, Boston, MA	Patrick Arbuthnot Abdullah Ely Betty Maepa
Advancing use of targeted DNA methylation to achieve epigenetic modification of cccDNA of HBV.	NRF, DFG (German Research Foundation) SAMRC	Kristie Bloom Patrick Arbuthnot Claudio Mussolino (Freiburg, Germany)
Developing use of adeno-associated viral vectors pseudotyped with the ancestral capsid to achieve hepatotropic delivery of Anti-HBV therapeutic sequences.	SAMRC, NRF	Betty Maepa Patrick Arbuthnot
Vectored immunoprophylaxis against HIV-1 using adeno-associated viral vectors to deliver sequences encoding broadly neutralising antibodies.	SAMRC	Lynn Morris (NICD) Patrick Arbuthnot Abdullah Ely
Developing preventative and therapeutic mRNA-based vaccination against HBV.	NRF, PRF, SAMRC	Kristie Bloom Patrick Arbuthnot

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At the forefront of community advocacy

SAMRC COLLABORATING CENTRES & TB REPORT SA

SAMRC TB/HIV COLLABORATING CENTRES

SAMRC TB/HIV Collaborating Centres in tuberculosis and HIV research in adult and paediatric populations was established in 2015 with the aim of creating a cohesive programme of multidisciplinary research to address key questions that could impact on lowering the burden of disease in South Africa. The SAMRC entered into a collaboration with the NIH to establish RePORT SA, which created exclusive opportunities for the centres to apply for TB RePORT SA and RePORT international Requests for Applications.

TUBERCULOSIS COLLABORATING CENTRE FOR CHILD HEALTH (TB-CHILD)

The current focus of our research activities is the evaluation and implementation of novel diagnostics for TB in children. Our core activity over the past two years has been the recruitment of a cohort of children in whom we are evaluating new diagnostics. We recently completed an evaluation of the accuracy of the new, highly sensitive version of the Xpert MTB/RIF assay, Ultra MTB/RIF; results of this evaluation were submitted to the Scientific and Technical Advisory Committee of the World Health Organization in January 2017 for consideration in their recommendation on the implementation of Ultra MTB/RIF. We are also studying several other diagnostics, including a molecular assay to detect M. tuberculosis in easily obtained oral swabs from children (co-funded by Bill & Melinda Gates Foundation) as well as an evaluation of point of care ultrasound for the identification of tuberculosis pathology in the lungs of children.

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SOWETO MATLOSANA SAMRC COLLABORATING CENTRE FOR HIV/AIDS AND TB

The centre identifies young and emerging researchers for research support. They target those working either at Perinatal HIV Research Unit in Soweto or at the Tshepong Hospital in Matlosana, North West. Support is categorised into mentoring research projects through the entire process of protocol development, finalisation, approval, data collection, analysis and write up, and providing competitive reviewed grants programmes for new researchers to obtain funding.

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martinson@phru.co.za

CLINICAL AND COMMUNITY HIV-TUBERCULOSIS RESEARCH COLLABORATING CENTRE

The centre is a partnership between researchers at the University of Cape Town, Walter Sisulu University and other clinician researchers working in the Eastern Cape Province. They focus on clinical and translational research questions pertaining to HIV-associated TB and drug-resistant TB. Specific focus areas include improved diagnostic strategies for TB in HIV-infected patients; the pathogenesis, treatment and prevention of immune reconstitution inflammatory syndrome; and the pharmacology, toxicity and resistance issues related to novel drugs being introduced for the treatment of drug-resistant TB. We aim to develop clinical research capacity in the Eastern Cape Province through collaboration.

CONTACT: GRAEME MEINTJES
graeme.meintjes@uct.ac.za

WITS RHI COLLABORATING CENTRE FOR HIV/AIDS

The Wits Reproductive Health and HIV Institute (Wits RHI) is a leading African research institute focusing on HIV, sexual and reproductive health (SRH), and vaccine preventable diseases (VPDs). We are the largest research institute of the University of the Witwatersrand, and form part of the Faculty of Health Sciences. Our vision is to tackle Africa's health challenges through science and innovation.

CONTACT: HELEN REES
hrees@wrhi.ac.za

CENTRE FOR BASIC AND TRANSLATIONAL HUMAN TB RESEARCH

The Centre asks fundamentally important questions in the TB field that is centred on how Mtb triggers a localized immune response leading to disease or latency, reactivation and death of the host, and in what way this knowledge can be exploited for therapeutic and prophylactic purposes.

CONTACT: ADRIE STEYN
adrie.steyn@k-rith.org

ADVANCING CARE AND TREATMENT (ACT) FOR TB/HIV

The ACT for TB/HIV collaborating centre aims to do transformative and translational research that will advance understanding and have impact on patient, programme and population outcomes.

CONTACT: GAVIN CHURCHYARD
GChurchyard@auruminstitute.org

CENTRE FOR TUBERCULOSIS BIOMARKER-TARGETED INTERVENTION

The Centre brings together TB researchers with expertise in diagnostic and prognostic biomarkers of tuberculosis, in order to conceive, design, fund, and implement translational studies that use these biomarkers to target curative and preventive therapy.

CONTACT: MARK HATHERILL
mark.hatherill@uct.ac.za

WITS CLINICAL HIV/TB RESEARCH UNIT

At the Centre for Basic and Translational Human TB Research (CBTR), our long-term goal is to ask fundamentally important questions in the TB field that is centred on the following objectives: How Mtb triggers a localized immune response leading to disease or latency, reactivation and death of the host, and in what way this knowledge can be exploited for therapeutic and prophylactic purposes.

CONTACT: IAN SANNE
isanne@witshealth.co.za

TB FREE THROUGH RESEARCH AND INNOVATION

TB Free through Research and Innovation (TFRI) brings together a set of multi-disciplinary scientists and clinicians to address important research questions in TB, particularly related to drug-resistant TB, TB diagnostics, the transmission dynamics of TB, and immunopathogenesis of TB using cells from the human lung. This encompasses a wide spectrum of activities but reflects the need for multi-disciplinary teams to tackle TB-related research questions in a scientifically holistic way.

CONTACT: KEERTAN DHEDA
keertan.dheda@uct.ac.za

TYGERBERG SAMRC COLLABORATING CENTRE FOR HIV LABORATORY RESEARCH

CONTACT: PREISER WOLFGANG
preiser@sun.ac.za

CLINICAL CANCER RESEARCH CENTRES

The SAMRC established two Clinical Cancer Research Centres at medical schools/hospitals in South Africa in 2015 with the explicit aim to integrate cancer-related research programmes in fields such as basic laboratory and clinical sciences, prevention and control methodologies, and population-based studies into a transdisciplinary cancer research centre that may straddle departmental and institutional boundaries.

SAMRC/UCT Gynaecological Cancer Research Centre

SAMRC/Wits Common Epithelial Cancer Research Centre

SAMRC IN CONVERSATION WITH

SOUTH AFRICANS

STRATEGIC STAKEHOLDER ENGAGEMENTS, PARTNERSHIPS AND COLLABORATIONS

The 2017/18 reporting period was characterised by **significant partnerships and collaborations** between SAMRC and some world-renowned organisations and institutions from Africa and beyond. In addition to forging partnerships, **SAMRC also identified specific conferences** to place the brand and **engage the public about our research**.

ENGAGMENT	OBJECTIVE
China delegation visit the SAMRC, Pretoria Offices. 25 April 2017	Signing of a Memorandum of Understanding (MoU) between Beijing Genomics Institute (BGI) and SAMRC to form a partnership to develop a genomics centre of excellence.
SAMRC hosted by Swiss Embassy 17 May 2017	On invitation by the Swiss Ambassador, Budliger Artieda Helene EDA, SAMRC had an opportunity of networking and forging partnerships with Ambassadors from Italy, Arab Republic of Egypt, Tunisia, Switzerland and Finland. The main aim was to source funding for the development of new knowledge in health research and innovation.
SAMRC/DST/Novartis - Tripartite MoU signing ceremony in Parliament 24 May 2017	In collaboration with DST, SAMRC hosted a signing agreement ceremony between SAMRC, Novartis and DST in Parliament to establish a framework for potential cooperation between the three institutions.
Nigeria delegation visited SAMRC 5 – 7 June	Nigeria Institute of Medical Research visited SAMRC headquarters to establish possible collaborations in cancer research.
SA Aids 13 – 15 June 2017	SAMRC's stand showcased research outputs in HIV prevention and treatment. The exhibition stand offered the opportunity to interact with experts on HIV/AIDS prevention and treatment.
Global Evidence Summit (GES) 13 – 16 September 2017	GES afforded the SAMRC an opportunity to share its evidence based research outcomes with a broad audience from students, healthcare implementers to policy makers and academics, at the Cape Town ICC.
Innovation Bridge 15 September 2017	SAMRC highlighted outputs of its funding initiative by exhibiting innovation projects funded during the 2017/18 reporting period at the Innovation Bridge conference.
BGI/SAMRC Signing Ceremony 14 February 2018	An agreement was signed between SAMRC and Beijing Genomics Institute to build a Genomics Centre of Excellence, the first of its kind in Africa. Both institutions confirmed that the Centre will efficiently and effectively deliver on quick and fast diagnosis of diseases such as hypertension, stroke, heart disease, diabetes and cancer, which are a burden in South Africa.

MEDIA RELATIONS

The following table lists all press releases issued to national, regional and community media institutions in the reporting period April 2017 to March 2018.

MONTH	TITLE
April 2017	• Launch of the first Big Data summer school on the African continent • Glenda Gray – TIME top 100 most influential people in the world • March for Science • Cardiovascular disease and cancers account for most deaths in the Western Cape
May 2017	• Public - Private partnership promises scientific capacity development and job opportunities • SAMRC delivers amidst constricting economic climate • Reinstated South Africa Demographic and Health Survey (SADHS) reveals limited improvement in the state of country's health • Health literacy lessons help children make sense of health claims, study finds. (The Lancet Journal press)
June 2017	• National one-click access to evidence-based Cochrane reviews: increasing healthcare benefit and reducing harms and costs • Obesity and diabetes in Africa on the rise • SAMRC software provides affordable access to ethical biobanking activities • Responsive medical research in the fight against HIV/AIDS
August 2017	• SAMRC President & CEO honoured with "Lifetime Achiever award" • A lifetime of real stories liberated in new book on female academics • Sub-Saharan Africa (SSA) faces multifaceted challenge of infectious diseases & diseases of poverty
September 2017	• Rio, Brazil: A convergence to place sexual violence, intimate partner violence, child abuse & maltreatment at the heart of resolve • Antibiotics: the shift from "commercial product" to "emergency treatment" • SAMRC showcases responsive medical research and innovation • Using evidence to inform global health workforce policies: Four Cochrane overviews published today show the effectiveness of health system interventions

MONTH	TITLE
October 2017	• Accountable medical research council engages Standing Committee on Health
November 2017	• SAPRIN: evidence-base data to inform sustainable solutions • Collaboration underscores malaria agenda • Designing inclusive interventions for change • Trying working environments strain quality of health care • Public-private partnership begins HIV vaccine clinical trial in sub-Saharan Africa
December 2017	• African genetic diversity to unlock disease susceptibility • Vulnerable groups exposed to elevated heat in waiting rooms
January 2018	• Anti-Microbial Resistance + Africa + Diagnostics: Global leaders converge from across Africa to counter AMR and to help the global fight
February 2018	• Making better use of qualitative evidence in decision making • National Tuberculosis Prevalence Survey underway • Genomics centre in Cape Town to decode genes • Study confirms sexual violence as a common feature in the murders of women and children
March 2018	• Novel process for a Rooibos extract to optimise the healing effect • 60% of adverse drug reactions are caused by herbal medicines • Call for Nominations Now Open: SAMRC Scientific Merit Awards • FIND and SAMRC team up to tackle childhood TB diagnosis

The independently measured media performance of the SAMRC is reflected below:

TITLE	AVE VALUE MEASURED
AVE* generated for print media	350 796 49
AVE generated for broadcast media	67 458 33
Total AVE* generated by the SAMRC (1 April 2017 – 31 March 2018)	418 25 482

*AVE refers to the Advertising Value Equivalent that an article has generated

COVERAGE TYPE	NUMBER OF ARTICLES
Number of articles considered as positive coverage	1442
Number of articles considered as neutral coverage	2
Number of articles considered as negative coverage	727
TOTAL number of articles generated	2171

Note: Negative articles are described by the issue reported on and are not a reflection that the SAMRC's reputation was brought into disrepute or was perceived negatively in the articles.

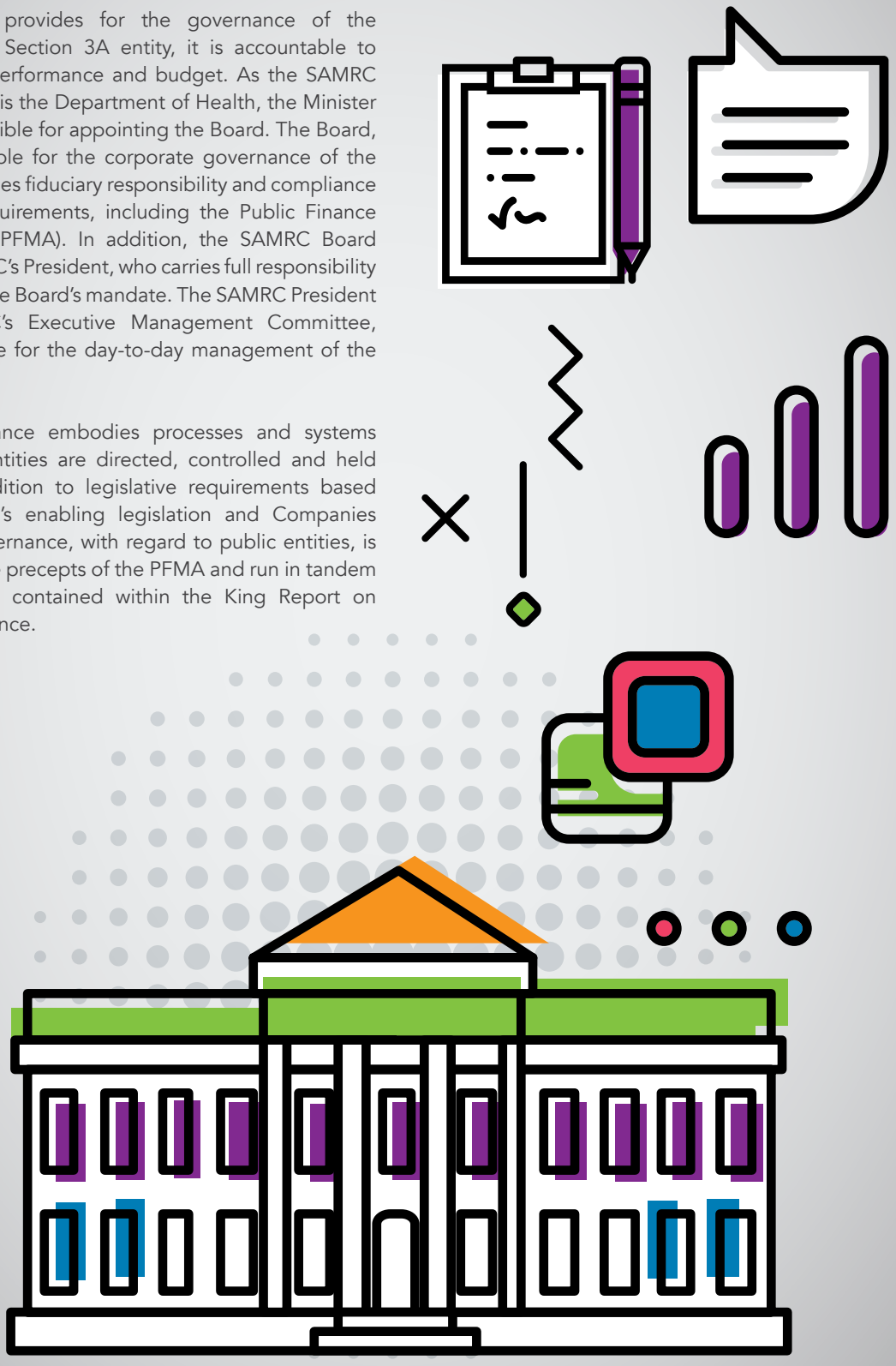
March for Science upholds the common good in the public's best interest


GOVERNANCE

INTRODUCTION

The SAMRC Act provides for the governance of the organisation. As a Section 3A entity, it is accountable to Parliament for its performance and budget. As the SAMRC executive authority is the Department of Health, the Minister of Health is responsible for appointing the Board. The Board, in turn, is responsible for the corporate governance of the SAMRC. This includes fiduciary responsibility and compliance with legislative requirements, including the Public Finance Management Act (PFMA). In addition, the SAMRC Board appoints the SAMRC's President, who carries full responsibility for implementing the Board's mandate. The SAMRC President chairs the SAMRC's Executive Management Committee, which is responsible for the day-to-day management of the organisation.

Corporate governance embodies processes and systems by which public entities are directed, controlled and held to account. In addition to legislative requirements based on a public entity's enabling legislation and Companies Act, corporate governance, with regard to public entities, is applied through the precepts of the PFMA and run in tandem with the principles contained within the King Report on Corporate Governance.



OUR LEGAL CONTEXT

CONSTITUTIONAL MANDATE

The Constitutional (Constitution of the Republic of South Africa Act, 1996 (Act 108 of 1996, as amended) base that supports the SAMRC's mandate is:

- Section 10 (right to human dignity):
- Section 11 (right to life);
- Section 12 (right to freedom and security of the person);
- Section 14 (right to privacy)
- Section 24 (right to environment that is not harmful to health)
- Section 27 (right to healthcare, food, water, and social security).

In the Constitutional context, the outcome of SAMRC work must translate to some tangible/realisable proposition addressing one of these areas.

STATUTORY AND OTHER MANDATES

The Legal and Compliance Services Division of the SAMRC has identified 52 Acts of Parliament (with 21 of those characterised as primary (i.e. non-compliance therewith or parts thereof would be catastrophic to the business/mandate of the SAMRC). Further to that, 7 Good Practice Standards (local and international) have been identified to be applicable to the SAMRC. Last, 10 Regulatory Authorities have been identified to have authority over the business or conduct of the SAMRC.

THE 51 ACTS INCLUDE THE FOLLOWING:

- SAMRC Act 58 of 1991, as amended
- This is the enabling and founding legislation creating the SAMRC. It is instructive on the mandate of the SAMRC and the prioritisation of its research programmes. The SAMRC Act empowers the functional and authoritative structures of the SAMRC to source/employ such resources and engage the Executive Authority and such other key stakeholders as may be appropriate to give effect to the mandate of the SAMRC. The SAMRC Act is currently under review. The SAMRC Board, the NDoH, the NDoST and the Parliamentary Portfolio Committee of Health have been briefed about the contemplated review of the SAMRC Act
- The National Health Act 61 of 2003
- Intellectual Property, Rights from Publicly Financed Research and Development Act, 2008
- Employment Equity Act 55 of 1998
- Basic Conditions of Employment Act 75 of 1997
- Public Finance Management Act (No.1 of 1999 as amended by Act 29 of 1999)
- The Patents Act 57 of 1978
- Copyright Act 98 of 1978 Trade Marks Act 194 of 1993
- Designs Act 195 of 1993
- Implementation of Official Languages Act 12 of 2012
- Protecting of Personal Information Act 4 of 2013

The Good Practice Codes include:

- King Code on Corporate Governance
- Good Clinical Practices (GCP)
- Good Laboratory Practices (GLP)

The Regulatory Authorities include:

- Information Regulator created in terms of the Protection of Personal Information Act
- South African Revenue Services
- Health Professions Council of South Africa

All these instrumentals are constantly monitored to attend to necessary reviews as and when public policy, professional practice and legislative changes are initiated.

LEADERSHIP GALVANISES PROCESS TO AMEND SAMRC ACT

The South African Medical Research Council (SAMRC) initiated a process in collaboration with the National Dept. of Health to review the SAMRC Act. The objective of the review process was to identify and agree to changes that could be adopted as suitable amendments to optimise the SAMRC's ability to respond to its mandate to conduct and fund research that impacts on the wellbeing of South Africans.

The SAMRC identified and justified four key reasons to review the SAMRC Act:

REASON	SAMRC ACT's CURRENT DRAWBACK
Modernise the SAMRC Act	Current Act outdated with references non-existent law, e.g. reference to 1983 Constitution.
Align the SAMRC Act with current legislation	Current Act using references to e.g. Public Deposits Act of 1984 and therefore not aligned to e.g. PFMA of 1991.
Competitively position the SAMRC	Over and above the allocation from the National Fiscus, the Act must enable the SAMRC to go the funding base and compete with its (SAMRC) counterparts.
Improve the efficacy of the SAMRC	Current Act needs to be aligned with the Companies Act 2008 and the King Code on Corporate Governance.

Key strategic stakeholders, such as the National Department of Health and the South African Law Reform Commission, were consulted as part of the initial steps of the review process to make recommendations of suitable amendments to aid the SAMRC to achieve the objectives of the review process. The strategic stakeholders, as an immediate imperative to the review process, were requested to assess the current SAMRC Act and provide their feedback on the following substantive provisions in consideration of how the SAMRC can optimise the delivery of its mandate by amending the Act:

- What the leadership requirements of the SAMRC should be;
- What the financial/funding model of the SAMRC should be;
- What approach to employ in collaborating / contracting / competing with the private sector entities doing business in medical / health research space;
- Transformation aspirations of the SAMRC and the delivery model appropriate to these; and
- What the institutional model should be.

The consultation process with the said stakeholders is expected to draw comparable experiences and organisational design and delivery models of identified local, regional, continental and global entities pursuing a cause or mandate similar to that of the SAMRC.

SAMRC'S ENGAGEMENT WITH THE PORTFOLIO COMMITTEE ON HEALTH

The South African Medical Research Council is accountable to Parliament through Parliamentary Portfolio Committee of Health. The SAMRC regularly responds to invitations from the Committee, and for the purposes of this report the period under review, presented key strategic milestones and engaged members on important matters to the mandate of health research.

Titles of the presentations delivered to the Portfolio Committee on Health in the 2017/18 reporting period.

DATE	DISCUSSION
2 May 2017	SAMRC presented its Annual Performance Plan for 2017/18
16 August 2017	SAMRC provided input on the National Public Health Institute of South African (NAPHISA) Bill
3 October 2017	SAMRC briefed the Health Portfolio Committee on its 2016/17 Annual Report
8 November 2017	SAMRC Violence, Injury and Peace Research Unit and HIV Prevention Research Unit presented their current research projects to the Health Portfolio Committee

OUR BOARD

The role of our Board is set out in the South African Medical Research Council Act of 1991 and states that "the affairs of the SAMRC shall be managed and controlled by a Board, which shall, subject to the provisions of this Act, determine the policy and objectives of the SAMRC and exercise control generally over the performance of its functions, the exercise of its powers and the execution of its duties".

In essence, the Act mandates the Board to designate an Executive Management Committee, consisting of the President and other members who are employees of the SAMRC, and who, subject to the directives and control of the Board, are responsible for managing the affairs of the organisation in accordance with the objects and policy of the SAMRC.

The Board is supported by a board secretary who fulfills a facilitative, coordination and communication role between the Board and Management, as follows:

- Organising and recording the activities of the Board and committee meetings in a professional manner
- Advising and assisting the board regarding their duties and responsibilities
- Ensuring Board and committee packs and reports are professionally compiled and timeously distributed in consultation with the Chairperson and CEO to the relevant parties
- Ensuring that statutory reports and returns are presented to the Board for approval
- Ensuring effective and efficient management of all logistical arrangements pertaining to Board activities
- Ensuring effective and accurate record-keeping of Board proceedings and resolutions in compliance with statutory requirements
- Acting as a communication and information channel for Board members
- Ensuring Board resolutions and directives are communicated and implemented by relevant parties
- Following up on Board matters (decisions and requests)
- Tracking and coordination of Board requests between the Board and management.

ABOUT OUR BOARD MEMBERS

Name	Designation	Board and Sub Committees	No Meetings Attended			
			Board	ARIC	RemCo	R&D
Prof M Sathekge	Board Chairperson	R&D (EXCO)	6			2
Prof Q Abdool Karim	Board Vice Chairperson	R&D Chairperson (EXCO)	6			3
Dr P Hanekom	Member	ARIC Chairperson (EXCO)	6	5		
Dr Z Kwitshana	Member	RemCo Chairperson (EXCO)	6		3	
Prof T Sodi	Member	RemCo (EXCO)	6		2	
Prof L Zungu	Member	RemCo	6		3	
Dr R Chikwamba	Member	RemCo	5		2	
Prof B Shaw	Member	ARIC	6	6		
Prof J Mahlangu	Member	ARIC	6	5		
Prof W Rae	Member	ARIC	5	5		
Adv N Kadwa	Member	ARIC	6	6		
Prof S Velaphi	Member	R&D	5			2
Prof E Bukusi	Member	R&D	3			2
Prof L Skaal	Member	R&D	5			3
Prof M Cotton	Member	R&D	3			2
Prof G Gray	Member/ President & CEO	R&D	6			3

EXCO is an advisory committee and meets on an ad hoc basis


Prof Glenda Gray


Prof M Sathekge


Dr Zilungile Kwitshana


Ms Nafeesa Kawda


Prof Brandon Shaw


Prof Elizabeth Bukusi


Dr Patricia Hanekom


Prof Johnny Mahlangu


Prof Linda Skaal


Prof Lindiwe Zungu


Dr Rachel Chikwamba


Prof Mark Cotton


Prof Quarraisha Abdool Karim


Prof Sithembiso Velaphi


Prof Tholene Sodi

ENTERPRISE RISK MANAGEMENT

The Board is ultimately accountable for the SAMRC's risk management process and system of internal control, and to ensure that an effective holistic approach to risk management is in place to understand, evaluate and mitigate risk at the SAMRC. In terms of a mandate by the Board, the Audit, Risk & IT Committee (ARIC) has been delegated the oversight role over the risk management process, systems of internal control, fraud risk as it relates to financial reporting and information technology risks as it relates to operational and financial reporting. The Board oversees the activities of the ARIC, the SAMRC's internal and external auditors, and the risk management function as delegated to the ARIC.

The Enterprise Risk Management (ERM) Unit at SAMRC is a dedicated department that reports directly to the ARIC. The objective of risk management in the SAMRC is to establish an integrated and effective risk management framework where important and emerging risks are identified, assessed and managed. As such, the ERM Unit has primary responsibility for the design, implementation and monitoring of enterprise-wide risk management across the SAMRC and its integration into the day-to-day activities.

The SAMRC's philosophy to ERM entails the proactive management and mitigation of risks and the exploitation of any related opportunities under the guidance of the SAMRC Board, President and Executive Management. The ERM strategy, policy and framework is subject to annual review, and any amendments are submitted to the ARIC for consideration and Board approval.

Major risks that could influence the achievement of SAMRC's strategic objectives are actively and continuously identified throughout the organisation, together with the key current mitigation strategies. Where appropriate, management action plans to further improve the management of risk are timeously developed and implemented. While risk cannot be fully eliminated, the SAMRC endeavours to minimise its exposure by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied across the entity.

ERM Unit will continue to embed risk management principles, and continue with the implementation of a process to ensure follow-up by management of their risk intervention action plans to reduce the risk exposure to the SAMRC. Further support is provided by internal audit in the form of assurance on the effectiveness of control procedures in place to reduce the possibility and outcome of known risks.

KEY RISKS AND MITIGATION ACTIVITIES

A key objective of risk management is to ensure that all potentially significant risks facing the SAMRC are identified, proactively assessed, and managed in such a way that the impact of these risks is maintained in accordance with the SAMRC's appetite and tolerance for risk.

During the financial year under review, the SAMRC Executive Management and Board identified, and took necessary mitigating actions on the key business risks identified. The table below shows the alignment between strategic focus areas and principle business risks that may impact the SAMRC's ability to achieve its objectives:

STRATEGIC FOCUS AREA	RISK CONTEXT	KEY RESPONSE MEASURES
Administer health research effectively and efficiently in South Africa	Relationship with organised Labour	• Standing monthly meetings with Union • Strengthened industrial relations within the SAMRC • Union recognition agreement
	Inefficiencies in Corporate Processes	• Management oversight • Online helpdesk services and technology • Contracts for major procurement spends • Policies, processes, SOPs
	Lack of modernisation of the MRC Act	• On-going consultation and engagement with NDoH
	Insufficient facility management, including movable and immovable assets	• Asset management and verification • Capital project refurbishment • Revamping and leasing out of office space in Ridge Road building
	Ineffective implementation of Board strategies	• On-going engagement between SAMRC President and Board Chairperson • Executive couching and senior management training
	Potential non-compliance to legal and regulatory requirements as well as policies and procedures	• Policies, guidelines and SOPs • Legal & Compliance Services • Occupational Health and Safety support
Lead the generation of new knowledge and facilitate its translation into policies and practices to improve health	Formation of NAPHISA	• On-going engagement with NDoH on the establishment of NAPHISA and Parliamentary discussions
	Inferior quality of research output and/or lack of research integrity	• External and internal quality review process • Scientific advisory committees • Research Integrity Office • Oversight over the conduct of human and animal research
	Ineffective management of Extra-mural Research Units (EMUs)	• Approved EMU management strategy • Scientific Advisory Committees
	Human capital skills deficit	• Career Progression and Advancement process • Roll out of leadership interventions, coaching and mentoring programmes • Accelerated Development and Study Support programmes
	Transformation challenges	• EE Strategy and Plan • Appointment of Intramural Unit Deputy Directors • Diversity intervention initiatives / programmes • Succession planning
	Inability to sustainably grow funding	• Dedicated on-going investigation for further international funding opportunities

STRATEGIC FOCUS AREA	RISK CONTEXT	KEY RESPONSE MEASURES
Support innovation and technology development to improve health	Ineffective support for innovation, partnerships, platforms and technology development	• IP Policy and strategy • Commercialisation plan • Spending model with long term return defined • Dedicated on-going investigation for further international funding opportunities
Limited research capacity	Limited research capacity	• Capacity building strategy for supporting the development of HDI research scientist • Scholarship and bursary programmes • Strategic relations with institutions for collaboration and accessing researchers to build clinical research capacity

INTERNAL CONTROL AND ASSURANCE

The SAMRC has a number of management controls and governance structures in place to provide assurance on the status of governance and internal control, which is designed to ensure that risks are mitigated and that the SAMRC's objectives are attained. These include clearly defined and documented processes, policies approved by the Board, and monitoring mechanisms, which ensure that appropriate actions are taken to correct deficiencies when identified. While the Board is ultimately responsible for the internal controls at the SAMRC, this function is delegated to the President to ensure that business risks are properly managed. The Board relies on the Audit Risk & IT Committee (ARIC) to monitor and report on the status of internal controls at the SAMRC.

Management plays a crucial role in terms of internal control, as the 'first line of defence', in the day-to-day activities of the organisation. Other 'control measures' include the oversight responsibilities of certain committees and the role of assurance providers. The King Report advocates that the ARIC should ensure that a combined assurance model is applied to provide a co-ordinated approach to all assurance activities.

In response to this principle, the SAMRC has developed a combined assurance model and framework to provide a coordinated approach to all assurance activities, which is reviewed and annually approved by the Board. During the financial year the SAMRC developed a detailed Combined Assurance Plan, linking the strategic risks with the key control universe, and defined and assigned appropriate assurance types (both internal and external) and activities. This included defining and agreeing with Executive Management on an approach for identifying key assurance providers, evaluating the overall assurance status of each line of defence, and calculating of the assurance process conclusion of each assurance activity based upon pre-determined weighting criteria. This process will be further refined during the 2018/19 financial year.

The ARIC is responsible for monitoring the appropriateness of the organisation's combined assurance model and ensuring that significant risks facing the SAMRC are adequately managed.

The Auditor-General has responsibility for expressing an opinion on the financial statements and to report on findings relating to the audit predetermined objectives, and material non-compliance with specific requirements in key applicable legislation.

The SAMRC outsourced Internal Audit (IA) function derives its independence from its Charter, which is reviewed and approved annually by the Board. IA reports are functional to the ARIC and the IA have unrestricted access to the Chairperson of the ARIC and SAMRC President. The internal audit function is responsible for providing Executive Management and the Board with independent, objective assurance on the adequacy and effectiveness of the risk management, internal controls and governance processes across the organisation.

FRAUD & CORRUPTION RISK MANAGEMENT

The SAMRC has a zero tolerance to fraudulent behaviour and is committed to fighting fraudulent behaviour at all levels of the organisation. The SAMRC Fraud Prevention Policy addresses fraud risk management both proactively and reactively, and the Fraud Prevention Plan developed includes a fraud strategy as one of the outputs of the plan.

A key control within SAMRC's Fraud Prevention Plan is an on-line whistle-blower hotline where staff can report fraudulent activities/incidents anonymously. The web-page, 'Report fraudulent activities at the SAMRC', is available to all staff via the SAMRC Intranet home page. Staff who have knowledge of an occurrence of fraud or corruption, or who have good reason to suspect that a fraudulent or corrupt act has occurred, have a duty to promptly report any reasonable suspicion. All reported cases are treated with the utmost confidentiality to protect the rights of both the whistle blower and the alleged party.

ETHICAL CONDUCT

The SAMRC's commitment to ethical standards is set out in the SAMRC's values, and is supported by the Board approved Code of Business Conduct Framework Policy. The Code is intended to prevent unethical behaviour and encourage ethical behaviour, and is directed at the SAMRC's internal stakeholders (Board, managers and employees) and external stakeholders, such as suppliers. The Code helps to define the parameters of the spirit of the SAMRC business and research conduct, ethics and personal ethos of staff. It is a requirement that all internal stakeholders display integrity, honesty, mutual respect and openness when conducting business.

It is the responsibility of each employee to ensure that he/she complies with the provisions of the Code. In an event where an employee breaches the provisions of the policy, this will be addressed in terms of the Disciplinary and Grievance Policy. The SAMRC also has a Declaration of Gift Procedure, which clearly defines and communicates the parameters for accepting gifts and outlines prohibited gifts and the approval process for accepting gifts.

Each SAMRC employee is required to declare any interest and potential conflicts of interest on an annual basis via an on-line declaration of interest system. All outside work, financial and private interest, and any other business activities, including gifts, must be declared when completing the SAMRC staff annual On-line Declaration of Interest. Failure to disclose interests, or the wilful provision of incorrect or misleading details can lead to charges of misconduct.

Where these relate to dealings with any state entity full declaration must be provided. SAMRC staff are entrusted with public funds and as such, they need to maintain the highest standards of professional ethics.

In addition, a code of conduct for supply chain management (SCM) practitioners and other role players is in place, whereby conflicts of interest are declared on an annual basis in addition to the SAMRC-wide annual on-line declaration process.

SAMRC'S MATERIALITY & SIGNIFICANCE FRAMEWORK: 2017/2018

The Materiality and Significance Framework for the MRC, in terms of the Treasury Regulation 28.3.1 and the National Treasury Practice Note on Applications under of Section 54 of the Public Finance Management Act (PFMA), is as follows:

Section 50: Fiduciary duties of accounting authorities:

1) The accounting authority for a public entity must:

PFMA SECTION	QUANTITATIVE [AMOUNT]	QUALITATIVE [NATURE]
(c) on request, disclose to the executive authority responsible for that public entity or the legislature to which the public entity is accountable, all material facts, including those reasonably discoverable, which in any way may influence the decisions or action of the executive authority or that legislature;	Disclose all material facts.	The Board will disclose to the National Department of Health all material facts as requested and all material facts not requested, including those reasonably discoverable, which in any way may influence the decisions or action of the National Department of Health, at the discretion of the Board.

Section 51: General responsibilities of accounting authorities:

1) An accounting authority for a public entity:

PFMA SECTION	QUANTITATIVE [AMOUNT]	QUALITATIVE [NATURE]
(g) promptly inform the National Treasury on any new entity which that public entity intends to establish or in the establishment of which it takes the initiative, and allow the National Treasury a reasonable time to submit its decision prior to formal establishment; and	Disclose all material facts timeously.	Full particulars to be disclosed to the Minister of Health for approval after which it is to be presented to Treasury.

Section 54: Information to be submitted by accounting authorities:

2) Before a Public Entity concludes any of the following transactions, the Accounting Authority for the Public Entity must promptly and in writing inform the relevant Treasury of the transaction and submit relevant particulars of the transaction to its Executive Authority for approval of the transaction:

PFMA SECTION	QUANTITATIVE [AMOUNT]	QUALITATIVE [NATURE]
a) establishment of a company;	Any proposed establishment of a legal entity.	Full particulars to be disclosed to the Minister of Health and Minister of Finance (National Treasury) for approval (simultaneous submission).
b) participation in a **significant** partnership, trust, unincorporated joint venture or similar arrangement;	Qualifying transactions exceeds R12.5Mil (based on 2% of total average SAMRC assets, as at 31 March 2016). This includes research collaborative arrangements	
c) acquisition or disposal of a **significant** shareholding in a company;	Greater than 20% of shareholding.	
d) acquisition or disposal of a **significant** asset;	Qualifying transactions exceeds R12.5Mil (based on 2% of total average SAMRC assets, as at 31 March 2016). Including Financial Leases.	Any asset that would increase or decrease the overall operational functions of the SAMRC, outside of the approved strategic plan and budget.
e) commencement or cessation of a **significant** business activity; and	Any activity not covered by the mandate / core business of the SAMRC and that exceeds the R12.5Mil transaction value (based on 2% of total average SAMRC assets, as at 31 March 2016).	Full particulars to be disclosed to the Minister of Health and Minister of Finance (National Treasury) for approval (simultaneous submission).
f) a significant change in the nature or extent of its interest in a significant partnership, trust, unincorporated joint venture or similar arrangement.	Qualifying transactions exceeds R12.5Mil (based on 2% of total SAMRC assets, as at 31 March 2016)	

Section 55: Annual report and financial statements

3) The annual report and financial statements referred to in subsection (1) (d) ("financial statements") must:

a) fairly present the state of affairs of the Public Entity, its business, its financial results, its performance against predetermined objectives and its financial position as at the end of the financial year concerned;
b) include particulars of:

PFMA SECTION	QUANTITATIVE [AMOUNT]	QUALITATIVE [NATURE]
(i) any material losses through criminal conduct and any irregular expenditure and fruitless and wasteful expenditure that occurred during the financial year;	All instances	• Report quarterly to the Minister of Health • Report annually in the Annual Financial Statements
(ii) any criminal or disciplinary steps taken as a consequence of such losses or irregular expenditure or fruitless and wasteful expenditure;		
(iii) any losses recovered or written off;		

PFMA SECTION	QUANTITATIVE [AMOUNT]	QUALITATIVE [NATURE]
(iv) any financial assistance received from the state and commitments made by the state on its behalf; and	All instances	• Report quarterly to the Minister of Health • Report annually in the Annual Financial Statements
(v) any other matters that may be prescribed.	All instances, as prescribed	

Section 56: Assignment of powers and duties by accounting authorities

PFMA SECTION	QUANTITATIVE [AMOUNT]	QUALITATIVE [NATURE]
1) The accounting authority for a public entity may: (a) In writing delegate any of the powers entrusted or delegated to the accounting authority in terms of this Act, to an official in that public entity (b) Instruct an official in that public entity to perform any of the duties assigned to the accounting authority in terms of this Act.	Values excluded from the Delegation of Authority Framework Policy.	Instances that are excluded from the Delegation of Authority Framework Policy.
2) A delegation or instruction to an official in terms of subsection (1): (c) Is subject to any limitations and conditions the accounting authority may impose; (d) May either be to a specific individual or to the holder of a specific post in the relevant public entity; and (e) Does not divest the accounting authority of the responsibility concerning the exercise of the delegated power or the performance of the assigned duty.	Values excluded from the Delegation of Authority Framework Policy.	Instances that are excluded from the Delegation of Authority Framework Policy.

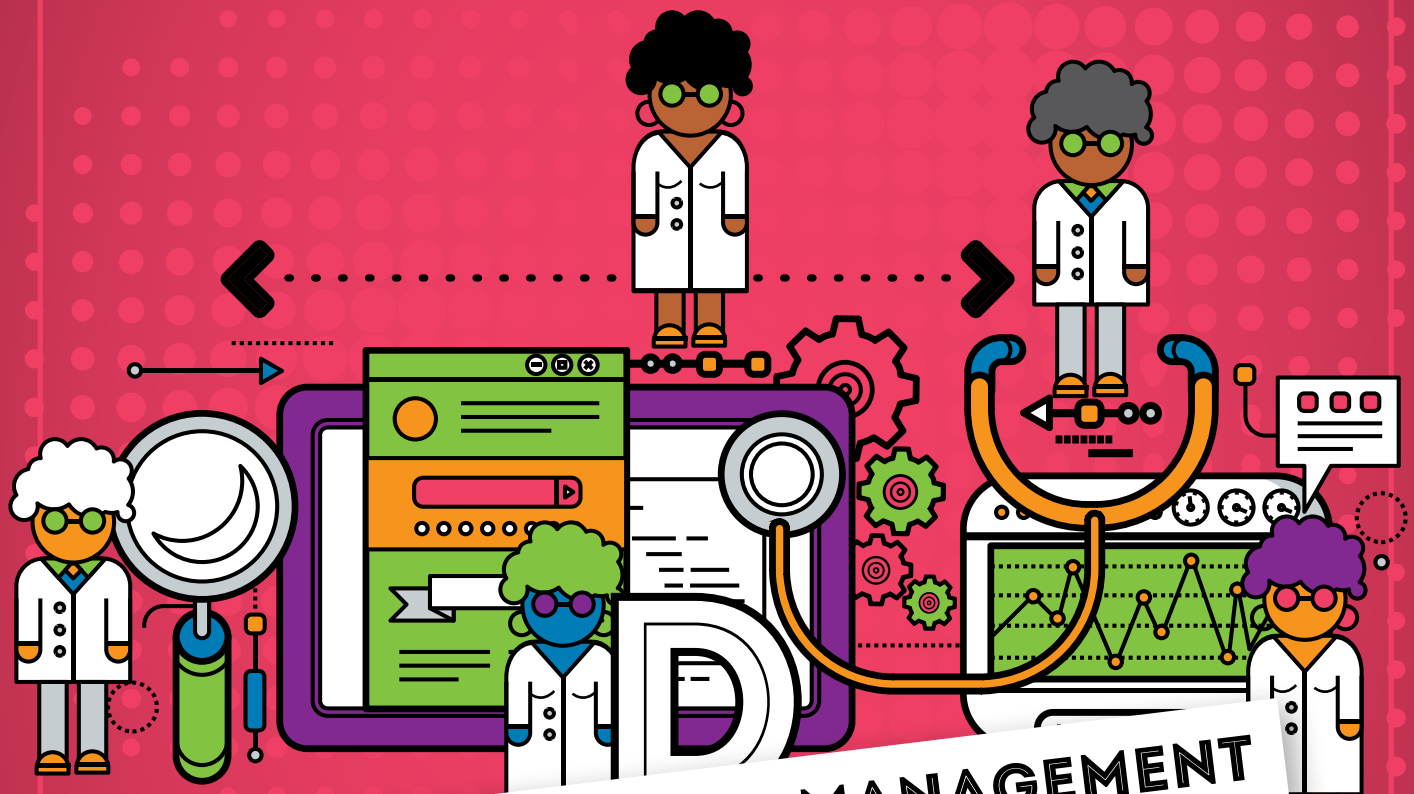
TREASURY CIRCULARS AND GUIDELINES RELATED TO SUPPLY CHAIN MANAGEMENT

1) National Department of Health and National Treasury are to be notified of procurement transactions exceeding R12.5 Million;
2) Obtained prior written approval from National Treasury for variation amounts in excess of:
   a. 20% or R20 Million (including applicable taxes) for construction related orders; and
   b. 15% or R15 Million (including applicable taxes) for goods / service related orders

The materiality level mentioned above was calculated using the guidance practice note of the National Treasury. Using these parameters the SAMRC materiality level calculation outcomes were as follows:

ELEMENT	% RAND TO BE APPLIED AGAINST R VALUE	ELEMENT VALUE AT 31 MARCH 2016	CALCULATED MATERIALITY & SIGNIFICANCE VALUE
Total Assets (1%-2%)	2%	R 628 635 288.00	R 12 572 705.76

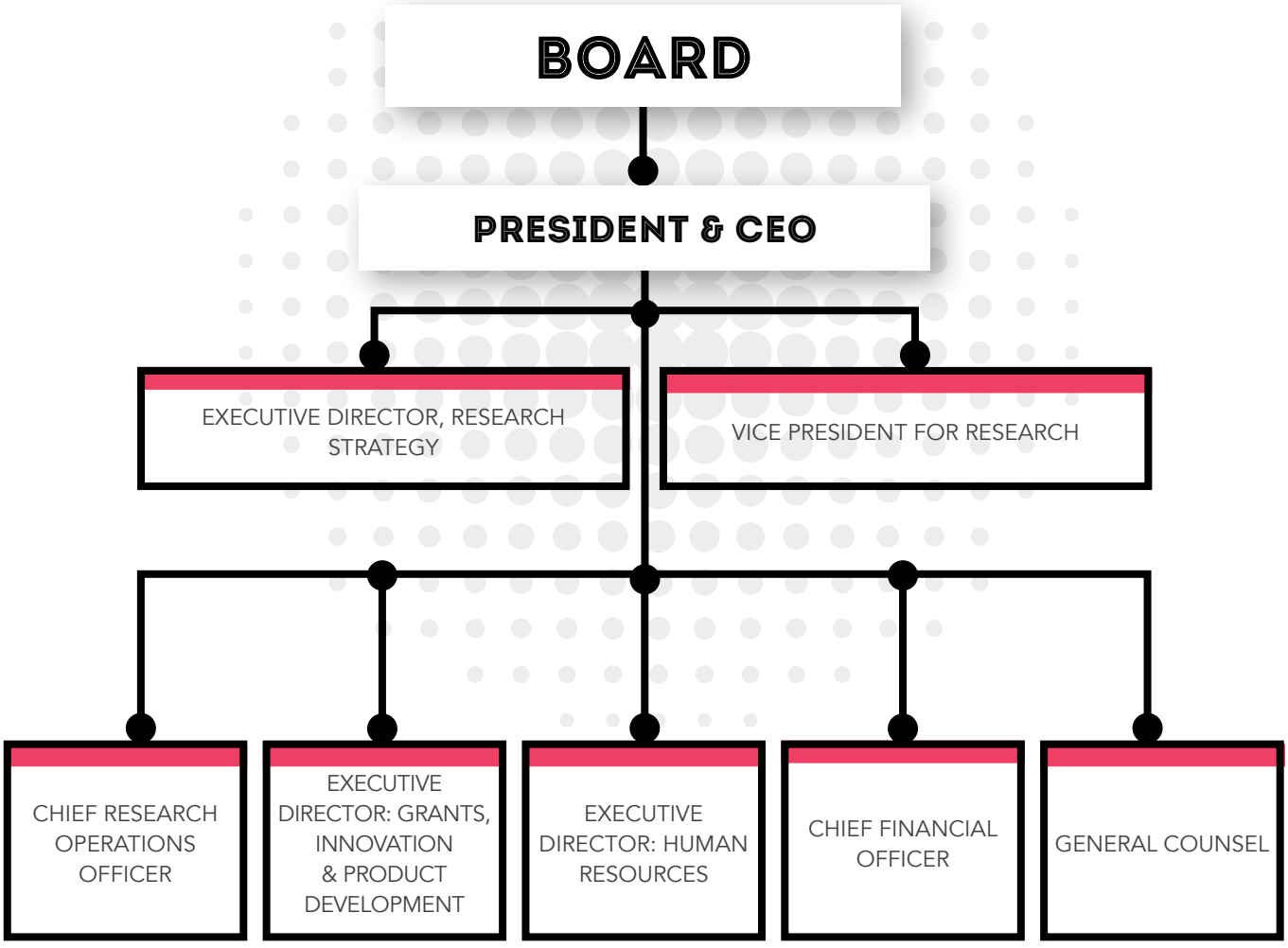
The SAMRC materiality and significant value will be R12.5 Million based on the highest percentage of the total asset element and the significant fluctuations in the month-to-month total asset value. This is the most stable element, given the performance statement outcomes associated with the current economic climate challenges.



HUMAN RESOURCES MANAGEMENT

SAMRC

ORGANOGRAM



HIGH LEVEL ORGANISATIONAL STRUCTURE

OVERVIEW

HR's primary function is to enable scientists and those who support the scientists to have the necessary passion, skills and experience to help the SAMRC deliver its mandate of funding and conducting research that impacts on the lives of South Africans.

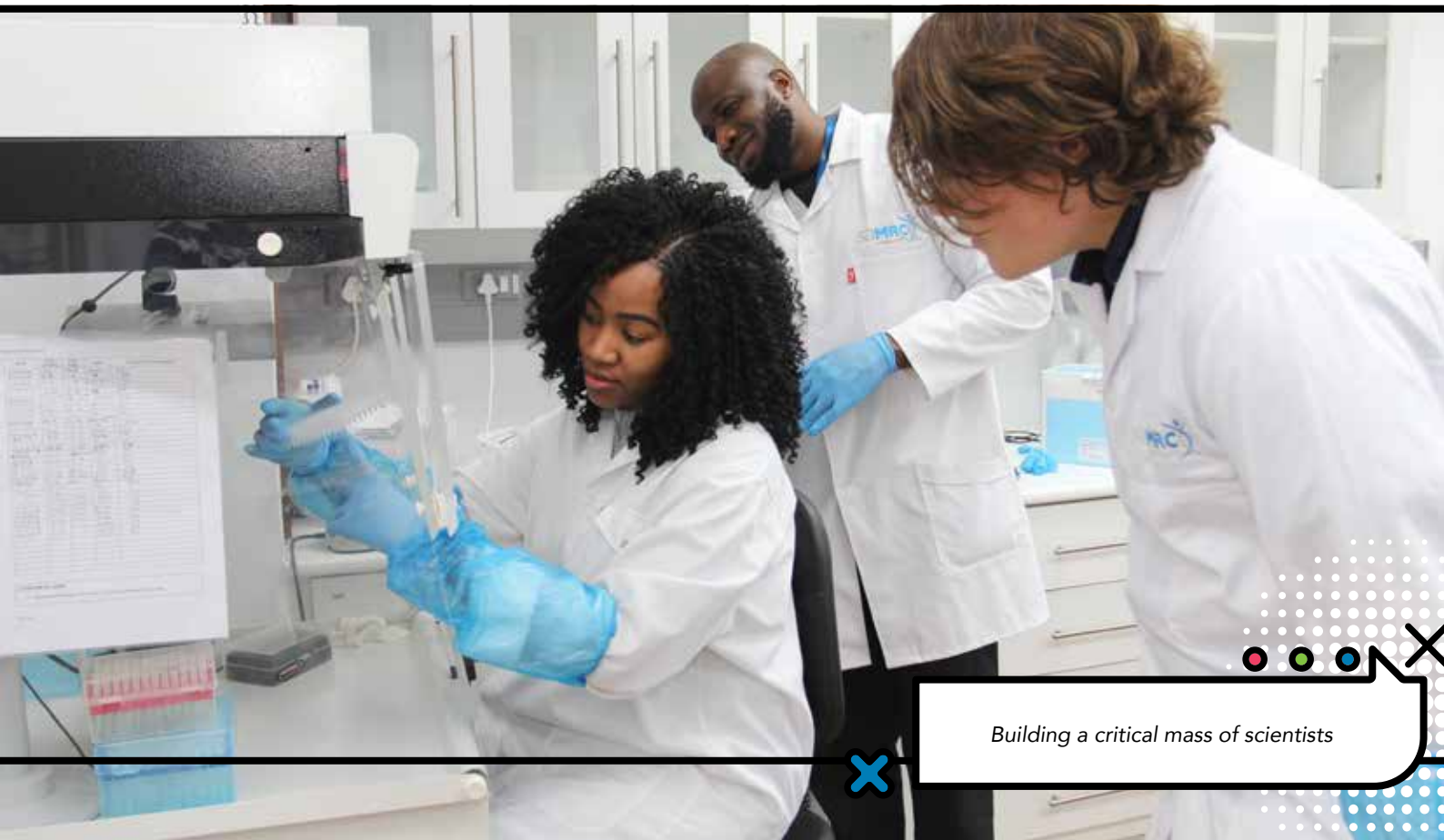
This HR Report provides employee metrics that demonstrate how we are translating the SAMRC's strategic priorities into action in order to have an impact on the lives of South Africans. It gives examples of what was achieved in 2017/18 in the areas of transformation, recruitment and human capacity development (through numerous study assistance and training programmes). The report addresses the implementation of the remuneration policy through career progression of staff that is fair, transparent and addresses issues of equity.

HR operates in close partnership with Executive Management, unit directors and all business divisions and infrastructure functions and endeavors to assist the SAMRC and its employees to achieve the annual performance indicators.

HR PRIORITIES FOR THE YEAR UNDER REVIEW

Transformation is still the top priority for the SAMRC during this period. It was also important to implement a career advancement and progression process for staff. The effective management of staff continued to be a focus area through the training of managers in employee relations and the completion of formal management training and development programmes.

There was a concerted effort to continue improving recruitment practice and turnaround times so that the appropriate skills are attracted and appointed to the organisation. Through the implementation of regular, scheduled monthly engagements, the organisation demonstrated its commitment to improving the relationship with labour.



Building a critical mass of scientists

ACHIEVEMENTS

Organisational transformation targets were further improved. There is still a need for more appointments of Africans (and especially African women) to the Senior Management cadre. A transformation plan for scientists was developed. The need for developing a pipeline and appointing more specialist scientists was identified and is being actioned.

Managers were offered training on employee relations in order to improve the management of employees. In particular, managers were trained to deal with misconduct and poor performance. This has already had a positive impact on the relationship with employees.

A new Wellness Programme service provider was appointed. Wellness days, which were well attended, were held in Cape Town, Pretoria and Durban.

The Career Progression and Advancement model for scientists was finalised. A rigorous review process was conducted by a specialist panel and 62 people were advanced – which has impacted staff motivation.

HR executed the payment of 2016/17 performance bonuses whilst still remaining within the approved quantum. The 2018 salary negotiations were successfully concluded with the SAMRC remaining within the approved budget.

TRANSFORMATION

The SAMRC has developed a Transformation Plan for Science for the period 2017-2021. The Transformation Plan is committed to advancing transformation within the SAMRC but also to extending its focus externally into extramural units, where possible.

A limited critical mass in medical and health research has been identified. Therefore, the transformation of the pool of scientists, particularly at the Specialist Scientist level and above, are the key targets of this Transformation Plan. To address succession and transformation, three additional Deputy Director posts were created and internal staff appointed into those posts giving preference to Employment Equity candidates.

Internal capacity development initiatives continue to grow intramural scientific critical mass through the funding of Masters and PhD students and the provision of Post-doctoral development opportunities.

As part of the Transformation programme, the SAMRC also focused on disabilities during the final quarter of the year. Employees were given an opportunity to make a declaration of any condition which they believe constitutes a disability. This will enable the SAMRC to accommodate the disability within the workplace.

RECRUITMENT

In 2017, the recruitment turnaround time was shortened to well below the target of 32 days. The table below depicts the number and level of new recruits in the SAMRC to ensure that we are fit for purpose.

Recruitment (new employees), 1 April 2017 to 31 March 2018

Occupational band	Male				Female			
	African	Coloured	Indian	White	African	Coloured	Indian	White
Top management	0	0	0	0	0	0	0	0
Senior management	0	0	2	0	0	0	0	0
Professionally qualified and experienced specialists and mid-management	3	1	1	1	12	1	9	2

Occupational band	Male				Female			
	African	Coloured	Indian	White	African	Coloured	Indian	White
Skilled technical and academically qualified workers, junior management, supervisors, foreman and superintendents	15	2	0	0	45	4	1	0
Semi-skilled and discretionary decision making	22	3	1	0	55	12	0	0
Unskilled and defined decision making	2	0	0	0	0	0	0	0
Total	42	6	4	1	112	17	10	2

PERFORMANCE MANAGEMENT

The SAMRC has ensured that all employees have a performance contract in place. At least one mid-year formal progress discussion was held with all employees and all year-end reviews were conducted between managers and their reportees. The organisation has developed career progression criteria for scientists and statisticians, which provide a clear career development opportunity for employees. The same process is envisaged for the other job categories during 2018/19.

EMPLOYEE AND LABOUR RELATIONS

The SAMRC has a recognition agreement with NEHAWU as a majority Union. The relationship with the Union is sound and co-operative, and communication lines are open at all times. The Union is involved in many of the HR processes, e.g. a union member sat on committees evaluating career progression and advancement, and a union observer attends all recruitment processes. Regular, monthly meetings are held to discuss matters of importance and mutual interest.

CHALLENGES FACED

There is a need to develop career development criteria for support staff in order to provide them with clearer career paths and a mechanism for advancement within the organisation.

An on-going challenge is responding to staff's need for security of employment whilst balancing the organisation's need to carefully manage its headcount. There is also a need for more support staff. Once again, the organisation has to balance this need with the Treasury guidelines and ratios for support staff.

The service provider has indicated that the Resource Link system will be phased out. There is a need to migrate to a new Human Resource Information System (HRIS). This presents an opportunity to ensure that the SAMRC adopts a new HRIS that will enable greater effectiveness and efficiencies in reporting and data management.

Transformation (including Diversity) is an on-going a challenge for the SAMRC.

HUMAN RESOURCE

STATISTICS

EXPENDITURE

The following table summarises the final audited expenditure by salary bands.

Table 1: Personnel costs by salary bands, 2017/18

SALARY BANDS	PERSONNEL EXPENDITURE (R)	% OF TOTAL PERSONNEL COST	AVERAGE PERSONNEL COST PER EMPLOYEE (R)
Lower skilled (levels 1-2)	3 219 856.00	1.05%	139 993.74
Skilled (level 3-5)	21 891 198.00	7.13 %	154 163.37
Highly skilled production (levels 6-8)	90 540 110.00	29.49	342 954.96
Highly skilled supervision (levels 9-12)	113 476 838.00	36.96%	713 690.81
Senior management (levels 13-16)	77 927 394.00	25.37%	1 320 803.29
TOTAL	309 215 396.00	100%	474 583.30

The following tables provide a summary per programme of expenditure incurred as a result of salaries and overtime. In each case, the table provides an indication of the percentage of the personnel budget that was used for these items.

Investing in science for South Africa's health and wealth

Table 2: Salaries, overtime, home-owners allowance and medical assistance by salary bands, 2017/18

SALARY BANDS	SALARIES						OVERTIME				
	AMOUNT (R) -BASELINE	SALARIES AS A % OF TOTAL PERSONNEL COST	AMOUNT (R) – CONTRACT	SALARIES AS A % OF TOTAL PERSONNEL COST	AMOUNT (R) – FLAGSHIP BL	SALARIES AS A % OF TOTAL PERSONNEL COST	AMOUNT (R) - BASELINE	OVERTIME AS A % OF TOTAL PERSONNEL COST	AMOUNT (R) - CONTRACT	OVERTIME AS A % OF TOTAL PERSONNEL COST	AMOUNT (R) – FLAGSHIP BL
Lower skilled (Levels 1-2)	3 096 856.00	1%	123 000.00	0.4%	0	0	17690.24	0.01%	0	0	0
Skilled (Levels 3-5)	5 152 595.00 + 12 159 162.00	1.6% + 3.9%	16 312 227.00 + 7 936 823.00	5.28% + 2.57%	892 619.00	0.29%	67794.36	0.02%	154 608.02	0.05%	0
Highly skilled production (Levels 6-8)	41 707 289.00	13.11%	32 506 518.00	10.51%	0	0.44%	382267.13	0.12%	117 641.32	0.04%	0
Highly skilled supervision (Levels 9-12)	72 231 671.00	23.3%	5 449 974.00	1.76%	0	0	43165.38	0.01%	0	0	0
Senior management (Levels 13-16)	56 550 488.00 + 17 034 618.00	18.2% + 5.5%	38 826 103.00 + 2 272 950.00	12.56% + 0.74%	1 058 047.00	0.34%	14943.12	0.005%	0	0	0
TOTAL	207 932 679.00	66.61%	97 977 621.00	32.06%	3 305 096.00	1.07%	525860.23	0.17%	272 249.34	0.09%	0

The SAMRC provides a total cost to company package. Home owners allowance and medical aid assistance is therefore not indicated as a separate component.

EMPLOYMENT AND VACANCIES

The following table summarises the number of posts on the establishment, the number of employees, the vacancy rate, and whether there are any staff who are additional to the establishment.

Table 3: Employment and vacancies by salary bands, 31 March 2018 (includes permanent and contract staff)

SALARY BAND	NUMBER OF POSTS	NUMBER OF POSTS FILLED	BASELINE FUNDED (PERMANENT, INDEFINITE AND TERM BASELINE)	CONTRACT FUNDED	FLAGSHIP	VACANCY RATE (%)	NUMBER OF POSTS FILLED ADDITIONAL TO THE ESTABLISHMENT
Lower skilled (Levels 1-2)	24	23	21	2	0	4.2	0
Skilled (Levels 3-5)	146	146	32	108	6	0	0
Highly skilled production (Levels 6-8)	283	267	148	113	6	5.7	0
Highly skilled supervision (Levels 9-12)	161	150	94	54	2	6.8	0

SALARY BAND	NUMBER OF POSTS	NUMBER OF POSTS FILLED	BASELINE FUNDED (PERMANENT, INDEFINITE AND TERM BASELINE)	CONTRACT FUNDED	FLAGSHIP	VACANCY RATE (%)	NUMBER OF POSTS FILLED ADDITIONAL TO THE ESTABLISHMENT
Senior management (Levels 13-16)	59	54	51	3	0	8.5	0
TOTAL	673	640	346	280	14	4.9	0

JOB EVALUATION

Table 4 summarises the number of jobs that were evaluated during the year under review. The table also provides statistics on the number of posts that were upgraded or downgraded.

Table 4: Job evaluation, 1 April 2017 to 31 March 2018

SALARY BAND	NUMBER OF POSTS	NUMBER OF JOBS EVALUATED	% OF POSTS EVALUATED BY SALARY BANDS	POSTS UPGRADED		POSTS DOWNGRADED	
				NUMBER	% OF POSTS EVALUATED	NUMBER	% OF POSTS EVALUATED
Lower skilled (Levels 1-2)	24	0	0	0	0	0	0
Skilled (Levels 3-5)	146	5	3	5	100	0	0
Highly skilled production (Levels 6-8)	283	41	14	20	49	0	0
Highly skilled supervision (Levels 9-12)	161	48	30	31	65	0	0
Senior management	59	12	20	6	50	0	0
Total	673	106	16	62	58	0	0

Note: posts evaluated were for both career progression/advancement and recruitment (new posts, etc). Therefore, not all posts qualified to be considered for up or downgrade

The following table provides a summary of the number of employees whose salary positions were upgraded due to their posts being upgraded.

Table 5: Profile of employees whose salary positions were upgraded (promotions or career advancement) due to their posts being upgraded, 1 April 2017 to 31 March 2018

Beneficiaries	African	Asian	Coloured	White	Total
Female	21	10	13	8*	52
Male	5	1	3	1	10
Total	26	11	16	9	62
Employees with a disability					1*

The following table summarises the number of cases where remuneration levels exceeded the grade determined by job evaluation. Reasons for the deviation are provided in each case.

Table 6: Employees whose salary level exceed the grade determined by job evaluation, 1 April 2017 to 31 March 2018 (in terms of PSR 1.V.C.3)

Total number of employees whose salaries exceeded the grades determined by job evaluation in 2017/18	0

EMPLOYMENT CHANGES

Turnover rates provide an indication of trends in the employment profile of the department. The following table provides a summary of turnover rates by salary band.

Table 7: Annual turnover rates by salary band, 1 April 2017 to 31 March 2018

SALARY BAND	NUMBER OF EMPLOYEES PER BAND	APPOINTMENTS AND TRANSFERS INTO THE DEPARTMENT	TERMINATIONS AND TRANSFERS OUT OF THE DEPARTMENT	TURNOVER RATE (%)
Lower skilled (Levels 1-2)	23	2	2	9
Skilled (Levels 3-)	146	93	38	26
Highly skilled production(Levels 6-8)	267	67	48	18
Highly skilled supervision(Levels 9-12)	150	30	25	17
Senior management	54	2	5	9
Total	640	194	118	18

Formula used: Band terminations / band total x 100/1 = turnover rate (%)

The table below depicts the reasons for staff leaving the SAMRC.

Table 8: Reasons why staff are leaving the SAMRC

TERMINATION TYPE	NUMBER OF EXITS	% OF TOTAL EXITS
Death	2	2
Resignation	58	49
Expiry of contract	44	37
Dismissal – operational changes	0	0
Dismissal – misconduct	0	0
Dismissal: Inefficiency	0	0
Discharged due to ill-health	0	0
Retirement	13	11
Transfers to other public service departments	0	0
Terminations	0	0
Other: Retrenchment	1	1
Total	118	100
Total number of employees who left as a % of the total employment		18

Formula used: terminations / total = turnover rate (%) for organisation

EMPLOYMENT EQUITY

The tables in this section are based on the formats prescribed by the Employment Equity Act, 55 of 1998.

Table 9: Total number of employees (including employees with disabilities) in each of the following occupational categories, 31 March 2018

OCCUPATIONAL CATEGORY (SASCO)	MALE				FEMALE				TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	
Legislators, senior officials and managers	6	4	5	14	2	5	3	15	54
Professionals	15	9	4	2	36	27	27	30	150
Technicians and associate professionals	33	22	12	4	108	52	29	7	267
Clerks	41	8	1	1	72	18	3	2	146
Service and sales workers	0	0	0	0	0	0	0	0	0
Skilled agriculture and fishery workers	0	0	0	0	0	0	0	0	0
Craft and related trades workers	0	0	0	0	0	0	0	0	0
Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
Elementary occupations	11	3	0	0	5	4	0	0	23
Total	106	46	22	21	223	106	62	54	640
Employees with disabilities	0	0	0	1	1	1	0	1	4

Table 10: Total number of employees (including employees with disabilities) in each of the following occupational bands, 31 March 2018

OCCUPATIONAL BAND	MALE				FEMALE				TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	
Top management	3	1	0	2	0	0	0	2	8
Senior management	3	3	5	12	2	5	3	13	46
Professionally qualified and experienced specialists and mid-management	15	9	4	2	36	27	27	30	150

OCCUPATIONAL BAND	MALE				FEMALE				TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	
Skilled technical and academically qualified workers, junior management, supervisors, foreman and superintendents	33	22	12	4	108	52	29	7	267
Semi-skilled and discretionary decision making	41	8	1	1	72	18	3	2	146
Unskilled and defined decision making	11	3	0	0	5	4	0	0	23
Total	106	46	22	21	223	106	62	54	640

Table 11: Recruitment (new employees), 1 April 2017 to 31 March 2018

OCCUPATIONAL BAND	MALE				FEMALE				TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	
Top management	0	0	0	0	0	0	0	0	0
Senior management	0	0	2	0	0	0	0	0	2
Professionally qualified and experienced specialists and mid-management	3	1	1	1	12	1	9	2	30
Skilled technical and academically qualified workers, junior management, supervisors, foreman and superintendents	15	2	0	0	45	4	1	0	67
Semi-skilled and discretionary decision making	22	3	1	0	55	12	0	0	93
Unskilled and defined decision making	2	0	0	0	0	0	0	0	2
Total	42	6	4	1	112	17	10	2	194
Employees with disabilities	0	0	0	0	1	1	0	0	2

Table 12: Promotions, 1 April 2017 to 31 March 2018

OCCUPATIONAL BANDS	MALE				FEMALE				TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	
Lower skilled (Levels 1-2)	0	0	0	0	0	0	0	0	0
Skilled (Levels 3-5)	1	0	0	0	3	1	0	0	5
Highly skilled production (Levels 6-8)	0	1	1	0	9	4	5	0	20
Highly skilled supervision (Levels 9-12)	4	2	0	0	9	7	4	5	31
Senior management	0	0	0	1	0	1	1	3	6
Total	5	3	1	1	21	13	10	8	62
Employees with disabilities	0	0	0	0	0	0	0	1	1

Table 13: Terminations, 1 April 2017 to 31 March 2018

(Terminations include all exits in the organisation for the period - refer to table 8)

OCCUPATIONAL BAND	MALE				FEMALE				TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	
Top management	0	0	0	0	0	0	0	0	0
Senior management	0	1	1	1	0	0	1	1	5
Professionally qualified and experienced specialists and mid-management	4	0	0	1	5	3	9	3	25
Skilled technical and academically qualified workers, junior management, supervisors, foreman and superintendents	3	2	1	0	29	5	3	5	48
Semi-skilled and discretionary decision making	4	2	0	0	23	8	1	0	38

OCCUPATIONAL BAND	MALE				FEMALE				TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	
Unskilled and defined decision making	1	0	0	0	1	0	0	0	2
Total	12	5	2	2	58	16	14	9	118
Employees with disabilities	0	1	0	0	0	1	0	1	3

Table 14: Disciplinary action, 1 April 2017 to 31 March 2018

	MALE				FEMALE				TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	
Disciplinary action	2	1	0	0	1	1	0	0	5

Table 15: Skills development, 1 April 2017 to 31 March 2018

	AFRICAN	COLOURED	INDIAN	WHITE	AFRICAN	COLOURED	INDIAN	WHITE	TOTAL
Legislators, senior officials and managers	0	2	1	3	1	2	2	0	11
Professionals	10	5	1	2	30	31	28	9	116
Technicians and associate professionals	10	7	1	0	24	21	4	4	71
Clerks	17	6	3	0	76	13	16	0	131
Service and sales workers	0	0	0	0	0	0	0	0	0
Skilled agriculture and fishery workers	0	0	0	0	0	0	0	0	0
Craft and related trades workers	0	0	0	0	0	0	0	0	0
Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
Elementary occupations	0	1	0	0	0	1	0	0	2
Total	37	21	6	5	131	68	50	13	331
Employees with disabilities	0	1	0	0	1	0	0	1	3

PERFORMANCE REWARDS

To encourage good performance, the department has granted the following performance rewards (or performance bonuses) during the year under review. The information is presented in terms of race, gender, and disability (Table 16) and salary bands (Table 17).

Table 16: Performance bonuses by race, gender, and disability, 1 April 2017 to 31 March 2018

	BENEFICIARY PROFILE			COST	
	NUMBER OF BENEFICIARIES	TOTAL NUMBER OF EMPLOYEES IN GROUP	% OF TOTAL WITHIN GROUP OF BENEFICIARIES	COST (R)	AVERAGE COST PER EMPLOYEE (R)
AFRICAN					
Male	37	55	67	439322	11873
Female	73	115	63	572026	7836
ASIAN					
Male	15	18	83	224626	14975
Female	38	58	66	499804	13152
COLOURED					
Male	30	42	73	326038	10868
Female	80	94	85	823095	10289
WHITE					
Male	12	19	63	345578	28798
Female	40	56	71	699310	16973
Employees with a disability	2	4	50	37786	18893
Total	327	456	72	3967585	12133

Note: *only employees eligible for a bonus have been counted. Employees with less than 12 months' service were not eligible, thus not included in figures.*

Table 17: Performance bonuses by salary bands for personnel below Senior Management Service, 1 April 2017 to 31 March 2018

SALARY BAND	BENEFICIARY PROFILE			COST		
	NUMBER OF BENEFICIARIES	NUMBER OF EMPLOYEES	% OF TOTAL WITHIN SALARY BANDS	TOTAL COST (R)	AVERAGE BONUS PER EMPLOYEE (R)	TOTAL COST AS A % OF THE TOTAL BONUS POOL
Lower skilled (Levels 1-2)	11	23	48	32783	2980	0.8
Skilled (Levels 3-5)	36	62	58	128844	3579	3.2
Highly skilled production (Levels 6-8)	152	198	77	1112283	7318	28

SALARY BAND	BENEFICIARY PROFILE			COST		
	NUMBER OF BENEFICIARIES	NUMBER OF EMPLOYEES	% OF TOTAL WITHIN SALARY BANDS	TOTAL COST (R)	AVERAGE BONUS PER EMPLOYEE (R)	TOTAL COST AS A % OF THE TOTAL BONUS POOL
Highly skilled supervision (Levels 9-12)	86	122	70	1 340 429	15586	34
Total	285	405	70	2 614 342	9173	66

Note: *only employees eligible counted. Employees less than 12 months service were not eligible, thus not included in figures*

Table 18: Performance related rewards (cash bonus), by salary band, for Senior Management Service

SALARY BAND	BENEFICIARY PROFILE			TOTAL COST (R)	AVERAGE COST PER EMPLOYEE (R)	TOTAL COST AS A % OF THE TOTAL BONUS POOL
	NUMBER OF BENEFICIARIES	NUMBER OF EMPLOYEES	% OF TOTAL WITHIN BAND			
Band E-F	47	56	84	1353295	28772	34
Total	47	56	84	1353295	28772	34

FOREIGN WORKERS

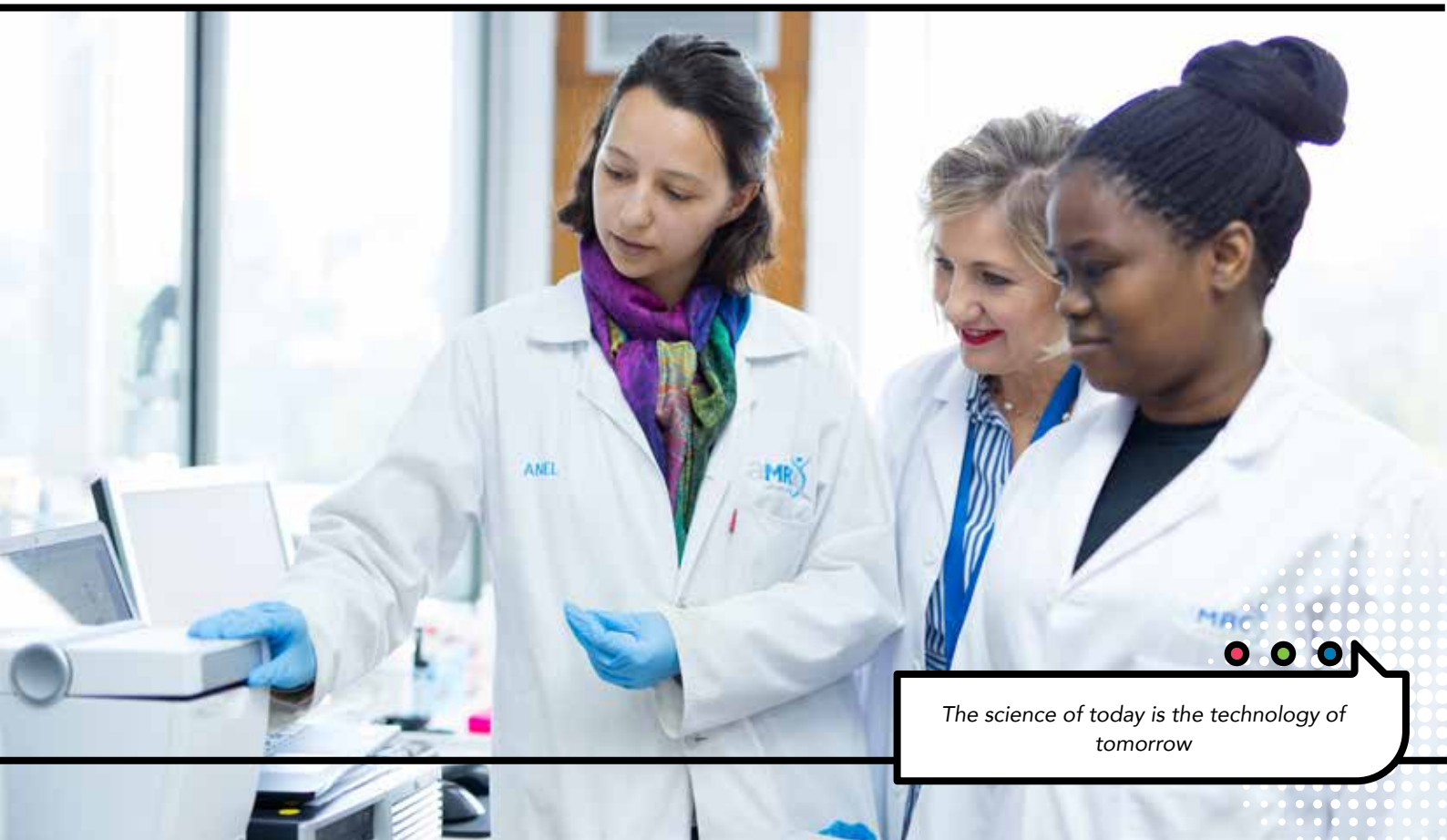
The tables below summarise the employment of foreign nationals in the SAMRC in terms of salary bands and by major occupation. The tables also summarise changes in the total number of foreign workers in each salary band and by each major occupation.

Table 19: Foreign workers, 1 April 2017 to 31 March 2018, by salary band

SALARY BAND	1 APRIL 2017		31 MARCH 2018		CHANGE	
	NUMBER	% OF TOTAL OF MRC EMPLOYEES	NUMBER	% OF TOTAL OF MRC EMPLOYEES	NUMBER	% CHANGE
Lower skilled (Levels 1-2)	0	0	0	0	0	0
Skilled (Levels 3-5)	0	0	1	0.1	1	0.1
Highly skilled production (Levels 6-8)	3	0.5	4	0.6	1	0.1
Highly skilled supervision (Levels 9-12)	17	3.0	19	2.97	2	0.03
Senior management (Levels 13-16)	5	0.9	6	0.94	1	0.04
Total	25	4.4	30	4.5	5	0.2

Table 20: Foreign workers, 1 April 2017 to 31 March 2018, by major occupation

MAJOR OCCUPATION	1 APRIL 2017		31 MARCH 2018		CHANGE	
	NUMBER	% OF TOTAL OF MRC EMPLOYEES	NUMBER	% OF TOTAL OF MRC EMPLOYEES	NUMBER	% CHANGE
Unit Director	2	0.4	2	0.3	0	0
Acting Unit Director	0	0	1	0.2	1	0.2
Scientist	1	0.2	1	0.2	0	0
Senior Scientist	8	1.4	6	0.9	-2	-0.5
Senior Statistician	1	0.2	0	0	-1	-0.2
Specialist Scientist	4	0.7	8	1.3	4	0.6
Specialist Statistician	1	0.2	1	0.2	0	0
Senior Specialist Scientist	2	0.4	2	0.3	0	-0.1
Chief Research Technologist	1	0.2	1	0.2	0	0
Chief Specialist Scientist	0	0	1	0.2	1	0.2
Chief Specialist Statistician	1	0.2	0	0	-1	-0.2
Pharmacist	0	0	1	0.2	1	0.2
Project Coordinator	1	0.2	0	0	-1	-0.2
Project Manager	0	0	1	0.2	1	0.2
Division Manager	2	0.4	0	0	-2	-0.4
Research Support Manager	0	0	1	0.2	1	0.2
Research Manager	1	0.2	1	0.2	0	0
Research Technologist	0	0	3	0.5	3	0.5
Total	25	4.5	30	4.9	5	0.5



LEAVE UTILISATION
1 JANUARY 2017 TO 31 DECEMBER 2017

The Public Service Commission identified the need for careful monitoring of sick leave within the public service. The following tables provide an indication of the use of sick leave (Table 21) and disability leave (Table 22). In both cases, the estimated cost of the leave is also provided.

Table 21: Sick leave, 1 January 2017 to 31 December 2017

SALARY BAND	TOTAL DAYS	NUMBER OF SICK LEAVE DAYS TAKEN WITH A MEDICAL CERTIFICATE	% DAYS WITH MEDICAL CERTIFICATION	NUMBER OF EMPLOYEES USING SICK LEAVE	% OF TOTAL EMPLOYEES USING SICK LEAVE	AVERAGE DAYS PER EMPLOYEE USING SICK LEAVE	ESTIMATED COST (R'000)
Lower skilled (Levels 1-2)	128	90	70	20	87	7	71 436
Skilled (Levels 3-5)	403	51	13	82	56	5	260 661
Highly skilled production (Levels 6-8)	1 171	60	5	199	75	6	1 664 764
Highly skilled supervision (Levels 9-12)	532	57	11	93	62	6	1 442 345
Senior management	105	28	27	25	46	4	571 355
Total	2339	286	12	419	65	6	4 010 561

Table 22: Disability leave (temporary and permanent), 1 January 2017 to 31 December 2017

SALARY BAND	TOTAL DAYS TAKEN	% DAYS WITH MEDICAL CERTIFICATION	NUMBER OF EMPLOYEES USING DISABILITY LEAVE	% OF TOTAL EMPLOYEES USING DISABILITY LEAVE	AVERAGE DAYS PER EMPLOYEE	ESTIMATED COST (R'000)
Lower skilled (Levels 1-2)	0	0	0	0	0	0
Skilled (Levels 3-5)	0	0	0	0	0	0
Highly skilled production (Levels 6-8)	236	100	4	0.6	59	313 409
Highly skilled supervision (Levels 9-12)	0	0	0	0	0	0
Senior management	0	0	0	0	0	0
Total	236	100	4	0.6	59	313 409

Table 24 summarises the utilisation of annual leave. The wage agreement concluded with trade unions in the PSCBC in 2000 requires management of annual leave to prevent high levels of accrued leave being paid at the time of termination of service.

Table 23: Annual Leave, 1 January 2017 to 31 December 2017

SALARY BANDS	NO OF EMPLOYEES TAKING LEAVE (DIFFERS TO TABLE 8 AS THE REPORTING PERIOD DIFFERS)	TOTAL DAYS TAKEN	AVERAGE PER EMPLOYEE IN THE CATEGORY
Lower skilled (Levels 1-2)	23	521	23
Skilled (Levels 3-5)	88	1 282	15
Highly skilled production (Levels 6-8)	209	3 673	16
Highly skilled supervision (Levels 9-12)	134	2 439	18
Senior management	56	1 198	21
Total	510	9 113	18

Note: *due to the respite period (allowed to take previous cycle's leave within six months of next year), there are employees who have not taken any leave as yet during the period*

Table 24: Capped leave, 1 January 2017 to 31 December 2017 (capped leave refers to leave which had to be taken by 30 June 2017 to avoid forfeiting the leave)

SALARY BANDS	TOTAL DAYS OF CAPPED LEAVE TAKEN	NUMBER OF EMPLOYEE AFFECTED	AVERAGE CAPPED LEAVE PER EMPLOYEE AS AT 31 DECEMBER 2017
Lower skilled (Levels 1-2)	79	8	10
Skilled (Levels 3-5)	60	7	9
Highly skilled production (Levels 6-8)	377	40	19
Highly skilled supervision (Levels 9-12)	402	36	11
Senior management	437	29	15
Total	1 355	120	11

The following table summarises payments made to employees as a result of leave that was not taken.

Table 25: Leave pay-outs, 1 April 2017 to 31 March 2018

REASON	TOTAL AMOUNT (R'000)	NUMBER OF EMPLOYEES	AVERAGE PAYMENT PER EMPLOYEE
Terminations	2 363 332	117	20 199
Total			

HIV AND AIDS & HEALTH PROMOTION PROGRAMMES

Table 26: Steps taken to reduce the risk of occupational exposure

UNITS/CATEGORIES OF EMPLOYEES IDENTIFIED TO BE AT HIGH RISK OF CONTRACTING HIV & RELATED DISEASES	KEY STEPS
HPRU, TB, BRIP	Screening process as per study protocol, exposure to needle-stick injuries and following standardised Good Clinical Principles (GCP)

Table 27: Details of Health Promotion and HIV and AIDS Programmes

QUESTION	YES	NO	DETAILS, IF YES
1. Has the department designated a member of the SMS to implement the provisions contained in Part VI E of Chapter 1 of the Public Service Regulations, 2001? If so, provide her/his name and position.	✓		The Executive Director of HR takes responsibility as part of the Wellness programme
2. Does the department have a dedicated unit or has it designated specific staff members to promote the health and well-being of your employees? If so, indicate the number of employees who are involved in this task and the annual budget that is available for this purpose.	✓		Three members. R750 000 budget
3. Has the department introduced an Employee Assistance or Health Promotion Programme for your employees? If so, indicate the key elements/services of this Programme.	✓		• 24/7/365 Call Centre • Employee assistance programme • Trauma debriefing • HIV and Chronic disease management • Life management and work-related issues • Wellness days • Staff orientation and awareness programmes • Management training • Ill health, incapacity and absenteeism management
4. Has the department established (a) committee(s) as contemplated in Part VI E.5 (e) of Chapter 1 of the Public Service Regulations, 2001? If so, please provide the names of the members of the committee and the stakeholder(s) that they represent.	✓		There is a Committee consisting of members of the SAMRC, the appointed service provider, the corporate supported medical scheme and the Safety Manager.
5. Has the department reviewed its employment policies and practices to ensure that these do not unfairly discriminate against employees on the basis of their HIV status? If so, list the employment policies/practices so reviewed.	✓		Performance Management Policy Recruitment Policy Transformation Strategy Remuneration Policy
6. Has the department introduced measures to protect HIV-positive employees or those perceived to be HIV-positive from discrimination? If so, list the key elements of these measures.	✓		No special references are formally made. It is part of the SAMRC general code of conduct to honour the Constitution, EE and LRA Acts and other legislation. The SAMRC subscribes to the principles of no unfair discrimination at any level or aspect.

QUESTION	YES	NO	DETAILS, IF YES
7. Does the department encourage its employees to undergo Voluntary Counselling and Testing? If so, list the results that you have you achieved.	✓		As part of our Wellness Days. The information remains confidential, but feedback is that approximately 60% know their status. There are also employees formally registered on the HIV programme under the umbrella of the wellness programme.
8. Has the department developed measures/indicators to monitor & evaluate the impact of its health promotion programme? If so, list these measures/ indicators.	✓		The SAMRC has appointed a new service provider in Dec 2017. One of the SLA's are to measure and monitor the impact of the Programme via regular statistics, as well to promote the Programme through information sessions and training.

LABOUR RELATIONS

The following collective agreements were entered into with trade unions within the SAMRC.

Table 28: Collective agreements, 1 April 2017 to 31 March 2018

SUBJECT MATTER	DATE
Salary adjustments and other benefits	5 March 2018

The following table summarises the outcome of disciplinary hearings conducted within the SAMRC during the year under review.

Table 29: Misconduct and disciplinary hearings finalised, 1 April 2017 to 31 March 2018

OUTCOME OF DISCIPLINARY HEARINGS	NUMBER	% OF TOTAL SAMRC STAFF
Correctional counseling	0	0
Verbal warning	1	0.2%
Written warning	2	0.3%
Final written warning	2	0.3%
Suspended without pay	0	0
Fine	0	0
Demotion	0	0
Dismissal	0	0
Not guilty	0	0
Case withdrawn	0	0
Total	5	0.8%

Table 30: Types of misconduct addressed at disciplinary hearings

TYPE OF MISCONDUCT	NUMBER	% OF TOTAL SAMRC STAFF
Unauthorised possession, absenteeism, influence of alcohol	0	0
Total	0	0

Table 31: Grievances lodged, 1 April 2017 to 31 March 2018

	NUMBER	% OF TOTAL SAMRC STAFF
Number of grievances resolved	1	0.2%
Number of grievances not resolved	1	0.2%
Total number of grievances lodged	**2**	**0.4%**

Table 32: Disputes lodged with Councils, 1 April 2017 to 31 March 2018

	NUMBER	% OF TOTAL SAMRC STAFF
Number of disputes upheld	0	0
Number of disputes dismissed	0	0
Total number of disputes lodged	**0**	**0**

Table 33: Strike actions, 1 April 2017 to 31 March 2018

Total number of person working days lost	None
Total cost (R) of working days lost	
Amount (R) recovered as a result of no work no pay	

Table 34: Precautionary suspensions, 1 April 2017 to 31 March 2018

	NUMBER	% OF TOTAL SAMRC STAFF
Number of people suspended	1	0.2%
Number of people whose suspension exceeded 30 days	1	0.2%
Average number of days suspended	118	
Cost (R) of suspensions	R155 903	

SKILLS DEVELOPMENT

This section highlights the efforts of the department with regard to skills development.

Table 35: Training needs identified, 1 April 2017 to 31 March 2018

OCCUPATIONAL CATEGORY	GENDER	NUMBER OF EMPLOYEES AS AT 31 MARCH 2017	TRAINING NEEDS IDENTIFIED AT START OF REPORTING PERIOD			
			LEARNERSHIPS	SKILLS PROGRAMMES & OTHER SHORT COURSES	OTHER FORMS OF TRAINING INTERVENTIONS	TOTAL NUMBER OF INTERVENTIONS REQUESTED
Legislators, senior officials and managers	Female	25	0	1	8	9
	Male	29	0	0	0	0
Professionals	Female	120	0	36	223	259
	Male	30	0	13	40	53
Technicians and associate professionals	Female	196	0	30	160	190
	Male	71	0	9	73	82
Clerks	Female	95	0	29	206	235
	Male	51	0	7	99	106
Service and sales workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Skilled agriculture and fishery workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Craft and related trades workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Plant and machine operators and assemblers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Elementary occupations	Female	0	0	0	0	0
	Male	0	0	0	0	0
Sub Total	Female	9	0	0	0	0
	Male	14	0	25	52	77
Total		640	0	150	861	1011

Table 36: Training provided, 1 April 2017 to 31 March 2018

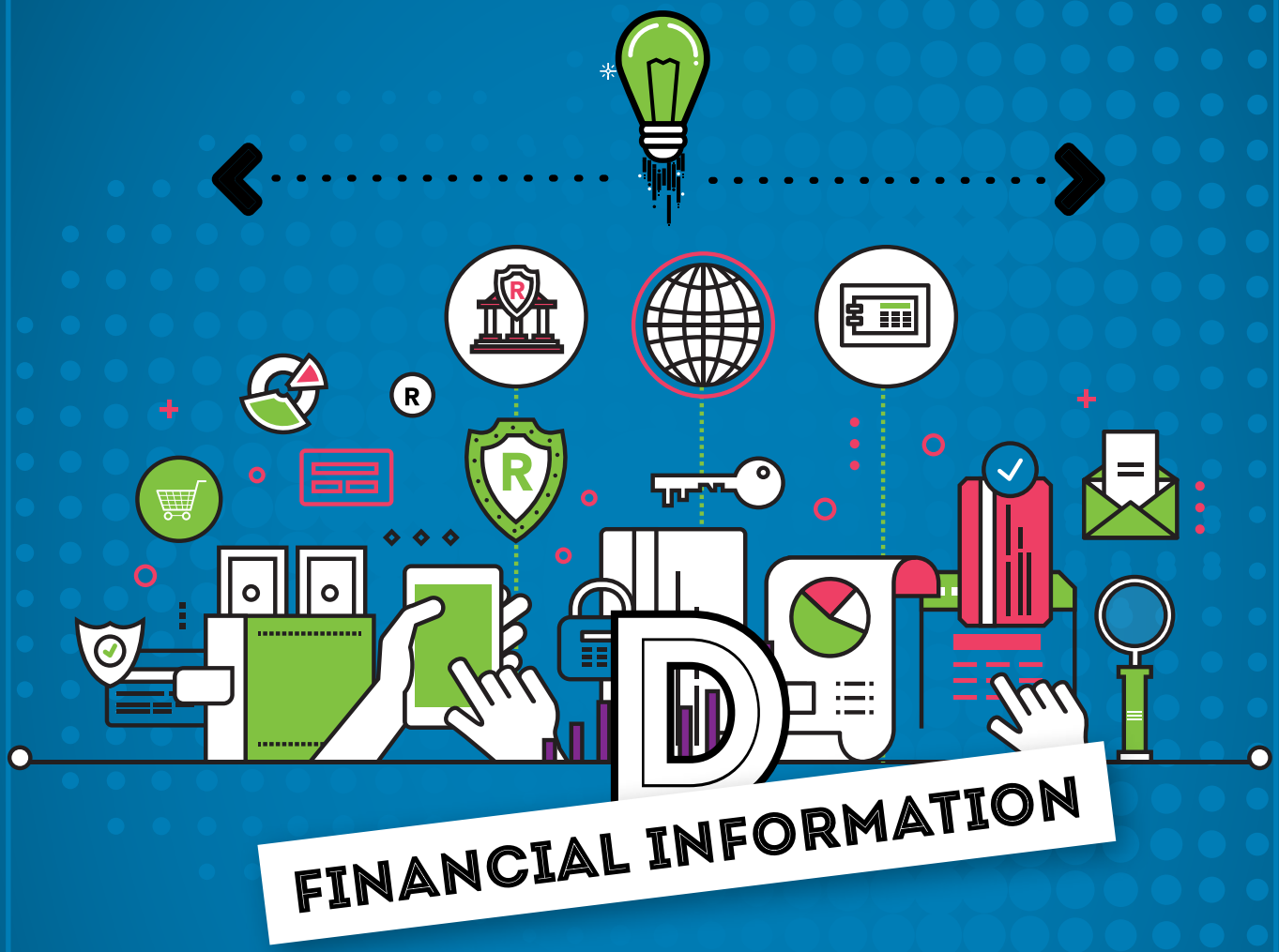
OCCUPATIONAL CATEGORY	GENDER	NUMBER OF EMPLOYEES AS AT 31 MARCH 2017	TRAINING PROVIDED WITHIN THE REPORTING PERIOD			
			LEARNERSHIPS	SKILLS PROGRAMMES & OTHER SHORT COURSES	OTHER FORMS OF TRAINING	TOTAL NUMBER OF TRAINING INTERVENTIONS EXECUTED
Legislators, senior officials and managers	Female	25	0	5	44	49
	Male	29	0	5	2	7
Professionals	Female	120	0	23	459	482
	Male	30	0	8	83	91
Technicians and associate professionals	Female	196	0	18	879	897
	Male	71	0	6	220	226
Clerks	Female	95	0	12	345	357
	Male	51	0	4	208	212
Service and sales workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Skilled agriculture and fishery workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Craft and related trades workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Plant and machine operators and assemblers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Elementary occupations	Female	0	0	0	0	0
	Male	0	0	0	0	0
Sub Total	Female	9	0	0	0	0
	Male	14	0	0	0	0
Total		640	0	81	2240	2321

INJURY ON DUTY

The following tables provide basic information on injury on duty.

Table 37: Injury on duty, 1 April 2017 to 31 March 2018

NATURE OF INJURY ON DUTY	NUMBER	% OF TOTAL SAMRC STAFF
Required basic medical attention only	8	1.25
Temporary total disablement	2	0.31
Permanent disablement	0	0
Fatal	0	0
Total	10	1.56



FINANCIAL INFORMATION

REPORT OF THE CHIEF EXECUTIVE OFFICER AND PRESIDENT

(All figures R'000, prior year in parenthesis.)

Revenue for the year showed an increase of 6.7% to R1 000 857 (R937 789). This consists of a decrease in government grants of 6.5 % to R539 439 (R576 833) offset by a substantial increase in contract income of 27.8% to R461 418 (R360 955).

This has resulted in an operating deficit of R88 247 for the year compared to an operating deficit of R2 649 in 2016/17. An increase in investment income of 19.8% to R42 270 (R35 267) due to an increase in the average balance of investments during the year under review resulted in a net deficit for the year of R46 480 compared to a surplus of R32 278 in 2016/17.

The final deficit for the year of R46 480 was slightly under the budget deficit of R63 901. This is due mainly as a result of higher than anticipated income on investments as well as income and related expenditure recognized on contract funding. Higher than budget collaborative research costs were offset by lower spending by intramural research units.

The organisation remains financially strong with accumulated reserves of R289 755 (R336 236).

Total assets have decreased by 2.9% to R730 297 (R752 068) due mainly to a decrease in cash and cash equivalents of 9.7% to R491 211 (R543 940). This has been offset to some extent by an increase in property plant and equipment of 13.1% to R158 832 (R140 410) driven by capital expenditure for the year of R38 885.

Provisions include an amount of R 4 527 raised in respect of a performance bonus for the 2017/18 year while the employee benefit obligation in respect of the pension fund and medical aid has increased to R22 184 from R12 036 in 2016/17.

The organisation generated a negative operating cashflow of R11 894 compared to a positive operating cash flow of R117 580 in the prior period.

Net cash flows from investing activities were negative due mainly to capital expenditure of R38 885 (R23 013).

The net impact of the above is a decrease of R52 729 in cash and cash equivalents compared to an increase of R93 985 in cash and cash equivalents in the prior year.

SPENDING TRENDS

Operating expenses reflected a substantial increase of 15.7% R1 097 373 (R948 137) higher than the increase in income.

Collaborative research costs increased by 8.9% to R513 099 (R471 121) reflecting the continued growth in high impact grant awards.

Laboratory costs, computer expenses, printing stationery and publication costs as well as travel, subsistence and conference attendance costs have shown increases in excess of inflation. This is mainly due to the costs recognized on additional contract income for the year.

Employee related costs have increased by 18.1% to R359 069 (R303 910). Basic salary costs have increased by 14.7% to R194 736 (R169 830) due to annual increases and the filling of vacant posts. Temporary staff costs have increased by 28.2% to R16 825 (R13 129) due to the increase in temporary staff employed on contracts. Employee related costs include a bonus provision of R4 527 while an additional cost of R10 148 has been incurred as a result of the increase in employee benefit obligations in respect of the pension fund and medical aid.

REQUESTS FOR ROLL OVER OF FUNDS

Accumulated reserves at 31 March 2018 amount to R289 755 (R336 236). The necessary approvals have been requested for the rollover of funds received from Government but not yet spent.

SUPPLY CHAIN MANAGEMENT

There were no unsolicited bid proposals received during the year. The existing Materiality Framework was approved by the Minister.

AUDIT REPORT MATTERS

There were no matters to report.

EVENTS AFTER THE REPORTING DATE

There were no significant events occurring after balance sheet date

ECONOMIC VIABILITY

Funding allocations of R624 829 for 2018/19 have been approved by government through the MTEF process. This together with accumulated reserves of R289 755 and the increases anticipated in grant income will ensure that the SAMRC will continue to operate as a going concern.

REPORT OF THE AUDITOR-GENERAL

REPORT ON THE AUDIT OF THE FINANCIAL STATEMENTS

Opinion

1. I have audited the financial statements of the South African Medical Research Council set out on pages 158 to 214, which comprise the statement of financial position as at 31 March 2018, the statement of financial performance, statement of changes in net assets, cash flow statement and the statement of comparison of budget and actual amounts for the year then ended, as well as the notes to the financial statements, including a summary of significant accounting policies.
2. In my opinion, the financial statements present fairly, in all material respects, the financial position of the South African Medical Research Council as at 31 March 2018, and its financial performance and cash flows for the year then ended in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) and the requirements of the Public Finance Management Act, 1999 (Act No. 1 of 1999) (PFMA).

Context for the opinion

3. I conducted my audit in accordance with the International Standards on Auditing (ISAs). My responsibilities under those standards are further described in the auditor-general's responsibilities for the audit of the financial statements section of this auditor's report.
4. I am independent of the public entity in accordance with the International Ethics Standards Board for Accountants' Code of ethics for professional accountants (IESBA code) and the ethical requirements that are relevant to my audit in South Africa. I have fulfilled my other ethical responsibilities in accordance with these requirements and the IESBA code.
5. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Emphasis of matter

6. I draw attention to the matter below. My opinion is not modified in respect of this matter.

Restatement of corresponding figures

7. As disclosed in note 34 to the financial statements, the corresponding figures for 31 March 2017 have been restated as a result of reclassification in the financial statements discovered during the 2017-18 financial year of the entity at, and for the year ended 31 March 2018.

Other matter

8. I draw attention to the matter below. My opinion is not modified in respect of this matter.

Unaudited supplementary schedules

9. The supplementary information set out on page 215 does not form part of the financial statements and is presented as additional information. We have not audited this schedule and, accordingly, we do not express an opinion thereon.

Responsibilities of accounting authority for the financial statements

10. The board of directors, which constitutes the accounting authority is responsible for the preparation and fair presentation of the financial statements in accordance with SA Standards of GRAP and the requirements of the PFMA and for such internal control as the accounting authority determines is necessary to enable the preparation of the financial statements that are free from material misstatement, whether due to fraud or error.
11. In preparing the financial statements, the accounting authority is responsible for assessing the South African Medical Research Council's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless the accounting authority either intends to liquidate the public entity or to cease operations, or has no realistic alternative but to do so.

REPORT ON THE AUDIT OF THE ANNUAL PERFORMANCE REPORT

Introduction and scope

12. In accordance with the Public Audit Act of South Africa, 2004 (Act No. 25 of 2004) (PAA) and the general notice issued in terms thereof, I have a responsibility to report material findings on the reported performance information against predetermined objectives for selected strategic goals presented in the annual performance report. I performed procedures to identify findings but not to gather evidence to express assurance.
13. My procedures address the reported performance information, which must be based on the approved performance planning documents of the public entity. I have not evaluated the completeness and appropriateness of the performance indicators included in the planning documents. My procedures also did not extend to any disclosures or assertions relating to planned performance strategies and information in respect of future periods that may be included as part of the reported performance information. Accordingly, my findings do not extend to these matters.
14. I evaluated the usefulness and reliability of the reported performance information in accordance with the criteria developed from the performance management and reporting framework, as defined in the general notice, for the following selected strategic goals presented in the annual performance report of the public entity for the year ended 31 March 2018:

STRATEGIC GOAL	PAGES IN THE ANNUAL PERFORMANCE REPORT (APR)
Strategic Goal 2: Lead the generation of new knowledge and facilitate its translation into policies and practices to improve health	28 – 29
Strategic Goal 3: Support innovation and technology development to improve health	30 – 31
Strategic Goal 4: Build capacity for the long-term sustainability of the country's health research	30 – 31

15. I performed procedures to determine whether the reported performance information was properly presented and whether performance was consistent with the approved performance planning documents. I performed further procedures to determine whether the indicators and related targets were measurable and relevant, and assessed the reliability of the reported performance information to determine whether it was valid, accurate and complete.
16. I did not raise any material findings on the usefulness and reliability of the reported performance information for the following strategic goals:
    - Strategic Goal 2: Lead the generation of new knowledge and facilitate its translation into policies and practices to improve health
    - Strategic Goal 3: Support innovation and technology development to improve health
    - Strategic Goal 4: Build capacity for the long-term sustainability of the country's health research.

Other matters

17. I draw attention to the matters below.

Achievement of planned targets

18. Refer to the annual performance report on pages 28 to 31 for

information on the achievement of planned targets for the year and explanations provided for the over achievement of a significant number of targets.

Adjustment of material misstatements

19. I identified material misstatements in the annual performance report submitted for auditing. These material misstatements were on the reported performance information for strategic goals 2, 3 and 4 as the reasons for variances was not presented in the initial APR submitted for audit. As management subsequently corrected the misstatements, I did not raise any material findings on the usefulness and reliability of the reported performance information.

REPORT ON THE AUDIT OF COMPLIANCE WITH LEGISLATION

Introduction and scope

20. In accordance with the PAA and the general notice issued in terms thereof, I have a responsibility to report material findings on the compliance of the public entity with specific matters in key legislation. I performed procedures to identify findings but not to gather evidence to express assurance.
21. The material findings on compliance with specific matters in key legislations are as follows:

Procurement and contract management

22. Sufficient appropriate audit evidence could not be obtained that bid documentation for procurement of commodities designated for local content and production, met the stipulated the minimum threshold for local production and content, as required by the 2017 preferential procurement regulation 8 (2).
23. Sufficient appropriate audit evidence could not be obtained to confirm that commodities designated for local content and production, were procured from suppliers who did submit a declaration on local production and content as required by the 2017 preferential procurement regulation.
24. Sufficient appropriate audit evidence could not be obtained that commodities designated for local content and production, were procured from suppliers who met the prescribed minimum threshold for local production and content, as required by the 2017 preferential procurement regulation 8(5).

Other information

25. The accounting authority is responsible for the other information. The other information comprises the information included in the annual report. The other information does not include the financial statements, the auditor's report and those selected strategic goals presented in the annual performance report that have been specifically reported in this auditor's report.
26. My opinion on the financial statements and findings on the reported performance information and compliance with legislation do not cover the other information and I do not express an audit opinion or any form of assurance conclusion thereon.
27. In connection with my audit, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements and the selected strategic goals presented in the annual performance report, or my knowledge obtained in the audit, or otherwise appears to be materially misstated. I have nothing to report in this regard.

Internal control deficiencies

28. I considered internal control relevant to my audit of the financial statements, reported performance information and compliance with applicable legislation; however, my objective was not to express any form of assurance on it. The matters reported below are limited to the significant internal control deficiencies that resulted in the basis for the findings on compliance with legislation included in this report.

Financial and performance management

Compliance monitoring

29. Management did not adequately review and monitor compliance with preferential procurement regulations8(2) and 8(5) regarding the local content requirements that are to be applied to the procurement of items from the designated sectors. The requirements for local content was not applied for procurement of awards between R30 000 and R500 000.

Auditor - General

Cape Town
26 September 2018

AUDITOR-GENERAL SOUTH AFRICA

Auditing to build public confidence

ANNEXURE – AUDITOR-GENERAL'S RESPONSIBILITY FOR THE AUDIT

1. As part of an audit in accordance with the ISAs, I exercise professional judgement and maintain professional scepticism throughout my audit of the financial statements, and the procedures performed on reported performance information for selected strategic goals and on the public entity's compliance with respect to the selected subject matters.

Financial statements

2. In addition to my responsibility for the audit of the financial statements as described in this auditor's report, I also:
   - identify and assess the risks of material misstatement of the financial statements whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control
   - obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the public entity's internal control
   - evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the board of directors, which constitutes the accounting authority
   - conclude on the appropriateness of the board of directors, which constitutes the accounting authority use of the going concern basis of accounting in the preparation of the financial statements. I also conclude, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the South African Medical Research Council's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements about the material uncertainty or, if such disclosures are inadequate, to modify the opinion on the financial statements. My conclusions are based on the information available to me at the date of this auditor's report. However, future events or conditions may cause a public entity to cease continuing as a going concern
   - evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation

Communication with those charged with governance

3. I communicate with the accounting authority regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.
4. I also confirm to the accounting authority that I have complied with relevant ethical requirements regarding independence, and communicate all relationships and other matters that may reasonably be thought to have a bearing on my independence and, where applicable, related safeguards.

RESPONSIBILITY AND APPROVAL BY THE ACCOUNTING AUTHORITY

The Accounting Authority is required by the Public Finance Management Act (Act 1 of 1999), to maintain adequate accounting records and is responsible for the content and integrity of the annual financial statements and related financial information included in this report. It is the responsibility of the Accounting Authority to ensure that the annual financial statements fairly present the state of affairs of the entity as at the end of the financial year and the results of its operations and cash flows for the period then ended. The external auditors are engaged to express an independent opinion on the annual financial statements and were given unrestricted access to all financial records and related data.

The annual financial statements have been prepared in accordance with Standards of Generally Recognised Accounting Practice (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.

The annual financial statements are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgements and estimates. On a quarterly basis the Board approved revised estimates in response to additional income received and progress with research projects.

The Accounting Authority acknowledges that it is ultimately responsible for the system of internal financial control established by the entity and places considerable importance on maintaining a strong control environment. To enable the Accounting Authority to meet these responsibilities, the Accounting Authority sets standards for internal control aimed at reducing the risk of error or deficit in a cost effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties to ensure an acceptable level of risk. These controls are monitored throughout the entity and all employees are required to maintain the highest ethical standards in ensuring the entity's business is conducted in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the entity is on identifying, assessing, managing and monitoring all known forms of risk across the entity. While operating risk cannot be fully eliminated, the entity endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

The Accounting Authority is of the opinion, based on the information and explanations given by management, that the system of internal control provides reasonable assurance that the financial records may be relied on for the preparation of the annual financial statements. However, any system of internal financial control can provide only reasonable, and not absolute, assurance against material misstatement or deficit.

The Accounting Authority has reviewed the entity's cash flow forecast for the year to 31 March 2019 and, in the light of this review and the current financial position, is satisfied that the entity has or has access to adequate resources to continue in operational existence for the foreseeable future.

Although the Accounting Authority is primarily responsible for the financial affairs of the entity, it is supported by the entity's external auditors.

The external auditors are responsible for independently auditing and expressing an opinion on the entity's annual financial statements. The annual financial statements have been examined by the entity's external auditors and their report is presented on page 154.

The annual financial statements set out on pages 158 to 215, which have been prepared on the going concern basis, were approved by the Accounting Authority on 26 September 2018 and were signed on its behalf by:

Professor M Sathekge
Chairperson of the Board

REPORT OF THE AUDIT COMMITTEE

We are pleased to present our report for the financial year ended March 31, 2018.

AUDIT COMMITTEE MEMBERS AND ATTENDANCE

The audit committee consists of the members listed hereunder and should meet 4 times per annum as per its approved terms of reference. During the year under review 5 meetings were held. The unaudited annual financial statements were reviewed and discussed at a meeting on 28 May 2018.

Name of member	Number of meetings attended
Doctor P Hanekom (Chairperson)	5
Advocate N Kadwa	5
Professor J Mahlangu	4
Professor B Shaw	5
Professor W Rae	4

AUDIT COMMITTEE RESPONSIBILITY

The audit committee reports that it has complied with its responsibilities arising from section 55(1)(a) of the PFMA and Treasury Regulation 27.1.

The audit committee also reports that it has adopted appropriate formal terms of reference as its audit committee charter, has regulated its affairs in compliance with this charter and has discharged all its responsibilities as contained therein.

THE EFFECTIVENESS OF INTERNAL CONTROL

The audit committee is satisfied with the content and quality of monthly and quarterly reports prepared and issued by the Accounting Authority of the entity during the year under review.

EVALUATION OF ANNUAL FINANCIAL STATEMENTS

The audit committee has:

- Reviewed and discussed the audited annual financial statements to be included in the annual report, with the Auditor-General and the Accounting Authority;
- Reviewed the Auditor-General of South Africa's management report and management's response thereto;
- Reviewed the entity's compliance with legal and regulatory provisions.

The audit committee concurs with and accepts the Auditor-General of South Africa's report on the annual financial statements, and are of the opinion that the audited annual financial statements should be accepted and read together with the report of the Auditor-General of South Africa.

INTERNAL AUDIT

The audit committee is satisfied that the internal audit function is operating effectively and that it has addressed the risks pertinent to the entity and its audits.

AUDITOR-GENERAL OF SOUTH AFRICA

The audit committee has met with the Auditor-General of South Africa to ensure that there are no unresolved issues.

RISK MANAGEMENT

The risk management activity has received corporate endorsement and risk management processes have been formalised and adopted. Risk management activities are reported on a quarterly basis.

INFORMATION SYSTEMS

The IT infrastructure and the JD Edwards financial system was upgraded during the year under review.

ADJUSTMENTS REQUIRED BY THE AUDITOR GENERAL

Irregular expenditure on local content

The SAMRC did not request the relevant information on local content on furniture to the value of R269 176 for quotations between R30,000 and R500,000 as the SAMRC interpreted the regulations as only applying to tenders above R500 000. The Auditor General has determined that the cost of such purchases be disclosed as irregular expenditure and as material noncompliance. The SAMRC has confirmed that the awarded suppliers did meet the local content requirements on the furniture supplied and the procedural shortcoming of not calling for information on local content therefore had no impact, as it would not have resulted in procurement from a different supplier.

Revenue Classification

The Auditor General has interpreted income received for research and other services performed in respect of contract funding where the intellectual property is not owned by the grantor/funder to be classified as income from non-exchange transactions in terms of GRAP 23 and not as revenue from exchange transactions in terms of GRAP 9 as has been the case in the past. The SAMRC has discussed the matter with National Treasury and has reclassified revenue from exchange to non-exchange where the intellectual property vests solely with SAMRC, where there was no evidence of a request to submit a grant proposal and where funders/grantors provided funding without a request for proposal or similar request.

The view of the Audit Committee is that the SAMRC delivers value to its funders in exchange for the funds invested. It is the nature of scientific research that the scientific data generated yields immeasurable value which is not time bound.

Chairperson of the Audit Committee
Date: 26 September 2018

STATEMENT OF FINANCIAL POSITION

	Note(s)	2018	2017
		R	R
Assets			
Current Assets			
Financial assets at fair value	3	6,789,704	6,430,523
Receivables from exchange transactions	4	42,900,802	36,059,674
VAT receivable	5	15,094,330	11,796,907
Prepayments	6	7,114,586	5,847,275
Cash and cash equivalents	7	491,211,168	543,939,683
		563,110,590	**604,074,062**
Non-Current Assets			
Biological assets that form part of an agricultural activity	8	1,285,103	1,147,101
Property, plant and equipment	9	158,831,606	140,409,601
Intangible assets	10	7,069,970	6,436,756
Investments in controlled entities	11	2	2
		167,186,681	**147,993,460**
Total Assets		**730,297,271**	**752,067,522**
Liabilities			
Current Liabilities			
Payables from exchange transactions	12	118,275,377	104,036,715
Provisions	13	16,783,576	7,251,811
Deferred income	14	279,352,698	288,897,953
		414,411,651	**400,186,479**
Non-Current Liabilities			
Employee benefit obligation	15	22,184,000	12,036,000
Earmarked funds	16	3,946,152	3,609,128
		26,130,152	**15,645,128**
Total Liabilities		**440,541,803**	**415,831,607**
Net Assets		**289,755,468**	**336,235,915**
Accumulated surplus	17	289,755,468	336,235,915

STATEMENT OF FINANCIAL PERFORMANCE

	Note(s)	2018	2017
		R	R
Revenue	18	1,000,857,070	937,788,794
Other income	19	8,269,185	7,698,867
Operating expenses		(1,097,373,155)	(948,136,803)
Operating deficit	27	**(88,246,900)**	**(2,649,142)**
Investment income	20	42,270,230	35,266,897
Fair value adjustments	25	246,091	(53,229)
Finance costs	22	(749,868)	(286,199)
(Deficit) Surplus for the period		**(46,480,447)**	**32,278,327**

STATEMENT OF CHANGES IN NET ASSETS

	Accumulated surplus and Total net assets
	R
Balance at April 1, 2016	**303,957,588**
Changes in net assets	
Surplus for the year	32,278,327
Total changes	32,278,327
Balance at April 1, 2017	**336,235,915**
Changes in net assets	
Deficit for the year	(46,480,447)
Total changes	(46,480,447)
Balance at March 31, 2018	**289,755,468**

CASH FLOW STATEMENT

	Note(s)	2018	2017
		R	R
Cash flows from operating activities			
Receipts			
Interest income		42,152,540	35,137,720
Dividends received		117,690	129,177
Cash receipts from grants and other income		988,175,138	1,003,000,287
		1,030,445,368	**1,038,267,184**
Payments			
Suppliers		(1,041,589,345)	(920,400,988)
Finance costs		(749,868)	(286,199)
		(1,042,339,213)	(920,687,187)
Net cash flows from operating activities	28	**(11,893,845)**	**117,579,997**
Cash flows from investing activities			
Purchase of property, plant and equipment	9	(38,884,675)	(23,012,580)
Proceeds from sale of property, plant and equipment	9	80,383	268,410
Purchase of other intangible assets	10	(2,229,400)	(1,025,764)
Purchase of biological assets that form part of an agricultural activity	8	(162,069)	(66,734)
Proceeds from sale of biological assets that form part of an agricultural activity	8	24,067	83,211
Net cash flows from investing activities		**(41,171,694)**	**(23,753,457)**
Cash flows from financing activities			
Movement in earmarked funds	16	337,024	158,624
Net (decrease) increase in cash and cash equivalents		**(52,728,515)**	**93,985,164**
Cash and cash equivalents at the beginning of the year		543,939,683	449,954,519
Cash and cash equivalents at the end of the period	7	**491,211,168**	**543,939,683**

An amount of R279,352,698 (2017: R288,897,953) included in cash and cash equivalents is due to cash received from funders for research projects in progress or not yet commenced.

STATEMENT OF COMPARISON OF BUDGET & ACTUAL AMOUNTS

	Approved budget	Adjustments	Final Budget	Actual amounts on comparable basis	Difference between final budget and actual	Reference
	R	R	R	R	R	
Statement of Financial Performance						
Revenue						
Revenue from exchange transactions						
Income from contracts, grants and services rendered	325,634,000	-	**325,634,000**	412,358,057	**86,724,057**	41
Rental income	5,248,215	-	**5,248,215**	5,660,631	**412,416**	
Other income	7,663,312	-	**7,663,312**	2,608,554	**(5,054,758)**	41
Interest received - investment	34,300,000	-	**34,300,000**	42,152,540	**7,852,540**	41
Dividends received	-	-	**-**	117,690	**117,690**	
Total revenue from exchange transactions	**372,845,527**	**-**	**372,845,527**	**462,897,472**	**90,051,945**	
Revenue from non-exchange transactions						
Government grants & subsidies	539,439,473	-	**539,439,473**	539,439,474	**1**	
Income from contracts and grants	-	-	**-**	49,059,539	**49,059,539**	41
Total revenue from nonexchange transactions	539,439,473	-	**539,439,473**	588,499,013	**49,059,540**	
Total revenue	**912,285,000**	**-**	**912,285,000**	**1,051,396,485**	**139,111,485**	
Expenditure						
Personnel	(326,404,402)	-	**(326,404,402)**	(359,068,074)	**(32,663,672)**	41
Infra-structural, communication & statutory costs	(40,818,062)	-	**(40,818,062)**	(29,031,027)	**11,787,035**	41
Depreciation and amortisation	(17,000,000)	-	**(17,000,000)**	(21,340,453)	**(4,340,453)**	41
Finance costs	-	-	**-**	(749,868)	**(749,868)**	
Lease rentals	(6,191,892)	-	**(6,191,892)**	(5,660,661)	**531,231**	
Debt Impairment reversal	-	-	**-**	259,206	**259,206**	
Bad debts written off	(1,000,000)	-	**(1,000,000)**	-	**1,000,000**	
Repairs and maintenance	(9,247,236)	-	**(9,247,236)**	(14,139,533)	**(4,892,297)**	41
Travel, subsistence and vehicle fleet costs	(38,213,885)	-	**(38,213,885)**	(42,724,613)	**(4,510,728)**	41
Collaborative research	(455,292,557)	-	**(455,292,557)**	(513,098,915)	**(57,806,358)**	41
External research support, consulting and internal audit	(14,464,856)	-	**(14,464,856)**	(12,561,801)	**1,903,055**	41
Printing,stationery and publication costs	(12,800,708)	-	**(12,800,708)**	(8,833,165)	**3,967,543** 41	
Information technology	(17,868,298)	-	**(17,868,298)**	(20,633,830)	**(2,765,532)**	41
Laboratory operating expenses	(25,044,218)	-	**(25,044,218)**	(45,420,169)	**(20,375,951)**	41
Audit fees	(2,165,000)	-	**(2,165,000)**	(2,369,821)	**(204,821)**	
Other expenses	(9,674,886)	-	**(9,674,886)**	(19,958,515)	**(10,283,629)**	41
Total expenditure	**(976,186,000)**	**-**	**(976,186,000)**	**(1,095,331,239)**	**(119,145,239)**	
Operating deficit	**(63,901,000)**	**-**	**(63,901,000)**	**(43,934,754)**	**19,966,246**	
Loss on disposal of assets	-	-	**-**	(638,021)	**(638,021)**	
Loss on foreign exchange	-	-	**-**	(2,153,763)	**(2,153,763)**	41
Fair value adjustments	-	-	**-**	246,091	**246,091**	
	-	-	**-**	(2,545,693)	**(2,545,693)**	
Deficit before taxation	**(63,901,000)**	**-**	**(63,901,000)**	**(46,480,447)**	**17,420,553**	
Actual Amount on Comparable Basis as Presented in the Budget and Actual Comparative Statement	(63,901,000)	-	**(63,901,000)**	(46,480,447)	**17,420,553**	

The accounting policies on pages 163 to 177 and the notes on pages 178 to 215 form an integral part of the annual financial statements.

ACCOUNTING POLICIES

1. PRESENTATION OF ANNUAL FINANCIAL STATEMENTS

The annual financial statements have been prepared in accordance with the Standards of Generally Recognised Accounting Practice (GRAP), issued by the Accounting Standards Board in accordance with Section 91(1) of the Public Finance Management Act (Act 1 of 1999).

These annual financial statements have been prepared on an accrual basis of accounting and are in accordance with historical cost convention as the basis of measurement, unless specified otherwise. They are presented in South African Rand, which is also the functional currency. The amounts presented in the annual financial statements are rounded to the nearest Rand.

A summary of the significant accounting policies, which have been consistently applied in the preparation of these annual financial statements, are disclosed below.

These accounting policies are consistent with the previous period.

1.1 GOING CONCERN ASSUMPTION

These annual financial statements have been prepared based on the expectation that the entity will continue to operate as a going concern for at least the next 12 months.

1.2 SIGNIFICANT JUDGEMENTS AND SOURCES OF ESTIMATION UNCERTAINTY

In preparing the annual financial statements, management is required to make estimates and assumptions that affect the amounts represented in the annual financial statements and related disclosures. Use of available information and the application of judgement is inherent in the formation of estimates. Actual results in the future could differ from these estimates which may be material to the annual financial statements. Significant judgements include:

Trade receivables and loans and receivables

The entity assesses its trade receivables and loans and receivables for impairment at the end of each reporting period. In determining whether an impairment loss should be recorded in surplus or deficit, the entity makes judgements as to whether there is observable data indicating a measurable decrease in the estimated future cash flows from a financial asset.

The impairment for trade receivables and loans and receivables is calculated on a portfolio basis, based on a review of the full trade debtors book, adjusted for national and industry-specific economic conditions and other indicators present at the reporting date that correlate with defaults on the portfolio.

Fair value estimation

The fair value of financial instruments traded in active markets (such as trading) is based on quoted market prices at the end of the reporting period. The quoted market price used for financial assets held by the entity is the current bid price.

The fair value of financial instruments that are not traded in an active market (for example, over-the counter derivatives) is determined by using valuation techniques. The entity uses a variety of methods and makes assumptions that are based on market conditions existing at the end of each reporting period. Quoted market prices or dealer quotes for similar instruments are used for long-term debt. Other techniques, such as estimated discounted cash flows, are used to determine fair value for the remaining financial instruments. The fair value of interest rate swaps is calculated as the present value of the estimated future cash flows. The fair value of forward foreign exchange contracts is determined using quoted forward exchange rates at the end of the reporting period.

The carrying value less impairment provision of trade receivables and payables are assumed to approximate their fair values. The fair value of financial liabilities for disclosure purposes is estimated by discounting the future contractual cash flows at the current market interest rate that is available to the entity for similar financial instruments.

Impairment testing

The entity reviews and tests the carrying value of current and non-current assets when events or changes in circumstances suggest that the carrying amount may not be recoverable. Assets are grouped at the lowest level for which identifiable cash flows are largely independent of cash flows of other assets and liabilities. If there are indications that impairment may have occurred, estimates are prepared of expected future cash flows for each group of assets. Expected future cash flows used to determine the value in use of tangible assets are inherently uncertain and could materially change over time. They are significantly affected by a number of factors including supply demand, together with economic factors such as research units closed as part of the revitalisation process.

Provisions

Provisions were raised and management determined an estimate based on the information available. Additional disclosure of these estimates of provisions are included in note 13 - Provisions.

ACCOUNTING POLICIES

Post retirement benefits

The present value of the post retirement obligation depends on a number of factors that are determined on an actuarial basis using a number of assumptions. The assumptions used in determining the net cost (income) include the discount rate. Any changes in these assumptions will impact on the carrying amount of post retirement obligations.

The entity determines the appropriate discount rate at the end of each year. This is the interest rate that should be used to determine the present value of estimated future cash outflows expected to be required to settle the pension obligations. In determining the appropriate discount rate, the entity considers the interest rates of high-quality corporate bonds that aredenominated in the currency in which the benefits will be paid, and that have terms to maturity approximating the terms of the related pension liability.

Other key assumptions for pension obligations are based on current market conditions. Additional information is disclosed in Note 15.

1.3 BIOLOGICAL ASSETS THAT FORM PART OF AN AGRICULTURAL ACTIVITY

The entity recognises Biological assets or agricultural produce when, and only when:

- the entity controls the asset as a result of pastevents;
- it is probable that future economic benefits or service potential associated with the asset will flow to the entity; and
- the fair value or cost of the asset can be measuredreliably.

Biological assets are measured at their fair value less costs to sell.

Agricultural produce harvested from an entity's biological assets shall be measured at its fair value less estimated costs to sell at point of harvest.

A gain or loss arising on initial recognition of Biological assets at fair value less costs to sell and from a change in fair value less estimated costs to sell Biological assets is included in surplus or deficit for the period in which it arises.

Where biological assets are acquired at no cost, or for a nominal cost, the cost is determined to be its fair value less costs to sell as at the date of acquisition.

Where fair value cannot be measured reliably, biological assets are measured at cost less any accumulated impairment losses.

1.4 PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment are tangible non-current assets (including infrastructure assets and biological assets used for research) that are held for use in the production or supply of goods or services, rental to others, or for administrative purposes, and are expected to be used during more than one period.

The cost of an item of property, plant and equipment is recognised as an asset when:

- it is probable that future economic benefits or service potential associated with the item will flow to the entity;and
- the cost or fair value of the item can be measured reliably.

Property, plant and equipment is initially measured at cost.

The cost of an item of property, plant and equipment is the purchase price and other costs attributable to bring the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Trade discounts and rebates are deducted in arriving at the cost. Subsequent costs of replacing part of an item of property, plant and equipment is recognised in the carrying amount of the asset if it is probable that the future economic benefits embodied within the part will flow to the entity and its costs can be measured reliably. The costs of day to day servicing of property, plant and equipment are recognised in the surplus or deficit.

Where an asset is acquired through a non-exchange transaction, its cost is its fair value as at the date of acquisition.

When significant components of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Property, plant and equipment is carried at cost less accumulated depreciation and any impairment losses.

Property, plant and equipment are depreciated on the straight line basis over their expected useful lives to their estimated residual value.

ACCOUNTING POLICIES

The useful lives of items of property, plant and equipment have been assessed as follows:

Item	Depreciation method	Average useful life
Land (including boreholes)	Not depreciated	Indefinite
Buildings	Straight line	40 - 50 years
Vehicles and containers	Straight line	5 - 10 years
Furniture and office equipment	Straight line	3 - 15 years
Computer equipment	Straight line	5 - 10 years
Air conditioners	Straight line	10 - 15 years
Irrigation equipment	Straight line	10 - 15 years
Signage	Straight line	10 - 15 years
Usufruct buildings	Straight line	over life of asset
Prefabricated buildings	Straight line	20 - 30 years
Other property, plant and equipment -Biological assets - Vervet monkeys	Straight line	30 years
Laboratory equipment	Straight line	5 - 30 years

The items listed above are grouped in land; buildings; vehicles and containers, furniture and office equipment; computer equipment; laboratory equipment and other property, plant and equipment - vervet monkeys classes.

The residual value, the useful life and depreciation method of each asset is reviewed at the end of each reporting date. If the expectations differ from previous estimates, the change is accounted for as a change in accounting estimate. The useful lives of assets are based on management's estimation. The actual useful lives of assets and residual values are assessed annually, and may vary depending on a number of factors. In re-assessing asset useful lives, factors such as technology, innovation, product life cycles and maintenance programmes are taken into account. The estimation of residual values of assets determine whether they will be sold or used to the end of their useful lives and what their condition would be like at that time. Residual value assessments consider issues such as, the remaining life of the asset and the estimated amount which the entity would currently obtain.

Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item is depreciated separately.

The depreciation charge for each period is recognised in surplus or deficit unless it is included in the carrying amount of another asset.

Items of property, plant and equipment are derecognised when the asset is disposed of or when there are no further economic benefits or service potential expected from the use of the asset.

The gain or loss arising from the derecognition of an item of property, plant and equipment is included in surplus or deficit when the item is derecognised. The gain or loss arising from the derecognition of an item of property, plant and equipment is determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item.

Assets which the entity sells via auction when it is obsolete or can no longer be used by the entity, are not accounted for as current assets held for sale. Proceeds from sales of these assets are recognised as profit or loss on disposal of assets. All cash flows on these assets are included in cash flows from investing activities in the cash flow statement.

Reviewing the impairment of assets is performed on an annual basis. Assets impaired as a result of restructuring are not accounted for as non-current assets held for sale as these assets will be transferred to institutions of higher learning.

The entity separately discloses expenditure to repair and maintain property, plant and equipment in the notes to the financial statements (see note 9).

1.5 INTANGIBLE ASSETS

An asset is identifiable if it either:

- is separable, i.e. is capable of being separated or divided from an entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, identifiable assets or liability, regardless of whether the entity intends to do so; or
- arises from contractual rights or other legal rights, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.

An intangible asset is recognised when:

- it is probable that the expected future economic benefits or service potential that are attributable to the asset will flow to the entity; and
- the cost or fair value of the asset can be measured reliably.

Intangible assets are initially recognised at cost.

Where an intangible asset is acquired through a non-exchange transaction, its initial cost at the date of acquisition is measured at its fair value as at that date.

ACCOUNTING POLICIES

Intangible assets are carried at cost less any accumulated amortisation and any impairment losses. For all intangible assets amortisation is provided on a straight line basis over their useful life.

The amortisation period and the amortisation method for intangible assets are reviewed at each reporting date and any change is accounted for as a change in estimate.

Amortisation is provided to write down the intangible assets, on a straight line basis, to their residual values. The estimated useful lives for current and comparative periods are as follows:

Item	Depreciation method	Average useful life
Computer software	Straight line	3 - 10 years

Intangible assets are derecognised:

- on disposal; or
- when no future economic benefits or service potential are expected from its use or disposal.

The gain or loss arising from the derecognition of intangible assets is included in surplus or deficit when the asset is derecognised (unless the Standard of GRAP on leases requires otherwise on a sale and leaseback).

1.6 INVESTMENTS IN CONTROLLED ENTITIES

Investments in controlled entities are carried at cost less any accumulated impairment. The financial statements of the entity is not consolidated with those of the controlled entities, as the entities have had no trading activities and they are not material.

1.7 FINANCIAL INSTRUMENTS

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or a residual interest of another entity.

A concessionary loan is a loan granted to or received by an entity on terms that are not market related.

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation.

Currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.
Derecognition is the removal of a previously recognised financial asset or financial liability from an entity's statement of financial position.

The effective interest method is a method of calculating the amortised cost of a financial asset or a financial liability (or group of financial assets or financial liabilities) and of allocating the interest income or interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instrument or, when appropriate, a shorter period to the net carrying amount of the financial asset or financial liability. When calculating the effective interest rate, an entity shall estimate cash flows considering all contractual terms of the financial instrument (for example, prepayment, call and similar options) but shall not consider future credit losses. The calculation includes all fees and amounts paid or received between parties to the contract that are an integral part of the effective interest rate, transaction costs, and all other premiums or discounts. There is a presumption that the cash flows and the expected life of a group of similar financial instruments can be estimated reliably. However, in those rare cases when it is not possible to reliably estimate the cash flows or the expected life of a financial instrument (or group of financial instruments), the entity shall use the contractual cash flows over the full contractual term of the financial instrument (or group of financial instruments).

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable willing parties in an arm's length transaction.

A financial asset is:

- cash;
- a contractual right to:
  - receive cash or another financial asset from another entity;or
  - exchange financial assets or financial liabilities with another entity under conditions that are potentially favourable to the entity.

A financial liability is any liability that is a contractual obligation to:

- deliver cash or another financial asset to another entity; or
- exchange financial assets or financial liabilities under conditions that are potentially unfavourable to the entity.

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates.

Liquidity risk is the risk encountered by an entity in the event of difficulty in meeting obligations associated with financial liabilities that are settled by delivering cash or another financial asset.

Loan commitment is a firm commitment to provide credit under pre-specified terms and conditions.

ACCOUNTING POLICIES

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risk comprises three types of risk: currency risk, interest rate risk and other price risk.

Other price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices (other than those arising from interest rate risk or currency risk), whether those changes are caused by factors specific to the individual financial instrument or its issuer, or factors affecting all similar financial instruments traded in the market.

A financial asset is past due when a counterparty has failed to make a payment when contractually due.

Transaction costs are incremental costs that are directly attributable to the acquisition, issue or disposal of a financial asset or financial liability. An incremental cost is one that would not have been incurred if the entity had not acquired, issued or disposed of the financial instrument.

Financial instruments at amortised cost are non-derivative financial assets or non-derivative financial liabilities that have fixed or determinable payments, excluding those instruments that:

- the entity designates at fair value at initial recognition;or
- are held for trading.

Financial instruments at cost are investments in residual interests that do not have a quoted market price in an active market, and whose fair value cannot be reliably measured.

Financial instruments at fair value comprise financial assets or financial liabilities that are:

- derivatives;
- combined instruments that are designated at fair value;
- instruments held for trading. A financial instrument is held for trading if:
  - it is acquired or incurred principally for the purpose of selling or repurchasing it in the near-term;or
  - on initial recognition it is part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short term profit-taking;
  - non-derivative financial assets or financial liabilities with fixed or determinable payments that are designated at fair value at initial recognition;and
  - financial instruments that do not meet the definition of financial instruments at amortised cost or financial instruments at cost.

Classification

The entity has the following types of financial assets (classes and category) as reflected on the face of the statement of financial position or in the notes thereto:

Class	Category
Trade debtors	Financial asset measured at amortised cost
Shares	Held for trading measured at fair value
Unit trusts	Held for trading measured at fair value
Cash and cash equivalents	Financial asset measured at amortised cost
Loans and receivables	Financial asset measured at amortised cost
Employee costs in advance	Financial asset measured at amortised cost
Deposits	Financial asset measured at amortised cost

The entity has the following types of financial liabilities (classes and category) as reflected on the face of the statement of financial position or in the notes thereto:

Class	Category
Trade payables	Financial liabilities measured at amortised cost

Initial recognition

The entity recognises a financial asset or a financial liability in its statement of financial position when the entity becomes a party to the contractual provisions of the instrument.

The entity recognises financial assets using trade date accounting.

Initial measurement of financial assets and financial liabilities

The entity measures a financial asset and financial liability initially at its fair value plus, in the case of a financial asset or a financial liability not subsequently measured at fair value, transaction costs that are directly attributable to the acquisition or issue of the financial asset or financial liability.

Subsequent measurement of financial assets and financial liabilities

The entity measures all financial assets and financial liabilities after initial recognition using the following categories:

- Financial instruments at fair value.
- Financial instruments at amortised cost.

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All financial assets measured at amortised cost, or cost, are subject to an impairment review. The factors taken into account when considering impairment are solvency and whether the account holder is a slow payer.

Impairment and uncollectability of financial assets

The entity assesses at the end of each reporting period whether there is any objective evidence that a financial asset or group of financial assets is impaired.

Financial assets are measured at amortised cost:

If there is objective evidence that an impairment loss on financial assets measured at amortised cost has been incurred, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. The carrying amount of the asset is reduced through the use of an allowance account. The amount of the loss is recognised in surplus or deficit.

If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, the previously recognised impairment loss is reversed by adjusting an allowance account. The reversal does not result in a carrying amount of the financial asset that exceeds what the amortised cost would have been had the impairment not been recognised at the date the impairment is reversed. The amount of the reversal is recognised in surplus or deficit.

If there is objective evidence that an impairment loss has been incurred on an investment in a residual interest that is not measured at fair value because its fair value cannot be measured reliably, the amount of the impairment loss is measured as the difference between the carrying amount of the financial asset and the present value of estimated future cash flows discounted at the current market rate of return for a similar financial asset. Such impairment losses are not reversed.

Presentation

Interest relating to a financial instrument is recognised as revenue in surplus or deficit.

Losses and gains relating to a financial instrument or a component that is a financial liability is recognised as revenue or expense in surplus or deficit.

1.8 LEASES

Operating leases - lessor

Operating lease revenue is recognised as revenue on a straight-line basis over the lease term.

Initial direct costs incurred in negotiating and arranging operating leases are added to the carrying amount of the leased asset and recognised as an expense over the lease term on the same basis as the lease revenue.

Income for leases is disclosed under revenue in the statement of financial performance.

Operating leases - lessee

Operating lease payments are recognised as an expense on a straight-line basis over the lease term. The difference between the amounts recognised as an expense and the contractual payments are recognised as a prepayment or liability.

1.9 IMPAIRMENT OF CASH-GENERATING ASSETS

Cash-generating assets are assets managed with the objective of generating a commercial return. An asset generates a commercial return when it is deployed in a manner consistent with that adopted by a profit-oriented entity.

Impairment is a loss in the future economic benefits or service potential of an asset, over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation (amortisation).

Carrying amount is the amount at which an asset is recognised in the statement of financial position after deducting any accumulated depreciation and accumulated impairment losses thereon.

A cash-generating unit is the smallest identifiable group of assets managed with the objective of generating a commercial return that generates cash inflows from continuing use that are largely independent of the cash inflows from other assets or groups of assets.

Costs of disposal are incremental costs directly attributable to the disposal of an asset, excluding finance costs and income tax expense.

Depreciation (Amortisation) is the systematic allocation of the depreciable amount of an asset over its useful life.

Fair value less costs to sell is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable, willing parties, less the costs of disposal.

Recoverable amount of an asset or a cash-generating unit is the higher of its fair value less costs to sell and its value in use. Useful life is either:

(a) the period of time over which an asset is expected to be used by the entity;or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

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1.10 IMPAIRMENT OF NON-CASH-GENERATING ASSETS

Cash-generating assets are assets managed with the objective of generating a commercial return. When an asset is deployed in a manner consistent with that adopted by a profit-oriented entity, it generates a commercial return.

Non-cash-generating assets are assets other than cash-generating assets.

Impairment is a loss in the future economic benefits or service potential of an asset, over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation (amortisation).

Carrying amount is the amount at which an asset is recognised in the statement of financial position after deducting any accumulated depreciation and accumulated impairment losses thereon.

Fair value less costs to sell is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable, willing parties, less the costs of disposal.

Recoverable service amount is the higher of a non-cash-generating asset's fair value less costs to sell and its value in use. Useful life is either:

(a) the period of time over which an asset is expected to be used by the entity;or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

Criteria developed by the entity to distinguish non-cash-generating assets from cash-generating assets are as follows:
Assets used for administration and in daily operation of the entity is classified as non-cash-generating assets.
Where a substantial part of the asset is hired out, the asset is classified as cash generating assets.

Identification

When the carrying amount of a non-cash-generating asset exceeds its recoverable service amount, it is impaired.

The entity assesses at each reporting date whether there is any indication that a non-cash-generating asset may be impaired. If any such indication exists, the entity estimates the recoverable service amount of the asset.

This impairment test is performed at the same time every year. If an intangible asset was initially recognised during the current reporting period, that intangible asset was tested for impairment before the end of the current reporting period.

Value in use

Value in use of non-cash-generating assets is the present value of the non-cash-generating assets remaining service potential. The present value of the remaining service potential of non-cash-generating assets is determined using the following approach:

Restoration cost approach

Restoration cost is the cost of restoring the service potential of an asset to its pre-impaired level. The present value of the remaining service potential of the asset is determined by subtracting the estimated restoration cost of the asset from the current cost of replacing the remaining service potential of the asset before impairment. The latter cost is determined as the depreciated reproduction or replacement cost of the asset, whichever is lower.

Recognition and measurement

If the recoverable service amount of a non-cash-generating asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable service amount. This reduction is an impairment loss.

An impairment loss is recognised immediately in surplus or deficit.

When the amount estimated for an impairment loss is greater than the carrying amount of the non-cash-generating asset to which it relates, the entity recognises a liability only to the extent that is a requirement in the Standards of GRAP.

After the recognition of an impairment loss, the depreciation (amortisation) charge for the non-cash-generating asset is adjusted in future periods to allocate the non-cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

Reversal of an impairment loss

The entity assesses at each reporting date whether there is any indication that an impairment loss recognised in prior periods for a non-cash-generating asset may no longer exist or may have decreased. If any such indication exists, the entity estimates the recoverable service amount of that asset.

An impairment loss recognised in prior periods for a non-cash-generating asset is reversed if there has been a change in the estimates used to determine the asset's recoverable service amount since the last impairment loss was recognised. The carrying amount of the asset is increased to its recoverable service amount. The increase is a reversal of an impairment loss. The increased carrying amount of an asset attributable to a reversal of an impairment loss does not exceed the carrying amount that would have been determined (net of

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depreciation or amortisation) had no impairment loss been recognised for the asset in prior periods.

A reversal of an impairment loss for a non-cash-generating asset is recognised immediately in surplus or deficit.

After a reversal of an impairment loss is recognised, the depreciation (amortisation) charge for the non-cash-generating asset is adjusted in future periods to allocate the non-cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

1.11 EMPLOYEE BENEFITS

Employee benefits are all forms of consideration given by SAMRC in exchange for service rendered by employees. An annual valuation of the MRC Pension Fund and Post Retirement Medical Aid is performed.

A qualifying insurance policy is an insurance policy issued by an insurer that is not a related party (as defined in the Standard of GRAP on Related Party Disclosures) of the reporting entity, if the proceeds of the policy can be used only to pay or fund employee benefits under a defined benefit plan and are not available to the reporting entity's own creditors (even in liquidation) and cannot be paid to the reporting entity, unless either:

- the proceeds represent surplus assets that are not needed for the policy to meet all the related employee benefit obligations; or
- the proceeds are returned to the reporting entity to reimburse it for employee benefits already paid.

Termination benefits are employee benefits payable as a result of either:

- an entity's decision to terminate an employee's employment before the normal retirement date; or
- an employee's decision to accept voluntary redundancy in exchange for those benefits.

Short-term employee benefits

Short-term employee benefits are employee benefits (other than termination benefits) that are due to be settled within twelve months after the end of the period in which the employees render the related service.

When an employee has rendered service to the entity during a reporting period, the entity recognises the undiscounted amount of short-term employee benefits expected to be paid in exchange for that service:

- as a liability (accrued expense), after deducting any amount already paid. If the amount already paid exceeds the undiscounted amount of the benefits, the entity recognises that excess as an asset (prepaid expense) to the extent that the prepayment will lead to, for example, a reduction in future payments or a cash refund.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs. The entity measures the expected cost of accumulating compensated absences as the additional amount that the entity expects to pay as a result of the unused entitlement that has accumulated at the reporting date.

The entity recognises the expected cost of bonus, incentive and performance related payments when the entity has a present legal or constructive obligation to make such payments as a result of past events and a reliable estimate of the obligation can be made. A present obligation exists when the entity has no realistic alternative but to make the payments.

Post-employment benefits

Post-employment benefits are employee benefits (other than termination benefits) which are payable after the completion of employment.

SAMRC offers its employees post-employee benefits to the SAMRC Pension Fund.

Post-employment benefits: Defined contribution plans

Defined contribution plans are post-employment benefit plans under which an entity pays fixed contributions into a separate entity (a fund) and will have no legal or constructive obligation to pay further contributions if the fund does not hold sufficient assets to pay all employee benefits relating to employee service in the current and prior periods.

When an employee has rendered service to the entity during a reporting period, the entity recognises the contribution payable to a defined contribution plan in exchange for that service:

- as a liability (accrued expense), after deducting any contribution already paid. If the contribution already paid exceeds the contribution due for service before the reporting date, an entity recognise that excess as an asset (prepaid expense) to the extent that the prepayment will lead to, for example, a reduction in future payments or a cash refund; and
- as an expense, unless another Standard requires or permits the inclusion of the contribution in the cost of an asset.

Where contributions to a defined contribution plan do not fall due wholly within twelve months after the end of the reporting period in which the employees render the related service, they are discounted. The rate used to discount reflects the time value of money. The currency and term of

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the financial instrument selected to reflect the time value of money is consistent with the currency and estimated term of the obligation.

Post-employment benefits: Defined benefit plans

Defined benefit plans are post-employment benefit plans other than defined contribution plans.

Actuarial gains and losses comprise experience adjustments (the effects of differences between the previous actuarial assumptions and what has actually occurred) and the effects of changes in actuarial assumptions. In measuring its defined benefit liability the entity recognise actuarial gains and losses in surplus or deficit in the reporting period in which they occur.

Assets held by a long-term employee benefit fund are assets (other than non-transferable financial instruments issued by the reporting entity) that are held by an entity (a fund) that is legally separate from the reporting entity and exists solely to pay or fund employee benefits and are available to be used only to pay or fund employee benefits, are not available to the reporting entity's own creditors (even in liquidation), and cannot be returned to the reporting entity, unless either:

- the remaining assets of the fund are sufficient to meet all the related employee benefit obligations of the plan or the reporting entity; or
- the assets are returned to the reporting entity to reimburse it for employee benefits already paid.

Current service cost is the increase in the present value of the defined benefit obligation resulting from employee service in the current period.

Interest cost is the increase during a period in the present value of a defined benefit obligation which arises because the benefits are one period closer to settlement.

Past service cost is the change in the present value of the defined benefit obligation for employee service in prior periods, resulting in the current period from the introduction of, or changes to, post-employment benefits or other long-term employee benefits. Past service cost may be either positive (when benefits are introduced or changed so that the present value of the defined benefit obligation increases) or negative (when existing benefits are changed so that the present value of the defined benefit obligation decreases). In measuring its defined benefit liability the entity recognise past service cost as an expense in the reporting period in which the plan is amended.

Plan assets comprise assets held by a long-term employee benefit fund and qualifying insurance policies.

The present value of a defined benefit obligation is the present value, without deducting any plan assets, of expected future payments required to settle the obligation resulting from employee service in the current and prior periods.

The return on plan assets is interest, dividends or similar distributions and other revenue derived from the plan assets, together with realised and unrealised gains or losses on the plan assets, less any costs of administering the plan (other than those included in the actuarial assumptions used to measure the defined benefit obligation) and less any tax payable by the plan itself.

The entity account not only for its legal obligation under the formal terms of a defined benefit plan, but also for any constructive obligation that arises from the entity's informal practices. Informal practices give rise to a constructive obligation where the entity has no realistic alternative but to pay employee benefits. An example of a constructive obligation is where a change in the entity's informal practices would cause unacceptable damage to its relationship with employees.

The amount recognised as a defined benefit liability is the net total of the following amounts:

- the present value of the defined benefit obligation at the reporting date;
- minus the fair value at the reporting date of plan assets (if any) out of which the obligations are to be settled directly;
- plus any liability that may arise as a result of a minimum funding requirement.

The amount determined as a defined benefit liability may be negative (an asset). The entity measures the resulting asset at the lower of:

- the amount determined above;and
- the present value of any economic benefits available in the form of refunds from the plan or reductions in future contributions to the plan. The present value of these economic benefits is determined using a discount rate which reflects the time value ofmoney.

Any adjustments arising from the limit above is recognised in surplus or deficit.

The entity determine the present value of defined benefit obligations and the fair value of any plan assets with sufficient regularity such that the amounts recognised in the annual financial statements do not differ materially from the amounts that would be determined at the reporting date.

The entity recognises the net total of the following amounts in surplus or deficit, except to the extent that another Standard requires or permits their inclusion in the cost of an asset:

- current service cost;
- interest cost;
- the expected return on any plan assets and on any reimbursement rights;
- actuarial gains and losses;
- past service cost;
- the effect of any curtailments or settlements;and

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- the effect of applying the limit on a defined benefit asset (negative defined benefit liability).

The entity uses the Projected Unit Credit Method to determine the present value of its defined benefit obligations and the related current service cost and, where applicable, past service cost. The Projected Unit Credit Method (sometimes known as the accrued benefit method pro-rated on service or as the benefit/years of service method) sees each period of service as giving rise to an additional unit of benefit entitlement and measures each unit separately to build up the final obligation.

Actuarial valuations for GRAP 25 purposes are conducted on an annual basis by independent actuaries separately for each plan. The results of the valuation are updated for any material transactions and other material changes in circumstances (including changes in market prices and interest rates) up to the reporting date.

The entity recognises gains or losses on the curtailment or settlement of a defined benefit plan when the curtailment or settlement occurs. The gain or loss on a curtailment or settlement comprises:

- any resulting change in the present value of the defined benefit obligation;and
- any resulting change in the fair value of the plan assets.

Before determining the effect of a curtailment or settlement, the entity re-measure the obligation (and the related plan assets, if any) using current actuarial assumptions (including current market interest rates and other current market prices).

When it is virtually certain that another party will reimburse some or all of the expenditure required to settle a defined benefit obligation, the right to reimbursement is recognised as a separate asset. The asset is measured at fair value. In all other respects, the asset is treated in the same way as plan assets. In surplus or deficit, the expense relating to a defined benefit plan is not presented as the net of the amount recognised for a reimbursement.

The entity offsets an asset relating to one plan against a liability relating to another plan when the entity has a legally enforceable right to use a surplus in one plan to settle obligations under the other plan and intends either to settle the obligations on a net basis, or to realise the surplus in one plan and settle its obligation under the other plan simultaneously.

Actuarial assumptions

Actuarial assumptions are unbiased and mutually compatible.

Financial assumptions are based on market expectations, at the reporting date, for the period over which the obligations are to be settled.

The rate used to discount post-employment benefit obligations (both funded and unfunded) reflect the time value of money. The currency and term of the financial instrument selected to reflect the time value of money is consistent with the currency and estimated term of the post-employment benefit obligations.

Post-employment benefit obligations are measured on a basis that reflects:

- estimated future salary increases;
- the benefits set out in the terms of the plan (or resulting from any constructive obligation that goes beyond those terms) at the reporting date;and
- estimated future changes in the level of any state benefits that affect the benefits payable under a defined benefit plan, if, and only if, either:
- those changes were enacted before the reporting date;or
- past history, or other reliable evidence, indicates that those state benefits will change in some predictable manner, for example, in line with future changes in general price levels or general salary levels.

Assumptions about medical costs take account of estimated future changes in the cost of medical services, resulting from both inflation and specific changes in medical costs.

Post retirement medical aid obligations

The SAMRC provides post-retirement health care benefits, to some of its employees and their legitimate spouses. The major portion of the liability is funded by an investment policy.

The entitlement to post-retirement health care benefits is based on the employee remaining in service up to retirement age and the completion of a minimum service period. The expected costs of these benefits are accrued over the period of employment. Independent qualified actuaries carry out valuations of these obligations.

The amount recognised as a liability for other long-term employee benefits is the net total of the following amounts:

- the present value of the defined benefit obligation at the reporting date;
- minus the fair value at the reporting date of plan assets (if any) out of which the obligations are to be settled directly.

The entity shall recognise the net total of the following amounts as expense or revenue, except to the extent that another Standard requires or permits their inclusion in the cost of an asset:

- current service cost;
- interest cost;
- the expected return on any plan assets and on any reimbursement right recognised as an asset;

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- actuarial gains and losses, which shall all be recognised immediately;
- past service cost, which shall all be recognised immediately;and
- the effect of any curtailments or settlements.

Termination benefits

The entity recognises termination benefits as a liability and an expense when the entity is demonstrably committed to either:

- terminate the employment of an employee or group of employees before the normal retirement date;or
- provide termination benefits as a result of an offer made in order to encourage voluntary redundancy.

The entity is demonstrably committed to a termination when the entity has a detailed formal plan for the termination and is without realistic possibility of withdrawal. The detailed plan includes [as a minimum]:

- the location, function, and approximate number of employees whose services are to be terminated;
- the termination benefits for each job classification or function;and
- the time at which the plan will be implemented.

Termination benefits are payable whenever an employee's employment is terminated before normal retirement date or whenever an employee accepts voluntary redundancy in exchange for these benefits. The SAMRC recognises termination benefits as an expense when it is demonstrably committed to either terminate the employment of current employees according to a detailed formal plan without the possibility of withdrawal or to provide termination benefits as a result of an offer made to encourage voluntary redundancy. Benefits failing due more than 12 months after reporting date are discounted to present value.

Pension Plan

Contributions to a pension plan in respect of service in a particular period are included in the total cost of employment and are charged to the statement of financial performance in the year in which they relate as part of the cost of employment. The amount recognised in the surplus or deficit for the period under defined benefit plans represents the movement in the present value of the defined benefit obligation and the fair value of the plan assets, after adjusting for contributions paid to the fund, as well as any unrecognised past service costs. Actuarial gains or losses are recognised in the surplus or deficit in the period in which it occurs.

1.12 PROVISIONS AND CONTINGENCIES

Provisions are recognised when:

- the entity has a present obligation as a result of a past event;
- it is probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation;and
- a reliable estimate can be made of the obligation.

The amount of a provision is the best estimate of the expenditure expected to be required to settle the present obligation at the reporting date.

Provisions are measured at the present value of the expenditures expected to be made to settle the obligation using the pre-tax rate that reflects the current market assessments of the time value of money and the risks specific to the obligation. The increase in the provision due to the passage of time is recognised as finance charges.

Where some or all of the expenditure required to settle a provision is expected to be reimbursed by another party, the reimbursement is recognised when, and only when, it is virtually certain that reimbursement will be received if the entity settles the obligation. The reimbursement is treated as a separate asset. The amount recognised for the reimbursement does not exceed the amount of the provision.

Provisions are reviewed at each reporting date and adjusted to reflect the current best estimate. Provisions are reversed if it is no longer probable that an outflow of resources embodying economic benefits or service potential will be required, to settle the obligation.

A provision is used only for expenditures for which the provision was originally recognised. Provisions are not recognised for future operating deficits.

A constructive obligation to restructure arises only when an entity:

- has a detailed formal plan for the restructuring, identifying at least:
  - the activity/operating unit or part of an activity/ operating unit concerned;
  - the principal locations affected;
  - the location, function, and approximate number of employees who will be compensated for services being terminated;
  - the expenditures that will be undertaken; and
  - when the plan will be implemented; and
- has raised a valid expectation in those affected that it will carry out the restructuring by starting to implement that plan or announcing its main features to those affected by it.

A restructuring provision includes only the direct expenditures arising from the restructuring, which are those that are both:

- necessarily entailed by the restructuring; and
- not associated with the ongoing activities of the entity

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No obligation arises as a consequence of the sale or transfer of an operation until the entity is committed to the sale or transfer, that is, there is a binding arrangement.

After their initial recognition contingent liabilities recognised in entity combinations that are recognised separately are subsequently measured at the higher of:

- the amount that would be recognised as a provision;and
- the amount initially recognised less cumulative amortisation.

Contingent assets and contingent liabilities are not recognised. Contingencies are disclosed in note 31.

1.13 COMMITMENTS

Items are classified as commitments when an entity has committed itself to future transactions that will normally result in the outflow of cash.

Commitments for which disclosure is necessary to achieve a fair presentation is disclosed in a note to the financial statements,if both the following criteria are met:

- Contracts should be non-cancelable or only cancelable at significant cost (for example, contracts for computer or building maintenance services);and
- Contracts should relate to something other than the routine, steady, state business of the entity – therefore salary commitments relating to employment contracts or social security benefit commitments are excluded.

1.14 REVENUE FROM EXCHANGE TRANSACTIONS

Revenue is the gross inflow of economic benefits or service potential during the reporting period when those inflows result in an increase in net assets, other than increases relating to contributions from owners.

An exchange transaction is one in which the entity receives assets or services, or has liabilities extinguished, and directly gives approximately equal value (primarily in the form of goods, services or use of assets) to the other party in exchange.

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

Measurement

Revenue is measured at the fair value of the consideration received or receivable.

Sale of goods

Revenue from the sale of goods is recognised when all the following conditions have been satisfied:

- the entity has transferred to the purchaser the significant risks and rewards of ownership of the goods;
- the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity; and
- the costs incurred or to be incurred in respect of the transaction can be measured reliably.

Revenue derived from the sale of animal blood; dietary assessment kits and nutritional text books and sale of biological assets are classified as sale of goods.

Rendering of services

When the outcome of a transaction involving the rendering of services can be estimated reliably, revenue associated with the transaction is recognised by reference to the stage of completion of the transaction at the reporting date. The outcome of a transaction can be estimated reliably when all the following conditions are satisfied:

- the amount of revenue can be measured reliably;
- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity;
- the stage of completion of the transaction at the reporting date can be measured reliably;and
- the costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

When services are performed by an indeterminate number of acts over a specified time frame, revenue is recognised on a straight line basis over the specified time frame unless there is evidence that some other method better represents the stage of completion. When a specific act is much more significant than any other acts, the recognition of revenue is postponed until the significant act is executed.

When the outcome of the transaction involving the rendering of services cannot be estimated reliably, revenue is recognised only to the extent of the expenses recognised that are recoverable.

Consulting and research service revenue is recognised by reference to the stage of completion of the transaction at the reporting date. Stage of completion is determined by the proportion that costs incurred to date bear to the total estimated costs of the transaction.

Interest, royalties and dividends

Revenue arising from the use by others of entity assets yielding interest, royalties and dividends or similar distributions is recognised when:

- It is probable that the economic benefits or service potential associated with the transaction will flow to the entity, and

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- The amount of the revenue can be measured reliably.

Interest is recognised, in surplus or deficit, using the effective interest rate method.

Royalties are recognised as they are earned in accordance with the substance of the relevant agreements.

Dividends or their equivalent distributions are recognised, in surplus or deficit, when the entity's right to receive payment has been established.

Service fees included in the price of the product are recognised as revenue over the period during which the service is performed.

1.15 REVENUE FROM NON-EXCHANGE TRANSACTIONS

Revenue comprises gross inflows of economic benefits or service potential received and receivable by an entity, which represents an increase in net assets, other than increases relating to contributions from owners.

Conditions on transferred assets are stipulations that specify that the future economic benefits or service potential embodied in the asset is required to be consumed by the recipient as specified or future economic benefits or service potential must be returned to the transferor.

Control of an asset arise when the entity can use or otherwise benefit from the asset in pursuit of its objectives and can exclude or otherwise regulate the access of others to that benefit.

Exchange transactions are transactions in which one entity receives assets or services, or has liabilities extinguished, and directly gives approximately equal value (primarily in the form of cash, goods, services, or use of assets) to another entity in exchange.

Non-exchange transactions are transactions that are not exchange transactions. In a non-exchange transaction, an entity either receives value from another entity without directly giving approximately equal value in exchange, or gives value to another entity without directly receiving approximately equal value in exchange.

Stipulations on transferred assets are terms in laws or regulation, or a binding arrangement, imposed upon the use of a transferred asset by entities external to the reporting entity.

Recognition

An inflow of resources from a non-exchange transaction recognised as an asset is recognised as revenue, except to the extent that a liability is also recognised in respect of the same inflow.

As the entity satisfies a present obligation recognised as a liability in respect of an inflow of resources from a non-exchange transaction recognised as an asset, it reduces the carrying amount of the liability recognised and recognises an amount of revenue equal to that reduction.

Measurement

Revenue from a non-exchange transaction is measured at the amount of the increase in net assets recognised by the entity.

When, as a result of a non-exchange transaction, the entity recognises an asset, it also recognises revenue equivalent to the amount of the asset measured at its fair value as at the date of acquisition, unless it is also required to recognise a liability. Where a liability is required to be recognised it will be measured as the best estimate of the amount required to settle the obligation at the reporting date, and the amount of the increase in net assets, if any, recognised as revenue. When a liability is subsequently reduced, because the taxable event occurs or a condition is satisfied, the amount of the reduction in the liability is recognised as revenue.

Gifts and donations, including goods in-kind

Gifts and donations, including goods in-kind, are recognised as assets and revenue when it is probable that the future economic benefits or service potential will flow to the entity and the fair value of the assets can be measured reliably.

Services in-kind

The entity recognise services in-kind that are significant to its operations and/or service delivery objectives as assets and recognise the related revenue when it is probable that the future economic benefits or service potential will flow to the entity and the fair value of the assets can be measured reliably.

Where services in-kind are not significant to the entity's operations and/or service delivery objectives and/or do not satisfy the criteria for recognition, the entity disclose the nature and type of services in-kind received during the reporting period.

1.16 REVENUE RECOGNITION FOR EXCHANGE AND NON-EXCHANGE TRANSACTIONS

Revenue represents the parliamentary grant from government as well as external income. Parliamentary grant (Revenue from non-exchange transactions)

Government grants are recognised when it is probable that the future economic benefit will flow to the SAMRC and these benefits can be measured reliably. The grant is recognised to the extent that there are no further obligations arising from the receipt of the grant. Government grants are assistance by government in the form of transfer of resources in return for compliance with conditions related to operating activities.

ACCOUNTING POLICIES

Grants that compensate the SAMRC for expenses incurred are recognised in surplus or deficit in the same periods in which the expense is recognised.

Revenue other than grants, donations, project revenue and council activities (Revenue from exchange transactions)

Revenue is recognised on the accrual basis. Revenue is recognised when significant risks and rewards of ownership have been transferred.

Research revenue

Revenue is recognised only to the extent of research costs incurred and is probable that it will be recoverable. Advance income received in respect of which no work has been done, is treated as deferred income until such time the expenditure is incurred or the conditions of the grant/contract are met.

Rental income

Rental income from tenants is recognised in the statement of financial performance on a straight line basis over the term of the lease. Lease incentives granted are recognised as an integral part of the total rental income, over the term of the lease.

Deferred income

Deferred income is recognised to the extent that expenses are incurred and that conditions of the grant are met.

1.17 BORROWING COSTS

Borrowing costs are interest and other expenses incurred by an entity in connection with the borrowing of funds. Borrowing costs are recognised as an expense in the period in which they are incurred.

1.18 TRANSLATION OF FOREIGN CURRENCIES

Foreign currency transactions

A foreign currency transaction is recorded, on initial recognition in Rands, by applying to the foreign currency amount the spot exchange rate between the functional currency and the foreign currency at the date of the transaction.

At each reporting date:

- foreign currency monetary items are translated using the closing rate;
- non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the transaction;and
- non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

Exchange differences arising on the settlement of monetary items or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous annual financial statements are recognised in surplus or deficit in the period in which they arise.

When a gain or loss on a non-monetary item is recognised directly in net assets, any exchange component of that gain or loss is recognised directly in net assets. When a gain or loss on a non-monetary item is recognised in surplus or deficit, any exchange component of that gain or loss is recognised in surplus or deficit.

Cash flows arising from transactions in a foreign currency are recorded in Rands by applying to the foreign currency amount the exchange rate between the Rand and the foreign currency at the date of the cash flow.

1.19 VAT

The SAMRC accounts for VAT on the invoice basis.

1.20 COMPARATIVE FIGURES

Where necessary, comparative figures have been reclassified to conform to changes in presentation in the current year.

1.21 FRUITLESS AND WASTEFUL EXPENDITURE

Fruitless and wasteful expenditure means expenditure which was made in vain and would have been avoided had reasonable care been exercised.

All expenditure relating to fruitless and wasteful expenditure is recognised as an expense in the statement of financial performance in the year that the expenditure was incurred. The expenditure is classified in accordance with the nature of the expense, and where recovered, it is subsequently accounted for as revenue in the statement of financial performance.

1.22 IRREGULAR EXPENDITURE

Irregular expenditure as defined in section 1 of the PFMA is expenditure other than unauthorised expenditure, incurred in contravention of or that is not in accordance with a requirement of any applicable legislation, including -

(a) this Act; or
(b) the State Tender Board Act, 1968 (Act No. 86 of 1968), or any regulations made in terms of the Act;or

ACCOUNTING POLICIES

(c) any provincial legislation providing for procurement procedures in that provincial government.

National Treasury practice note no. 4 of 2008/2009 which was issued in terms of sections 76(1) to 76(4) of the PFMA requires the following (effective from 1 April 2008):

Irregular expenditure that was incurred and identified during the current financial year and which was condoned before year end and/or before finalisation of the financial statements is recorded appropriately in the irregular expenditure register. In such an instance, no further action is required with the exception of updating the note to the financial statements.

Irregular expenditure that was incurred and identified during the current financial year and for which condonement is being awaited at year end must is recorded in the irregular expenditure register. No further action is required with the exception of updating the note to the financial statements.

Where irregular expenditure was incurred in the previous financial year and is only condoned in the following financial year, the register and the disclosure note to the financial statements will be updated with the amount condoned.

Irregular expenditure that was incurred and identified during the current financial year and which was not condoned by the National Treasury or the relevant authority must be recorded appropriately in the irregular expenditure register. If liability for the irregular expenditure can be attributed to a person, a debt account must be created if such a person is liable in law. Immediate steps will be taken to recover the amount from the person concerned. If recovery is not possible, the accounting authority may write off the amount as debt impairment and disclose such in the relevant note to the financial statements. The irregular expenditure register will be updated accordingly.

1.23 BUDGET INFORMATION

General purpose financial reporting by entity shall provide information on whether resources were obtained and used in accordance with the legally adopted budget.

The approved budget is prepared on an accrual basis and presented by functional classification linked to performance outcome objectives.

The approved budget covers the fiscal period from 4/1/2017 to 3/31/2018.

The annual financial statements and the budget are on the same basis of accounting therefore a comparison with the budgeted amounts for the reporting period have been included in the Statement of comparison of budget and actual amounts.

Comparative information is not required.

1.24 RELATED PARTIES

The entity operates in an economic sector currently dominated by entities directly or indirectly owned by the South African Government. As a consequence of the constitutional independence of the three spheres of government in South Africa, only entities within the national sphere of government are considered to be related parties.

Management are those persons responsible for planning, directing and controlling the activities of the entity, including those charged with the governance of the entity in accordance with legislation, in instances where they are required to perform such functions.

Close members of the family of a person are considered to be those family members who may be expected to influence, or be influenced by, that management in their dealings with the entity.

Only transactions with related parties not at arm's length or not in the ordinary course of business are disclosed.

1.25 EARMARKED FUNDS

The Earmarked funds are donations; bequests from deceased estates or cash received for a limited period to be used for visiting eminent scientists; cancer research or tuberculosis research. The monies received have been allocated to a separate account. The monies are ring-fenced from the cash balance of the SAMRC.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

2. NEW STANDARDS AND INTERPRETATIONS

2.1 STANDARDS AND INTERPRETATIONS ISSUED, BUT NOT YET EFFECTIVE

The entity has not applied the following standards and interpretations, which have been published and are mandatory for the entity's accounting periods beginning on or after April 1, 2018 or later periods:

GRAP 20 Related parties	April 1, 2019	Not expected to impact results but may result in additional disclosure than would have previously been provided in the financial statements
GRAP 109 Accounting by Principals and Agents	April 1, 2018	None
GRAP 21 (as amended 2015) Impairment of non-cash-generating assets	April 1, 2018	The impact of the amendment is not material
GRAP 26 (as amended 2015) Impairment of Cash -generating Assets	April 1, 2018	None
GRAP 32 Service Concession Arrangements: Grantor	April 1, 2019	Impact is currently being assessed
Directive 12 The Selection of an Appropriate Reporting Framework by Public Entities	April 1, 2018	None

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

3. FINANCIAL ASSETS AT FAIR VALUE

	2018	2017
	R	R
Designated at fair value		
Class 1 Listed shares	1,233,453	980,619
Sanlam demutualisation shares No. of shares 12715 (2017: 12715) and Old Mutual demutualisation shares No. of shares 3682 (2017: 3682)	5,556,251	5,449,904
Class 2 Unit trusts		
SIM General Equity Fund R 16272,49 units (2017: 16060,98 units) and SIM Balanced Fund R 28074,07 (2017: 27220,83)		
	6,789,704	**6,430,523**
Current assets		
Designated at fair value	6,789,704	6,430,523

Financial assets at fair value

Fair value hierarchy of financial assets at fair value

For financial assets recognised at fair value, disclosure is required of a fair value hierarchy which reflects the significance of the inputs used to make the measurements. The fair value hierarchy has the following levels:

Level 1 represents those assets which are measured using unadjusted quoted prices in active markets for identical assets. Quoted selling price per share at 31 March 2018 (31 March 2017) is used.

Level 2 applies inputs other than quoted prices that are observable for the assets either directly (i.e. as prices) or indirectly (i.e. derived from prices). The valuation certificate received from Sanlam indicating the unit balance and price per unit and market value.

Level 3 applies inputs which are not based on observable market data.

Level 1		
Class 1 Listed shares	1,233,453	980,619
Class 2 Unit trusts	5,556,251	5,449,904
	6,789,704	**6,430,523**

The entity has not reclassified any financial assets from cost or amortised cost to fair value, or from fair value to cost or amortised cost during the current or prior period.

NOTES TO THE

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3. FINANCIAL ASSETS AT FAIR VALUE (CONTINUED)

Reconciliation of financial assets at fair value through surplus or deficit measured in level 1

Reconciliation of financial assets at fair value through surplus or deficit measured in level 1 - March 2018

	Opening balance	Gains or (losses) in surplus or deficit	Purchases	Closing balance
Class 1 Listed shares	980,619	252,834	-	1,233,453
Class 2 Unit trusts	5,449,904	(6,742)	113,089	5,556,251
	6,430,523	**246,092**	**113,089**	**6,789,704**

Reconciliation of financial assets at fair value through surplus or deficit measured in level 1 - March 2017

Class 1 Listed shares	1,021,739	(41,120)	-	980,619
Class 2 Unit trusts	5,349,072	(38,159)	138,991	5,449,904
	6,370,811	(79,279)	138,991	6,430,523

4. RECEIVABLES FROM EXCHANGE TRANSACTIONS

	2018	2017
	R	R
Trade debtors	38,490,797	33,511,201
Employee costs in advance	158,387	226,617
Deposits	1,427,057	2,321,856
South African Revenue Services	2,824,561	-
	42,900,802	**36,059,674**

The 2017 figures have been amended due to the reclassification of subsistence and travel advances which was previously included in receivables from exchange now classified as prepayments (R1,326,182).

The increase in receivables from exchange transactions is attributed to funder/grantor debtors.

South African Reserve Services (SARS) amount refers to output vat that was disallowed in the September 2016 vat period that was re-assessed in November and December 2017. The output vat is claimable and SAMRC has lodged a dispute with SARS.

Credit quality of trade debtors

The credit quality of trade debtors that are neither past nor due nor impaired can be assessed by reference to external credit ratings (if available) or to historical information about counterparty default rates.

Trade and other receivables

Trade and other receivables which are less than one month past due are not considered to be impaired. At 31 March 2018: R328,715 (31 March 2017: R2,626,072) were past due but not impaired.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

4. RECEIVABLES FROM EXCHANGE TRANSACTIONS (CONTINUED)

	2018	2017
	R	R
The ageing of amounts past due but not impaired is as follows:		
1 month past due	94,888	571,713
2 months past due	202,703	110,059
3 months past due	31,124	1,944,300

Trade and other receivables impaired

The amount of the provision was R 40,991 as of March 31, 2018 (March 31, 2017: R 322,168). All trade debtor balances are reviewed for impairment. Impairment considerations include solvency of debtor and recoverability of amount owed. Employee costs in advance are not considered for impairment as these amounts are recovered/processed within 30 days.

Aged as follows:

1 month but less than 2 months past due	3,644	-
2 months but less than 3 months past due	-	210,195
More than 3 months past due	37,347	111,973

The carrying amount of trade debtors are denominated in the following currencies:

Rand	14,325,522	28,617,275
US Dollar	3,498,624	4,893,926
Pound sterling	20,666,651	-

Reconciliation of provision for impairment of trade and other receivables

Opening balance	322,168	376,080
Provision for impairment	40,991	322,168
Unused amounts reversed	(322,168)	(376,080)
	40,991	**322,168**

5. VAT RECEIVABLE

	2018	2017
	R	R
VAT	15,094,330	11,796,907

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

6. PREPAYMENTS

The 2017 figures have been amended due to the reclassification of subsistence and travel advances which was previously included in receivables from exchange now classified as prepayments (R1,326,182).

Prepayments - other relate to expenditure paid in advance for subscriptions, annual computer licenses; computer software updates and maintenance; computer warranties; insurance; air tickets and accommodation.

	2018	2017
	R	R
Subsistence and travel advances	1,280,735	1,326,182
Prepayments - other	5,833,851	4,521,093
	7,114,586	5,847,275

7. CASH AND CASH EQUIVALENTS

Cash and cash equivalents consist of:		
Cash on hand	105,740	15,568
Bank balances	491,105,428	543,924,115
	491,211,168	543,939,683
Analysis of bank balances		
ABSA and Standard Bank	1,653,329	1,482,697
ABSA funder accounts	7,848,991	4,226,892
First National Bank	244,517	188,733
Cash at the Reserve Bank	448,929,838	512,523,879
First National Bank funder accounts	32,428,753	25,501,914
	491,105,428	543,924,115

The cash at the Reserve Bank includes funds for the Botha Trust; Bruhns Trust; Melville Douglas Trust; Q&S Abdool Karim Trust; FJ Kleynhans Trust; MF Ramashala Trust and Motor vehicle reserve fund.

The Motor vehicle reserve fund was established to provide self-insurance of motor vehicles with a low market value.

Motor vehicle reserve fund		
Balance at beginning of year	3,274,742	3,013,222
Allocation for year	261,920	261,520
	3,536,662	**3,274,742**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

8. BIOLOGICAL ASSETS THAT FORM PART OF AN AGRICULTURAL ACTIVITY

	March 2018		March 2017	
	Cost / Valuation	Carrying value	Cost / Valuation	Carrying value
Bearer mature biological assets	1,285,103	1,285,103	1,147,101	1,147,101

Reconciliation of biological assets that form part of an agricultural activity - March 2018

	Opening balance	Additions	Decreases due to sales/ disposals	Total
Bearer mature biological assets	1,147,101	162,069	(24,067)	1,285,103

Reconciliation of biological assets that form part of an agricultural activity - March 2017

	Opening balance	Additions	Decreases due to sales/ disposals	Gains or losses arising from changes in fair value	Other changes, movements	Total
Bearer mature biological assets	1,137,529	66,734	(83,211)	26,050	(1)	1,147,101

SAMRC holds certain monkeys and horses for breeding and external research purposes. All research activities are monitored and controlled to ensure humane treatment of animals.

The last selling price per biological animal type is used to determine fair value.

	2018	2017
	R	R
Fair value less costs to sell of biological assets during the period	1,285,103	1,147,101

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

9. PROPERTY, PLANT AND EQUIPMENT

	2018			2017		
	Cost/ Valuation	Accumulated depreciations and accumulated impairment	Carrying value	Cost/ Valuation	Accumulated depreciations and accumulated impairment	Carrying value
Land	1,872,502	-	1,872,502	1,738,558	-	1,738,558
Buildings	104,915,246	(34,632,124)	70,283,122	93,838,353	(32,073,642)	61,764,711
Vehicles and containers	21,650,974	(15,344,122)	6,306,852	19,821,000	(14,366,544)	5,454,456
Furniture and office equipment	41,184,184	(22,459,069)	18,725,115	37,016,080	(19,752,792)	17,263,288
Computer equipment	69,458,610	(48,787,777)	20,670,833	60,985,952	(41,153,206)	19,832,746
Laboratory equipment	59,931,151	(19,855,115)	40,076,036	50,462,872	(17,010,013)	33,452,859
Other property, plant and equipment - vervet monkeys	1,534,112	(636,966)	897,146	1,512,469	(609,486)	902,983
Total	**300,546,779**	**(141,715,173)**	**158,831,606**	**265,375,284**	**(124,965,683)**	**140,409,601**

Reconciliation of property, plant and equipment - March 2018

	Opening balance	Additions	Disposals	Depreciation	Total
Land	1,738,558	133,944	-	-	1,872,502
Buildings	61,764,711	11,223,377	(68,209)	(2,636,757)	70,283,122
Vehicles and containers	5,454,456	2,217,044	(206,648)	(1,158,000)	6,306,852
Furniture and office equipment	17,263,288	5,066,838	(65,707)	(3,539,304)	18,725,115
Computer equipment	19,832,746	9,961,298	(126,536)	(8,996,675)	20,670,833
Laboratory equipment	33,452,859	10,216,387	(230,703)	(3,362,507)	40,076,036
Other property, plant and equipment - vervet monkeys	902,983	65,787	(20,600)	(51,024)	897,146
	140,409,601	**38,884,675**	**(718,403)**	**(19,744,267)**	**158,831,606**

Reconciliation of property, plant and equipment - March 2017

Land	1,738,558	-	-	-	1,738,558
Buildings	59,876,311	4,332,233	(27,154)	(2,416,679)	61,764,711
Vehicles and containers	6,515,536	696,051	(352,120)	(1,405,011)	5,454,456
Furniture and office equipment	15,849,711	4,795,074	(216,005)	(3,165,492)	17,263,288
Computer equipment	20,232,499	7,199,674	(170,333)	(7,429,094)	19,832,746
Laboratory equipment	30,696,998	5,936,387	(227,760)	(2,952,766)	33,452,859
Other property, plant and equipment - vervet monkeys	939,057	53,161	(38,733)	(50,502)	902,983
	135,848,670	**23,012,580**	**(1,032,105)**	**(17,419,544)**	**140,409,601**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

9. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

Other information

	2018	2017
	R	R
Property, plant and equipment fully depreciated and still in use (Gross carrying amount)		
Property, plant and equipment - Buildings	424	436
Property, plant and equipment - Laboratory equipment	626	565
Property, plant and equipment - Computer equipment	2,469	2,302
Property, plant and equipment - Furniture and office equipment	8,220	8,297
	11,739	**11,600**

Property, plant and equipment fully depreciated and still in use with residual value (Gross carrying amount)

	No. of assets	March 2018 Residual value	No. of assets	March 2017 Residual value
Property, plant and equipment - Vehicles and containers	78	2,222,165	68	1,611,611

Impaired assets March 2018	Oncology
Property, plant and equipment -Laboratory equipment	28,189
	28,189

Impaired assets March 2017	
Property, plant and equipment -Laboratory equipment	28,189
	28,189

The assets impaired for the discontinued research units is reflected above. The assets impaired constitutes 0.02% (March 2017: 0,02%) of the carrying cost of property, plant and equipment and Nil% for March 2018 (March 2017: Nil%) of the carrying value of intangible assets.

The SAMRC Board, at its meeting of 1 March 2013, approved the restructuring of the SAMRC to focus on the 10 highest causes of death in the burden of disease in South Africa. Following this decision the Board at its meeting of 19 February 2014 further approved that discussions be held with institutions for higher learning regarding the transfer of staff and assets of the following units: Promec, Indigenous Knowledge Systems, Oncology and Tuberculosis. To ensure that research in these areas was continued at these institutions it was further agreed that the assets be transferred for no consideration.

The approval for this transaction was received from the Minister of Health in terms of the SAMRC materiality framework on 3 April 2014.

All items of property, plant and equipment are owned by the entity.

There are no restrictions on the title of Property, plant and equipment.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

9. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

Details of properties

Property, plant and equipment in the process of being constructed or developed
Cumulative expenditure recognised in the carrying value of property, plant and equipment

	2018	2017
	R	R
Buildings	165,000	-

Reconciliation of Work-in-Progress March 2018

	Included within Buildings	Total
Additions/capital expenditure	165,000	165,000

Expenditure incurred to repair and maintain property, plant and equipment

Amount included in Statement of Financial Performance

	2018	2017
	R	R
Contracted services	12,918,282	14,146,421

10. INTANGIBLE ASSETS

	2018			2017		
	Cost/ Valuation	Accumulated amortisation and accumulated impairment	Carrying Value	Cost/ Valuation	Accumulated amortisation and accumulated impairment	Carrying Value
Computer software	18,625,451	(11,555,481)	7,069,970	16,396,051	(9,959,295)	6,436,756

Reconciliation of intangible assets - March 2018

	Opening balance	Additions	Amortisation	Total
Computer software	6,436,756	2,229,400	(1,596,186)	7,069,970

Reconciliation of intangible assets - March 2017

	Opening balance	Additions	Disposals	Amortisation	Total
Computer software	7,004,253	1,025,764	(1)	(1,593,260)	6,436,756

There are no restrictions on the title of intangible assets.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

11. INVESTMENTS IN CONTROLLED ENTITIES

Name of company	Held by	% holding March 2018	% holding March 2017	Carrying amount 2018	Carrying amount 2017
Medres (Pty) Ltd	SAMRC	100.00 %	100.00%	1	1
Jirehsa Medical (Pty) Ltd	Medres (Pty) Ltd	25.00 %	25.00%	1	1
				2	2

The carrying amounts of controlled entities are shown net of impairment losses.

The financial statements of Medres (Pty) Ltd and Jirehsa Medical (Pty) Ltd have not been consolidated with those of the SAMRC, as they are not material.

SAMRC has obtained National Treasury's approval to increase its shareholding in Jirehsa Medical (Pty) Ltd from 25% to 42%.

Controlled entities with less than 50% voting powers held
Although the entity holds less than 50% of the voting powers in Jirehsa Medical (Pty) Ltd the investment is considered a controlled entity because SAMRC has the power to govern the financial and operating policies of Jirehsa Medical (Pty) Ltd.

12. PAYABLES FROM EXCHANGE TRANSACTIONS

	2018	2017
	R	R
Trade payables	62,871,559	50,600,431
Leave accrual	23,411,905	20,293,356
Accruals	31,849,618	33,097,313
Interest due to funders	142,295	45,615
	118,275,377	**104,036,715**

The increase in payables from exchange transactions is attributed to amounts due in respect of grants awarded.

The carrying amount of trade payables are denominated in the following currencies:		
Rand	58,197,975	37,622,451
US Dollar	122,321	4,727,314
Pound Sterling	4,551,263	8,238,546
Swiss Francs	-	10,094
Canadian Dollar	-	2,026
Leave accrual		
Balance at the beginning of the year	20,293,356	17,631,864
Leave payouts	(1,389,306)	(510,863)
Movement recognised in surplus or deficit	4,507,855	3,172,355
	23,411,905	**20,293,356**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

13. PROVISIONS

Reconciliation of provisions - March 2018

	Opening Balance	Additions	Utilised during the year	Total
Provision for bonus dispute	929,019	-	-	929,019
Provision for collaborative research	199,000	10,243,648	(199,000)	10,243,648
Provision for performance bonus	4,010,130	4,526,987	(4,010,130)	4,526,987
Other provisions	2,113,662	420,425	(1,450,165)	1,083,922
	7,251,811	**15,191,060**	**(5,659,295)**	**16,783,576**

Reconciliation of provisions - March 2017

	Opening Balance	Additions	Utilised during the year	Reversed during the year	Total
Provision for bonus dispute	929,019	-	-	-	929,019
Provision for collaborative research	-	199,000	-	-	199,000
Provision for performance bonus	3,523,376	4,010,130	(3,509,116)	(14,260)	4,010,130
Employee benefit cost provision	970,216	-	(970,216)	-	-
Other provisions	1,782,378	894,605	(563,321)	-	2,113,662
	7,204,989	**5,103,735**	**(5,042,653)**	**(14,260)**	**7,251,811**

Collaborative research costs

The provision relates to collaborative research costs for a CDC funded project with Epicentre (R9,793,648); self initiated research grant at North West University (R200,000) and two research development grants (R125,000 each) that will be settled in the next twelve months.

Provision for bonus dispute

The bonus dispute provision relates to the estimated legal costs that needs to be paid to NEHAWU.

Other provisions

The other provisions relate to research units that closed during the rationalisation process and the Department of Labour assessment for the claim for occupational injury on duty assessment for 2018 (COIDA). (March 2017: relate to the Department of Labour assessment for the claim for occupational injury on duty assessment for 2017 (COIDA) estimate; grant funds received on completed projects and projects relating to research units that closed during the rationalisation process, retention payable to building contractor for building works and repayment of grant funds to European Union and Centers for Disease Control an amount of R440,195).

Employee benefit cost provision

There is no employee benefit cost provision in 2017/2018. The 2015/2016 promotion amount provided for was paid in June 2016.

Provision for performance bonus

The performance bonus cycle was changed after discussions and agreement with the union. The Board approved the new bonus cycle, which will be paid after the financial year. The 2015/2016 performance bonus was paid in October and November 2016. The 2016/2017 performance bonus was paid in November and December 2017. The amount reflected is the 2017/2018 provision for performance bonuses.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

14. DEFERRED INCOME

The decrease in deferred income can be attributed to the utilisation of the following contract funds received in advance: DFID; Department of Science and Technology; Bill & Melinda Gates Foundation; MRC UK to fund Newton TB and Non Communicable Diseases projects; Grand Challenges SA; American Jewish World Service; Department of Health; MRC UK to fund the MIND project and Centers for Disease Control.

	2018	2017
	R	R
Deferred income	279,352,698	288,897,953
Summary of deferred income		
Research grants received in advance	279,008,574	287,777,026
Other funds received in advance	344,124	1,120,927
	279,352,698	**288,897,953**

15. EMPLOYEE BENEFIT OBLIGATIONS

Post retirement medical aid obligation	10,412,000	7,165,000
Pension fund - Defined benefit obligation	11,772,000	4,871,000
	22,184,000	**12,036,000**

Post retirement benefits

Post retirement medical aid plan
SAMRC, took a compulsory insurance policy in order to fund post retirement medical obligations of its ex-employees. Given the nature of the policy, it is appropriate to treat this as a plan asset. Certain assets have been allocated specifically for the purpose of covering the post retirement medical aid defined benefit liability. The defined benefit medical liability has been recognised and accounted for under the requirements of GRAP 25 - Employee Benefits. The assets have been accounted for in terms of the requirements of the accounting standards to which they relate and not in terms of GRAP 25 because the plan is not registered. The relevant assets are included in investments and cash balances.

Pension funds
SAMRC personnel are members of the following pension funds
- State Pension Fund (Associated institutions - AIPF) (Act No. 51 of1963)
- State Pension fund for temporary employees (Act No. 75 of1979)
- MRC Pension fund (since January 1994)

(a) The first two funds were established by Law and are regulated by the respective Acts.
(b) The last-named fund is regulated by the Pension Fund Act and is managed by an independent Board of Trustees. The MRC Pension fund was actuarially valued at 1 April 2017. Next statutory valuation for the fund is 1 April 2020.
(c) The first two funds offer defined benefits to staff. With regard to the MRC Pension fund, some members are on a defined benefit scheme, while the remainder are on a defined contribution scheme.

The MRC Pension Fund and the Post retirement Medical Aid Plan is valued annually in compliance with GRAP 25.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

15. EMPLOYEE BENEFIT OBLIGATIONS (CONTINUED)

Post retirement medical aid plan
The amounts recognised in the statement of financial position are as follows:

	2018	2017
	R	R
Carrying value		
Present value of the defined benefit obligation-wholly unfunded	(1,326,000)	(1,194,000)
Present value of the defined benefit obligation-partly or wholly funded	(26,667,000)	(22,177,000)
Fair value of plan assets	17,581,000	16,206,000
Net liability	**(10,412,000)**	**(7,165,000)**
Changes in the present value of the defined benefit obligation are as follows:		
Opening balance	23,371,000	22,649,000
Interest costs	1,996,000	2,004,000
Benefits paid	(2,235,000)	(2,080,000)
Actuarial loss (gain)	4,861,000	798,000
Closing balance	**27,993,000**	**23,371,000**
Net expense recognised in the statement of financial performance		
Interest cost	1,996,000	2,004,000
Expected return on plan assets	(1,358,000)	(1,504,000)
Contribution paid	(836,000)	-
Recognised actuarial loss	3,445,000	1,233,000
Total included in employee related cost	**3,247,000**	**1,733,000**
Calculation of actuarial gains and losses		
Actuarial losses – Obligation	4,861,000	798,000
Actuarial (gains) losses – Plan assets	(1,416,000)	435,000
	3,445,000	**1,233,000**
Changes in the fair value of plan assets are as follows:		
Opening balance	16,206,000	17,217,000
Actuarial gains (losses)	1,416,000	(435,000)
Expected return on plan assets	1,358,000	1,504,000
Contributions by employer	836,000	-
Benefits paid	(2,235,000)	(2,080,000)
Closing balance	**17,581,000**	**16,206,000**

The entity will investigate the options available to eliminate the net liability as far as possible.

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

15. EMPLOYEE BENEFIT OBLIGATIONS (CONTINUED)

	2018	2017
	R	R
Key assumptions used		
Assumptions used at the reporting date:		
Discount rates used	8.10 %	9.00 %
General increases to medical aid subsidy	7.40 %	7.50 %
Expected rate of return on assets	8.10 %	9.00 %
Proportion continuing membership at retirement	100.00 %	100.00 %
Proportion of retiring members who are married	80.00 %	80.00 %
Retirement age for staff who joined prior to 1 May 1998	65	65
Retirement age for staff who joined after 1 May 1998	65	65

The expected rate of return on plan assets is based on market expectations, at the beginning of the period, for returns over the entire life of the related obligation.

The discount rate has been determined by reference to market yields at the balance sheet date of South African long-term bonds.

Other assumptions

Assumed healthcare cost trends rates have a significant effect on the amounts recognised in surplus or deficit. A one percentage point change in assumed healthcare cost trends rates would have the following effects:

March 2018	Impact on liability RM	%Increase/ Decrease
Assumptions as above	27,993	
Discount rate - increases by 1% p.a.	25,823	(8)
Discount rate - decreases by 1% p.a.	30,523	9
Medical inflation - increases by 1% p.a.	30,322	8
Medical inflation - decreases by 1% p.a.	25,962	(7)
March 2017		
Assumptions as above	23,371	
Discount rate - increases by 1% p.a.	21,644	(7)
Discount rate - decreases by 1% p.a.	25,376	9
Medical inflation - increases by 1% p.a.	25,223	8
Medical inflation - decreases by 1% p.a.	21,751	(7)

Amounts for the current period and previous four years are as follows:

	2018	2017	2016	2015	2014
	R	R	R	R	R
Defined benefit obligation - partially or wholly unfunded	26,667,000	22,177,000	21,505,000	21,763,000	20,534,000
Defined benefit obligation wholly unfunded	1,326,000	1,194,000	1,144,000	1,067,000	889,000
Plan assets	17,581,000	16,206,000	17,217,000	18,825,000	17,976,000

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

15. EMPLOYEE BENEFIT OBLIGATIONS (CONTINUED)

	2018	2017
	R	R
Pension funds		
Defined benefit obligation - Wholly funded		
Present value of obligation	(111,435,000)	(105,379,000)
Fair value of plan assets	99,663,000	100,508,000
Net (Liability)	**(11,772,000)**	**(4,871,000)**
Changes in the present value of the defined benefit obligation are as follows:		
Opening defined benefit obligation	105,379,000	95,825,000
Benefits paid	(11,012,000)	(8,022,000)
Service cost	3,717,000	3,425,000
Interest cost	10,032,000	9,427,000
Actuarial loss	2,411,000	3,766,000
Member contributions	1,353,000	1,457,000
Re-insurance premiums	(210,000)	(265,000)
Expenses	(235,000)	(234,000)
Closed defined benefit obligation closing balance	**111,435,000**	**105,379,000**
Changes in the fair value of plan assets are as follows:		
Opening fair value of plan assets after limitation	100,508,000	95,473,000
Contributions	5,245,000	5,605,000
Benefits paid	(11,012,000)	(8,022,000)
Expected return on plan assets	9,351,000	9,213,000
Actuarial (loss)	(3,984,000)	(1,262,000)
Re-insurance premiums	(210,000)	(265,000)
Expenses	(235,000)	(234,000)
Closing fair value of plan assets	**99,663,000**	**100,508,000**
Calculation of actuarial gains and losses		
Actuarial loss - Obligation	2,411,000	3,766,000
Actuarial loss - Plan assets	3,984,000	1,262,000
	6,395,000	**5,028,000**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

15. EMPLOYEE BENEFIT OBLIGATIONS (CONTINUED)

	2018	2017
	R	R
Staff costs includes the following in respect of the defined benefit pension plan:		
Current service cost	3,717,000	3,425,000
Interest cost	10,032,000	9,427,000
Expected return on plan assets	(9,351,000)	(9,213,000)
Net actuarial gains recognised in current year	6,395,000	5,028,000
Contribution paid	(3,892,000)	(4,148,000)
	6,901,000	**4,519,000**

The principal actuarial assumptions used in determining the pension plan per annum were:		
General inflation rate	6.00%	6.70%
Discount rate	8.80%	9.60%
Expected return on plan assets	8.80%	9.60%
Salary inflation - percentage plus merit increase	7.00%	7.70%

	2018	2017	2016	2015	2014
Defined benefit obligation	111,435,000	105,379,000	95,825,000	106,556,000	88,433,000
Plan assets	99,663,000	100,508,000	95,473,000	98,377,000	89,805,000

16. EARMARKED FUNDS

	2018	2017
	R	R
Botha trust	151,636	151,636
Bruhns trust	1,169,925	1,101,922
Melville Douglas trust	13,325	13,325
Q&S Abdool Karim trust	2,399,824	2,230,803
FJ Kleynhans trust	111,442	111,442
MF Ramashala Trust	100,000	-
	3,946,152	**3,609,128**

The Earmarked funds are donations; bequests from deceased estates or cash received for a limited period to be used for visiting eminent scientists; cancer research or tuberculosis research. During the period a bequest was received from the estate of M Ramashala for diabetes research.

The Earmarked funds are held at the Reserve Bank.

The Bruhns and Q & S Abdool Karim trust funds earned interest.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

17. ACCUMULATED SURPLUS

	2018	2017
	R	R
Accumulated surplus	289,755,468	336,235,915

The policy of the SAMRC is to maintain a reserve of R50 million to provide for any unforeseen health emergencies. The accumulated surplus at the end of the reporting period is required to fund capital projects and other commitments as well as the maintenance of current funding levels of research projects over the MTEF period. The surplus will also be used to attract equivalent leverage funding from international funders.

18. TOTAL REVENUE

Income from contracts, grants and services rendered	412,358,057	317,240,031
Rental income	5,660,631	5,488,289
Other income	2,608,554	2,210,578
Interest received - investment	42,152,540	35,137,720
Dividends received	117,690	129,177
Government grants & subsidies	539,439,474	576,833,333
Income from contracts and grants (non-exchange)	49,059,539	43,715,430
	1,051,396,485	**980,754,558**

The amount included in revenue arising from exchanges of goods or services are as follows:

Income from contracts, grants and services rendered	412,358,057	317,240,031
Rental income	5,660,631	5,488,289
Other income	2,608,554	2,210,578
Interest received - investment	42,152,540	35,137,720
Dividends received	117,690	129,177
	462,897,472	**360,205,795**

The amount included in revenue arising from non-exchange transactions is as follows:

Government grants & subsidies	539,439,474	576,833,333
Income from contracts and grants	49,059,539	43,715,430
	588,499,013	**620,548,763**

Revenue

Income from contracts, grants and services rendered	461,417,596	360,955,461
Government grants	539,439,474	576,833,333
	1,000,857,070	**937,788,794**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

19. OTHER INCOME

	2018	2017
	R	R
Rental income	5,660,631	5,488,289
Other income	2,608,554	2,210,578
	8,269,185	**7,698,867**

The 2017 other income amount has been amended due to the reclassification of the recoupment of municipal costs previously included in general expenses - utilities now classified as other income (R1,015,957).

20. INVESTMENT INCOME

Dividend revenue		
Listed financial assets - Local	117,690	129,177
Interest revenue		
Unit trusts	22,660	36,293
Bank	504,171	337,638
Interest charged on trade and other receivables	6,426	5,391
Corporation for public deposits	41,619,283	34,644,241
Interest received - other	-	114,157
	42,152,540	**35,137,720**
	42,270,230	**35,266,897**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

21. EMPLOYEE RELATED COSTS

	2018	2017
	R	R
Basic	194,735,640	169,829,559
Other non pensionable allowances	91,511,698	75,482,273
Bonus	4,527,346	3,995,870
UIF	1,182,603	1,035,974
SDL	2,497,595	2,399,344
Leave payments	2,599,639	1,606,928
Adjustments from the application of GRAP 25	10,148,000	6,252,000
Other salary related costs	9,203,083	8,057,699
Defined pension benefit plan - employer contributions	4,062,776	4,073,343
Overtime payments	902,053	735,681
Temporary staff	16,824,995	13,129,440
Retrenchments	-	115,814
Defined pension contribution plan - employer contributions	20,036,533	17,196,475
Post retirement medical aid contribution	836,113	-
	359,068,074	**303,910,400**

The increase in employee related costs can mainly be attributed to normal salary increases plus the increase in the liability in respect of the post retirement medical aid plan of R3,247,000 and the defined benefit pension fund of R6,901,000. In addition, deputy director posts were created to facilitate career progression and transformation. The number of appointments relating to research funded contracts increased during the year.

The bonus amount includes the 2017/2018 provision for performance bonus of R 4,526,987 and an amount of R359 relating to the 2016/2017 bonus payment.

22. FINANCE COSTS

Other interest paid	749,868	286,199

SAMRC had to refund interest due to its funders for monies received in advance (March 2018: R136,655; March 2017: R49,419), to the earmarked funds (March 2018: R242,277; March 2017: R235,581). Interest paid to suppliers for late payments of account is not classified as fruitless and wasteful expenditure if the invoice is received late from the supplier (March 2018: R210, the amount of R210 was recovered from a staff member during the period under review ; March 2017: R1,199). SARS reassessed the September 2016 vat period and levied interest amounting to R370,726. SAMRC has raised an objection with SARS and is awaiting the outcome.

23. DEBT IMPAIRMENT

Provision / Reversal of debt impairment	(259,206)	(65,020)

The debt impairment reflected above include the current periods provision for bad debt of R40,991 (including VAT of R1,495) and reversal of the previous year's provision (March 2017 provision for bad debts of R322,168 including VAT of R23,466).

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

24. GENERAL EXPENSES

	2018	2017
	R	R
Advertising	1,828,523	1,369,153
Auditors remuneration	2,369,821	2,006,431
Bank charges	551,866	347,656
Computer expenses	20,633,830	17,054,877
Consulting and professional fees	12,561,801	12,950,831
Fines and penalties	294,150	-
Insurance	2,458,649	2,186,464
Magazines, books and periodicals	4,218,700	4,781,481
Postage and courier	685,349	828,821
Printing, stationery and publication costs	8,833,165	5,811,008
Security	8,885,877	8,342,056
Subscriptions and membership fees	856,296	748,795
Telephone and fax	3,009,067	2,864,611
Training	1,596,772	2,822,527
Travel, subsistence and conference attendance	42,724,613	30,610,582
Utilities	13,440,219	13,346,603
Laboratory operating cost	45,420,169	21,234,724
Collaborative research	513,098,915	471,121,281
Other expenses	11,164,074	3,666,103
	694,631,856	**602,094,004**

The 2017 utilities amount has been amended due to the reclassification of the recoupment of municipal costs previously included now classified as other income (R1,015,957).

Travel, subsistence and conference attendance

	2018	2017
	R	R
Local travel	6,693,869	5,790,094
Overseas travel	9,667,883	7,521,287
Accommodation - local and overseas	8,052,866	6,992,275
Subsistence and travel expenditure	12,176,468	6,750,486
Conference expenditure	6,133,527	3,556,440
	42,724,613	**30,610,582**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

24. GENERAL EXPENSES (CONTINUED)

	2018	2017
	R	R
Other expenses		
Canteen costs	1,346,744	1,096,523
Personnel teas	803,784	858,841
Hire of premises and equipment	8,560,434	1,624,123
Licences	438,499	86,616
Staff recruitment costs	14,613	-
	11,164,074	**3,666,103**

The increase in travel and subsistence costs is attributed to the number of national studies conducted by SA MRC research units (for example South African prevention of mother to child transmission evaluation study) and the increase in the number of participant trials conducted during the year.

Collaborative research costs include amounts that were paid to research institutions which relates to tranche payments of contractual agreements signed with institutions who will conduct research on behalf of the SAMRC as part of the entity's mandate. No goods or services are received for these payments as they relate to start-up costs for research, the 2017/2018 amount is R315,185,216 (2017 amount is R221,677,567).

The increase in other expenses is mainly attributed to the conference secretariat hosting the SVRI conference in Brazil. The increase in laboratory costs can be attributed to the additional contract research activity.

25. FAIR VALUE ADJUSTMENTS

Biological assets - (Fair value model)	-	26,050
Other financial assets		
• Other financial assets at fair value	246,091	(79,279)
	246,091	(53,229)

26. AUDITORS' REMUNERATION

Fees	2,369,821	2,006,431

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

27. OPERATING DEFICIT

	2018	2017
	R	R
Operating deficit for the period is stated after accounting for the following:		
Operating lease charges		
Premises		
• Contractual amounts	5,660,661	5,631,062
Loss on sale of property, plant and equipment	638,021	763,697
Loss on exchange differences	2,153,763	902,672
Amortisation on intangible assets	1,596,186	1,593,260
Depreciation on property, plant and equipment	19,744,267	17,419,545
Employee costs	359,068,074	303,910,400
General Expenses	694,631,856	602,094,004

28. CASH (USED IN) GENERATED FROM OPERATIONS

(Deficit) surplus	(46,480,447)	32,278,327
Adjustments for:		
Depreciation and amortisation	21,340,453	19,012,805
Loss on sale of assets	638,021	763,697
Loss on foreign exchange	2,153,763	902,672
Fair value adjustments	(246,091)	53,229
Debt impairment	(259,206)	(65,020)
Movements in retirement benefit assets and liabilities	10,148,000	6,252,000
Movements in provisions	9,531,765	46,822
Capitalisation of financial assets	(113,089)	(138,991)
Changes in working capital:		
Receivables from exchange transactions	(8,735,685)	(23,673,361)
Prepayments	(1,267,311)	(3,246,665)
Payables from exchange transactions	14,238,660	1,799,482
VAT	(3,297,423)	698,022
Deferred income	(9,545,255)	82,896,978
	(11,893,845)	**117,579,997**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

29. FINANCIAL INSTRUMENTS DISCLOSURE

Categories of financial instruments

	At fair value	At amortised cost	At cost	Total
March 2018				
Financial assets				
Receivables from exchange transactions	-	42,900,802	-	42,900,802
Cash and cash equivalents	-	491,211,168	-	491,211,168
Investment in controlled entities	-	-	2	2
Financial assets	6,789,704	-	-	6,789,704
	6,789,704	**534,111,970**	**2**	**540,901,676**

	At amortised cost	Total
Financial liabilities		
Payables from exchange transactions	118,275,377	118,275,377

	At fair value	At amortised cost	At cost	Total
March 2017				
Financial assets				
Receivables from exchange transactions	-	36,059,674	-	36,059,674
Cash and cash equivalents	-	543,939,683	-	543,939,683
Investment in controlled entities	-	-	2	2
Financial assets	6,430,523	-	-	6,430,523
	6,430,523	**579,999,357**	**2**	**586,429,882**

	At amortised cost	Total
Financial liabilities		
Payables from exchange transactions	104,036,715	104,036,715

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

30. COMMITMENTS

	2018	2017
	R	R
Authorised commitments		
Already contracted for but not provided for		
• Property, plant and equipment	3,463,413	9,011,726
• Goods and services	9,647,226	13,195,220
• Research grants	3,500,000	5,457,933
• Operating leases	4,812,535	5,597,746
	21,423,174	33,262,625
Already contracted for but not provided for	**21,423,174**	**33,262,625**

This committed expenditure relates to property, plant and equipment, goods and services and research grants and will be financed by retained surpluses, existing cash resources, funds internally generated, etc.

Operating leases - as lessee (expense)

Minimum lease payments due		
- within one year	2,503,475	4,330,711
- in second to fifth year inclusive	2,309,060	1,267,035
	4,812,535	**5,597,746**

Operating lease payments represent rentals payable by the entity for certain of its office properties. Leases are negotiated for an average term of three years. No contingent rent is payable.

Operating leases - as lessor (income)

Minimum lease payments due		
- within one year	2,685,505	1,950,427
- in second to fifth year inclusive	3,988,643	1,033,462
- later than five years	1,334,852	-
	8,009,000	**2,983,889**

Certain of the entity's buildings generate rental income. Lease agreements have terms from 12 months to 9 years and eleven months.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

31. CONTINGENCIES

Contingent liabilities

There are no contingent liabilities at the reporting date.

Contingent assets

In October 2017 and November 2017 the South African Revenue Services (SARS) re-assessed the September 2016 vat period. Output vat amounting to R2,824,561 was disallowed and interest and penalties were levied amounting to R370,726 and R294,150 respectively. The amount of R3,492,222 was deducted from a refund due to SAMRC. SAMRC has lodged a dispute with SARS for the disallowed output vat and the interest and penalties. The output vat is valid and this amount has been included in the current assets. SAMRC anticipates to recover the interest and penalties amounting R 664,876 from SARS.

32. RELATED PARTIES (2017 RESTATED)

Executive authority	Dept. of Health (DOH)
Controlled entities	Medres (Pty) Ltd Refer to note 11 Jirehsa Medical (Pty) Ltd Refer to note 5
Members of key management	**Prof G Gray** (President appointed 1 April 2014) (Wits Health Consortium - Perinatal HIV Research Unit researcher and NIH and NRF grant recipient; director Hutchinson Centre Research Institute of SA; University of Cape Town - Audit committee member)
	Mr. N Buick (Chief Financial Officer appointed 16 July 2012. Western Cape Education Department - Audit Committee member. University of Western Cape - Audit Committee member) Medres (Pty) Ltd - Director
	Dr. R Gordon (Ex officio Executive Management Committee member from 1 April 2013. Consulting services provided to Afrigen Biologics and Vaccines (rental tenant) ;Medres (Pty) Ltd - Director
	Prof. R Jewkes (Executive scientist research strategy in the office of the president appointed 1 June 2017)
	Prof. DC Stefan (Vice President appointed 1 October 2014, termination date 31 August 2016)
	Adv. N Bhuka appointed an EMC member from 1 October 2014)
	Prof. MJ Mphahlele (Vice President appointed 1 October 2014 and extra mural unit director at Sefako Makgatho Health Sciences University (SAMRC supplier); Medical science committee member at the Health Professions Council of South Africa (SAMRC supplier) and SA deputy representative in the General Assembly of the European and Developing Countries Clinical Trials Partnership (EDCTP) (SAMRC debtor).
	Mr. B Spies (Executive Director Human Capacity Development appointed 1 August 2016)
	Dr. M Mdhluli (Chief research operations officer appointed 1 September 2017).

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Board member:	Board members are employed by Universities who contract with SA Medical Research Council for grant income or collaborative research
	Dr S Gumbi, term ended 31 October 2016 (Director of AEC Amersham - SAMRC supplier and an employee of Technology Innovation Agency an MRC debtor till 30 November 2015)
	Prof. M Sathekge (University of Pretoria - grant recipient and debtor, director of College of Medicine SA)
	Prof. Z Dlamini, term ended 31 October 2016 (UNISA - supplier and debtor till 31 May 2015. Mangosuthu University of Technology grant recipient and debtor)
	Prof. K Mokwena & Prof. P Mntla, term ended 31 October 2016 (Univ. of Limpopo renamed to Sefako Makgatho Health Sciences University - grant recipient and debtor)
	Prof. C Feldman and Dr. F Conradie, term ended 31 October 2016 (Univ. of Witwatersrand and Wits Health Consortium- grant recipient and debtor)
	Dr. Z Kwitshana (Univ. KwaZulu Natal - supplier and debtor till 31 March 2016; Mangosuthu University of Technology grant recipient and debtor)
	Prof. K Mfenyana, term ended 31 October 2016 (Walter Sisulu University - grant recipient and debtor) Prof. Y Osman, term ended 31 October 2016 (University of Western Cape - grant recipient and debtor)
	Prof. K Setswe, term ended 31 October 2016 (HSRC - grant recipient and debtor)
	Prof. A Walubo, term ended 31 October 2016 (Free State University - grant recipient and debtor)
	Prof. Q Abdool Karim (CAPRISA - extramural unit, grant recipient and debtor; donor to SAMRC for the the Q&S Abdool Karim fund)
	Prof. L Skaal and Prof. T Sodi (University of Limpopo -grant recipient and debtor)
	Prof. M Cotton (University of Stellenbosch - grant recipient and debtor)
	Prof, S Velaphi and Prof. J Mahlangu (University of Witwatersrand - grant recipient and debtor)
	Prof. L Zungu (University of South Africa - supplier and debtor)
	Prof. B Shaw (University of Johannesburg - grant recipient, supplier and debtor)
	Prof. W Rae (University of Free State - grant recipient and debtor)
	Dr. R Chikwamba (CSIR - supplier and debtor)
Employee: **Mr P Charls**	Tertiary Education and Research Network of South Africa (TENET) (SAMRC internet service provider, the staff member is a co-opted director on the TENET Board effective 30 April 2015)
Employee: **Dr N Abrahams**	Sonke Gender Justice Network (service provider, staff member is adirector)
Employee: **Prof. MA Dhansay**	National Science and Technology Forum (SAMRC supplier, the staff member is adirector)
Employee: **Ms Y Singh**	One Voice South Africa (SAMRC supplier, the staff member is adirector)
Employee: **Ms N Naicker**	Public Health Association of South Africa (PHASA) (SAMRC supplier and debtor, the staff member is a director)

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

32. RELATED PARTIES (2017 RESTATED) (CONTINUED)

Related party balances

	2018	2017
	R	R
Loan accounts - Owing (to) by related parties		
Medres (Pty) Ltd (The loan is not considered to be recoverable and has been written off.)	199,949	199,949
Amounts included in Trade receivable (Trade Payable) regarding related parties		
Dept. of Health (DOH)	-	2,029,549
Dept. of Science and Technology (DST)	125,927	-
Council for Scientific and Industrial Research (CSIR)	-	(2,898,243)
Hutchinson Centre Research Institute of SA	(1,154,102)	-
Health Professions Council of South Africa	(1,048)	-
University of Stellenbosch	49,963	69,855
University of Cape Town	(3,559,496)	-
University of Pretoria	-	(6,676,345)
Sefako Makgatho Health Sciences University	-	(1,317,410)
Sonke Gender Justice Network	(1,425,923)	-
University of Stellenbosch	(77,940)	(88,400)
Wits Health Consortium	841,310	-
University of Witwatersrand	-	(6,738,122)
University of Johannesburg	-	(11,640)
University of Cape Town	33,680	-
Wits Health Consortium	(5,531,273)	(1,539,000)
European and Developing Countries Clinical Trials Partnership (EDCTP)	-	1,821
University of Western Cape	2,982	-
Sefako Makgatho Health Sciences University	-	114,000
Afrigen Biologics and Vaccines	-	7,805
Deferred Income (grants received in advance from government)		
Dept. of Health (DOH)	24,916,896	28,493,639
Dept. of Science and Technology (DST)	77,293,298	76,523,191

The 2017 figures have been restated to include amounts included in trade receivable (trade payable); revenue and expenditure relating to Afrigen Biologics and Vaccines and European and Developing Countries Clinical Trials Partnership.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

32. RELATED PARTIES (2017 RESTATED) (CONTINUED)

	2018	2017
	R	R
Revenue - grants received and services rendered to related parties		
Dept. of Health (DOH, revenue from non- exchange)	539,439,474	576,833,333
Dept. of Health (DOH) Contracts, revenue from exchange	456,140	25,592,587
CAPRISA	-	3,742
University of Stellenbosch	175,793	114,484
Council for Scientific and Industrial Research (CSIR)	1,148,350	-
University of Witwatersrand	11,579	290,135
Dept. of Science and Technology (DST)	85,645,485	81,705,545
Public Health Association of South Africa (PHASA)	218,564	-
Human Sciences Research Council (HSRC)	-	8,772
Wits Health Consortium	737,991	-
Afrigen Biologics and Vaccines	75,534	293,328
European and Developing Countries Clinical Trials Partnership (EDCTP)	6,499,441	11,345,579
University of Pretoria	130,208	(39,637)
University of South Africa	123,051	-
University of Free State	23,907	1,500
Sefako Makgatho Health Sciences University	622,749	859,159
University of Cape Town	106,733	-
Hutchinson Centre Research Institute of SA	63,683	-
University of Western Cape	293,435	463,836
	635,772,117	**697,472,363**

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

32. RELATED PARTIES (2017 RESTATED) (CONTINUED)

	2018	2017
	R	R
Expenditure such as grants awarded, extra-mural unit grants and collaborative research grants incurred with related party suppliers		
Health Professions Council of South Africa	13,410	-
University of Pretoria	7,124,277	11,575,092
UNISA	729,507	262,889
College of Medicine of South Africa	1,000	930
University of Limpopo	13,536,358	201,200
CAPRISA	33,692,909	3,189,530
Wits Health Consortium	61,148,587	42,408,567
University of Witwatersrand	23,179,393	24,559,327
University of Western Cape	7,768,078	2,721,223
University of Free State	1,323,464	1,815,789
University of Cape Town	90,642,532	-
University of Stellenbosch	29,990,772	10,611,690
University of Johannesburg	200,000	74,540
Mangosuthu University of Technology	5,648,333	3,000,000
Tertiary Education and Research Network of South Africa (TENET)	979,683	788,292
Sefako Makgatho Health Sciences University	9,726,923	9,071,499
Sonke Gender Justice Network	5,473,961	3,474,719
Hutchinson Centre Research Institute of SA	1,154,102	1,222,833
National Science and Technology Forum	41,100	21,800
Public Health Association of South Africa (PHASA)	112,900	505,987
Council for Scientific Industrial Research (CSIR)	-	2,542,318
	292,487,289	**118,048,225**

Executive authority information

Minister: Dr. A Motsoaledi

No subsistence, travel and other related re-imbursement costs have been paid.

Director General: Ms. Precious Matsoso

No subsistence, travel and other related re-imbursement costs have been paid.

Management information

Executive Directors/Managers leave balances

Adv. N Bhuka	195,672	128,546
Mr. N Buick	148,332	166,321
Dr. R Gordon	91,237	59,764
Prof. G Gray	174,537	208,436
Prof. M Mphahlele	313,201	269,776
Prof. R Jewkes	170,126	-
Dr. M Mdhluli	222,250	-
Mr. B Spies	169,019	48,970
	1,484,374	**881,813**

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

33. MEMBER'S EMOLUMENTS

Executive

March 2018	Emoluments	Vehicle & parking & cellphone allowance	Re-imbursement	Accommodation and entertainment	Local Airtravel and parking	Total
Professor M Sathekge	116,817	10,070	-	5,630	46,630	179,147
Professor E Bukusi	34,762	2,763	-	4,149	66,494	108,168
Doctor P. Hanekom	97,016	-	-	-	46,894	143,910
Doctor Z Kwitshana	91,908	3,070	-	9,770	101,138	205,886
Professor Q Abdool Karim	-	-	-	2,828	9,274	12,102
Professor M Cotton	47,567	59	-	-	-	47,626
Professor J Mahlangu	70,445	4,522	-	2,828	33,516	111,311
Advocate N Kadwa	79,149	3,297	-	9,030	61,701	153,177
Doctor R Chikwamba	-	-	-	2,828	33,866	36,694
Professor W Rae	59,592	3,070	-	8,655	16,667	87,984
Professor B Shaw	74,490	5,882	-	2,828	34,284	117,484
Professor T Sodi	59,722	8,955	400	10,576	45,513	125,166
Professor L Skaal	61,119	4,149	233	6,587	23,428	95,516
Professor S Velaphi	50,888	5,945	-	1,119	15,596	73,548
Professor L Zungu	57,369	3,334	-	1,414	49,136	111,253
	900,844	**55,116**	**633**	**68,242**	**584,137**	**1,608,972**

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

33. MEMBER'S EMOLUMENTS (CONTINUED)

March 2017	Emoluments	Vehicle & parking & cellphone allowance	Re-imbursement	Accommodation and entertainment	Local Airtravel and parking	Total
** Professor M Sathekge	116,480	19,252	-	11,310	74,105	221,147
** Professor E Bukusi	52,224	2,149	1,915	15,092	478,552	549,932
* Doctor F Conradie	19,584	-	-	2,461	21,404	43,449
* Professor Z Dlamini	52,864	2,149	-	6,034	63,018	124,065
* Professor C Feldman	34,816	3,179	-	-	6,790	44,785
* Doctor S Gumbi	61,184	1,287	-	2,461	20,279	85,211
** Doctor P Hanekom	75,776	921	-	1,200	73,714	151,611
** Doctor Z Kwitshana	73,856	3,684	-	10,088	81,465	169,093
* Professor K Mfenyana	34,816	3,733	-	2,548	40,202	81,299
* Professor P Mntla	34,816	2,558	-	1,200	13,638	52,212
* Doctor K Mokwena	64,896	3,159	-	4,981	48,632	121,668
* Professor Y Osman	34,816	2,149	-	1,173	13,698	51,836
* Advocate J Ralefatane	34,816	3,502	-	1,200	27,187	66,705
* Professor K Setswe	-	-	-	1,200	13,503	14,703
* Professor A Walubo	34,816	2,711	-	1,348	32,606	71,481
*** Professor Q Abdool Karim	-	-	-	2,521	7,906	10,427
*** Professor M Cotton	8,704	-	-	-	7,836	16,540
*** Professor J Mahlangu	19,584	1,535	-	-	18,721	39,840
*** Advocate Kadwa	23,936	1,899	-	-	15,734	41,569
*** Doctor Chikwamba	-	-	-	-	13,543	13,543
*** Professor W Rae	19,584	1,535	-	3,601	22,658	47,378
*** Professor B Shaw	19,584	1,535	-	1,200	12,758	35,077
*** Professor T Sodi	23,936	4,670	-	4,801	21,198	54,605
*** Professor L Skaal	19,584	5,799	-	4,801	23,710	53,894
*** Professor S Velaphi	17,408	-	-	1,200	22,121	40,729
*** Professor L Zungu	19,584	1,535	-	2,400	18,697	42,216
	897,664	**68,941**	**1,915**	**82,820**	**1,193,675**	**2,245,015**

* Old Board member
** Old and current Board member
*** New Board member

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

33. MEMBER'S EMOLUMENTS (CONTINUED)

EXECUTIVE DIRECTORS EMOLUMENTS

March 2018	Package Total incl. leave payout; allowances and lump sums	Bonus	S & T	Company Contributions	Total
G Gray (President)	2,690,477	37,335	45,374	188,931	2,962,117
N Bhuka (Executive Director)	1,611,218	37,335	52,016	113,888	1,814,457
N Buick (CFO)	2,528,040	37,335	13,471	236,995	2,815,841
R Gordon (Executive Director)	1,870,143	37,335	36,457	131,422	2,075,357
MJ Mphahlele (Vice President)	2,200,807	37,335	40,390	154,662	2,433,194
B Spies (Executive Director)	1,464,515	-	-	178,815	1,643,330
R Jewkes (Executive Scientist Research Strategy)	1,481,000	45,434	83,204	163,673	1,773,311
M Mdhluli (CROO)	959,257	22,771	-	96,967	1,078,995
	14,805,457	**254,880**	**270,912**	**1,265,353**	**16,596,602**

* R Jewkes appointed 1 June 2017 (Executive scientist research strategy in the office of the president).
** M Mdhluli appointed 1 September 2017 (Chief research operations officer).

March 2017	Package Total incl. leave payout; allowances and lump sums	Bonus	S & T	Company Contributions	Total
G Gray (President)	2,547,000	51,317	11,105	178,117	2,787,539
N Bhuka (Executive Director)	1,428,745	45,647	354	100,720	1,575,466
N Buick (CFO)	2,387,986	64,045	8,158	228,921	2,689,110
R Gordon (Executive Director)	1,761,745	35,405	8,441	124,029	1,929,620
DC Stefan (Vice President)	1,839,802	-	103	71,087	1,910,992
MJ Mphahlele (Vice President)	2,082,967	41,920	8,955	146,461	2,280,303
B Spies (Executive Director)	918,888	-	800	113,412	1,033,100
	12,967,133	**238,334**	**37,916**	**962,747**	**14,206,130**

Prof. DC Stefan termination date was 31 August 2016. The lump sum payment made on termination is not disclosed due to confidentiality agreement with the ex- employee.

34. PRIOR PERIOD ERROR

The Auditor General has interpreted income received for research and other services performed in respect of contract funding where the intellectual property is not owned by the grantor/funder to be classified as income from non-exchange transactions in terms of Grap 23. The SAMRC has discussed the matter with National Treasury and has adjusted the annual financial statements where the intellectual property vests solely with SAMRC, where there was no evidence of a request to submit a grant proposal and where funders/grantors provided funding without a request for proposal or similar request. Note 18 has been adjusted to reflect the income from contracts and grants recognised as income from non-exchange 2018 - R49,059,539 (2017 - R43,715,430)

The correction of the error does not have an impact on the statement of financial position or the statement of financial performance.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

35. RISK MANAGEMENT

Liquidity risk

The entity's risk to liquidity is a result of the funds available to cover future commitments. The entity manages liquidity risk through an ongoing review of future commitments and credit facilities. Trade and other payables are due within 12 months and equal their carrying balances as the impact of discounting is not significant.

SAMRC's primary source of income is government grants and contractual income, funds receivable is estimated when preparing the MTEF. Budgets are prepared for each contract and spend is monitored on an ongoing basis to ensure the liquidity of the entity.

Credit risk

This is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. Management has a debtors policy in place, and this makes provision for credit evaluation for customers requiring credit above R1 million. Investments are allowed only in liquid securities and only with the SARB and the four major banks with high credit standing.

Contract work constitutes a significant portion of the SAMRC's income, and the major exposure is delays in finalising contracts, and disputes in terms of whether or not the outputs have been produced. A certain number of contracts are stated and paid on a reimbursive basis, and this poses a risk if the funder is not satisfied with the outputs.

The SAMRC operates internationally and is exposed to foreign exchange risk arising from various currency exposures, primarily with respect to the US dollar; GBP and the Euro. SAMRC receives substantial funding from the UK; USA and Europe, as a result its statement of financial position can be affected by movements in the US dollar; GBP and Euro. Foreign exchange risk arises from future commercial transactions, recognised assets and liabilities and net investments.

Due to uncertainties in respect of when cash will be received from overseas, SAMRC does not hedge foreign exchange fluctuations.

Approximately 63% of SAMRC's Trade Debtors (R24,165,274) are exposed to currency compared to 15% last year (R4,893,926),

SAMRC's project office does a scenario calculation looking at how much would be lost if there was an unfavourable currency change. On the basis of this outcome, it will be decided whether or not to proceed with a particular project.

Market risk

Interest rate risk

In respect of income-earning financial assets interest- bearing financial liabilities, the table below indicates their average effective interest rates at the reporting date and the periods in which they mature.

Cash flow interest rate risk

Financial instrument	Current interest rate	Due in less than a year	Due in one to two years	Due in two to three years	2018	2017
Trade Receivables - normal credit terms	10.00%	42,900,802	-	-	42,900,802	36,059,674
Cash in current banking institutions	- %	491,211,168	-	-	491,211,168	543,939,683
Trade and other payables - extended credit terms	10.00%	118,275,377	-	-	118,275,377	104,036,715

	2018	2017
	R	R
Foreign exchange risk		
The entity does not hedge foreign exchange fluctuations.		
Exchange rates used for conversion of foreign items were:		
USD	11.8128	13.4599
GBP	16.6018	16.7650
Euro	14.5410	14.3947

The entity reviews its foreign currency exposure, including commitments on an ongoing basis. The entity has CFC accounts for specific foreign income grants whose payments are mainly made in foreign currency. The risk for currency fluctuations is eliminated by maintaining the CFC accounts for these grants.

NOTES TO THE

ANNUAL FINANCIAL STATEMENTS

36. GOING CONCERN

The annual financial statements have been prepared on the basis of accounting policies applicable to a going concern. This basis presumes that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

37. FRUITLESS AND WASTEFUL EXPENDITURE

	2018	2017
	R	R
Opening balance	-	175
Fruitless and wasteful expenditure current year	210	2,259
Recovered and approved	(210)	(2,434)
	-	-

Expenditure relates to interest on late payment of Telkom accounts.

Interest charged due to negligence on the part of the staff members is recovered from the employees, an amount of R210 was recovered during the period under review.

38. IRREGULAR EXPENDITURE (2017 RESTATED)

	2018	2017
	R	R
Opening balance	349,238	547,481
Add: Irregular Expenditure - current period	1,655,061	711,166
Less: Amounts condoned	(289,340)	(624,076)
Less: Amounts written off by the Board and awaiting condonation by National Treasury	(497,395)	(285,333)
	1,217,564	**349,238**
Analysis of expenditure awaiting condonation per age classification		
Current period	1,217,564	349,238

Details of irregular expenditure – current year

Non compliance with Supply Chain Management Practices	National Treasury - TR 16A 6.1; SCM Practice note 8 of 2007/08: Paragraph 3.2 and NT SCM Instruction No. 7 of 2017/2018: Paragraph 4	188,099	74,644
	National Treasury - TR 16A 6.1; SCM Practice note 8 of 2007/08: Paragraph 3.3 and NT SCM Instruction No. 7 of 2017/2018 Paragraph 4	929,623	409,654
	Preferential Procurement Regulation 2017, Regulation 8(2) and 8(5)	269,176	-
	National Treasury - Instruction note 3 of 2016/2017; Paragraph 8.5	268,163	226,868
		1,655,061	**711,166**

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Details of irregular expenditure condoned

The 2017 irregular expenditure figures have been restated to include amount of R226,868 that should have been condoned by National Treasury. During the 2016/2017 financial year SAMRC incorrectly applied the SCM regulations pertaining to sole source and awarded a contract over R500,000 including vat. A deposit was paid in 2016/2017 and the remaining amount was paid after satisfactory delivery of service in 2017/2018.

During the year under review awards were made to vendors for transactions under R30,000 who were not tax compliant at the date of award, the value of the awards were R429,106. The supply chain management system has been updated to verify all suppliers tax status irrespective of value.

The SAMRC did not request the relevant information on local content on furniture for quotations between R30,000 and R500,000 as the SAMRC interpreted the regulations as only applying to tenders above R500,000. The Auditor General has determined that the cost of such purchases of R269,176 be disclosed as irregular expenditure. The SAMRC confirmed that the awarded suppliers did meet the local content requirements on the furniture supplied.

At its meeting in May 2017; July 2017; October 2017 and January 2018 the Board condoned expenditure within its authority, totaling R55,788; R125,257; R102,295 and R6,000 respectively.

At its meeting in May 2017; July 2017; October 2017 and January 2018 the Board approved the write-off of irregular expenditure amounts of R66,582; R 126,991; R250,569 and R53,253. The expenditure written-off relates to one tender awarded in 2014 where the incorrect points system was used. Treasury was requested to condone the irregular expenditure relating to the tender awarded in 2014.

Treasury approval will be requested to condone irregular expenditure written-off by the Board.

39. DEVIATION FROM SUPPLY CHAIN MANAGEMENT REGULATIONS

Paragraph 12(1)(d)(i) of Government gazette No. 27636 issued on 30 May 2005 states that a supply chain management policy must provide for the procurement of goods and services by way of a competitive bidding process.

Paragraph 36 of the same gazette states that the accounting officer may dispense with the official procurement process in certain circumstances, provided that he records the reasons for any deviations and reports them to the next meeting of ARIC and the Board and includes a note to the annual financial statements.

All deviations were documented and will be submitted to the Accounting Authority or its delegate in terms of the Delegation ofAuthority Framework. Deviations were motivated in advance and subsequently approved.

40. PUBLIC FINANCE MANAGEMENT ACT (PFMA)

Section 55 (2)

No material losses through criminal conduct were incurred during the period ended 31 March 2018. Irregular and fruitless and wasteful expenditure incurred has been disclosed in notes 36 and 37.

Section 53 (3)

The entity may not accumulate surpluses unless written approval of the National Treasury has been obtained. Approval for the retention of the accumulated surplus as at 31 March 2018 has been requested from National Treasury.

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Section 54 (2)

In terms of the PFMA and Treasury Regulation 28.3 the entity has developed and agreed to a framework of acceptable levels of materiality and significance.

41. BUDGET DIFFERENCES

Material differences between budget and actual amounts

Income from contracts, grants and services rendered is higher than budget as a result of additional grant income received and milestones reached earlier than anticipated. This has resulted in an increase in related contract expenditure, personnel costs, travel and subsistence and laboratory operating expenses.

The SAMRC has successfully managed to leverage funding from other sources which has contributed to total revenue exceeding R1 billion for the first time.

Monthly forecasts are performed by management and approved at quarterly Board meetings highlighting variances to original budget. The original budget has been left unchanged as management identified new research funding opportunities in response to additional income received, and to offset a lower than anticipated spend by intra-mural units.

Due to the Auditor General's interpretation of classifying revenue from non- exchange, no amount was budgeted for income from contracts and grants (non-exchange) in 2017/2018.

Repairs and maintenance were higher than anticipated due to improvements at leased HPRU sites in KwaZulu Natal and repairs and maintenance at the Medicina; Pretoria and NIVS campus resulting in these expenses being over budget.

Contract funding received during 2017/2018 financial year resulted in changes to planned outputs, but overall the financial position is close to forecast with changes in allocation of funds.

Efficiency savings were generated on infra-structural, communication and statutory costs and printing, stationery and publication costs.

Collaborative research costs were higher than budget due to additional funding received.

Depreciation and amortisation were higher than anticipated.

External research support, consulting and internal audit costs were lower than anticipated.

Other expenses were higher than budget as a result of costs incurred for the SVRI conference expenditure.

Information technology costs were higher than anticipated.

Other income is lower than anticipated. Income received for the SVRI conference is reflected in income from contracts, grants and services rendered.

Interest received was higher than budget due to the increase in interest rates and higher than anticipated average bank balances.

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

42. COMPARATIVE FIGURES

Subsistence and travel debtors have been reclassified from Receivables from exchange to Prepayments. Recoupment of municipal costs have been reclassified from general expenses (utilities) to other income. The effects of the reclassification are as follows:

	2017 after reclassification	2017 Previously stated
Statement of financial position		
Receivables from exchange transactions	36,059,674	37,385,856
Prepayments	5,847,275	4,521,093
Statement of financial performance		
Other income	7,698,867	6,682,910
Operating expenses	(948,136,803)	(947,120,846)
Cashflow		
Cash receipts from grants and other income	1,003,000,287	1,001,984,330
Suppliers	(920,400,988)	(919,385,031)

43. SERVICES IN-KIND

During the year under review the SAMRC's Environment & Health Research Unit utilised office space at the University of Johannesburg; Health Systems Research Unit utilised space at a clinic in Gugulethu and the Alcohol, Tobacco and Other Drug Research Unit utilised space at various district hospitals at no cost. The deemed fair rental value of the space is computed at R150,744 (2017: R128,586).

In addition a staff member was seconded from Wits Health Consortium to the SAMRC to provide secretarial support to the President. The estimated annual value of this service is R335,494 (2017: R331,000).

DETAILED STATEMENT OF FINANCIAL PERFORMANCE

	Note(s)	2018	2017
		R	R
Revenue			
Income from contracts, grants and services rendered		461,417,596	360,955,461
Rental income		5,660,631	5,488,289
Other income		2,608,554	2,210,578
Interest received - investment		42,152,540	35,137,720
Dividends received		117,690	129,177
Government grants & subsidies		539,439,474	576,833,333
Total revenue		**1,051,396,485**	**980,754,558**
Expenditure			
Employee related costs	21	(359,068,074)	(303,910,400)
Depreciation and amortisation		(21,340,453)	(19,012,805)
Finance costs	22	(749,868)	(286,199)
Lease rentals on operating lease		(5,660,661)	(5,631,062)
Debt Impairment	23	259,206	65,020
Repairs and maintenance		(14,139,533)	(15,887,183)
General Expenses	24	(694,631,856)	(602,094,004)
Total expenditure		**(1,095,331,239)**	**(946,756,633)**
Operating (deficit) surplus	**27**	**(43,934,754)**	**33,997,925**
Loss on disposal of assets		(638,021)	(763,697)
(Loss) on foreign exchange		(2,153,763)	(902,672)
Fair value adjustments	25	246,091	(53,229)
		(2,545,693)	(1,719,598)
Surplus for the period		**(46,480,447)**	**32,278,327**

APPENDIX

SPECIFIC GRANT FUNDING SCHEMES

INVESTING IN INNOVATION & TECHNOLOGY

The following disease areas have been funded:

- Anti-Microbial Resistance
- Cancer
- Environmental health
- Health Systems and Services
- HIV, TB and co-morbidities
- Malaria
- Maternal, Infant and Child health
- Mental Health and Brain Disorders
- Non-communicable diseases
- Precision Medicine
- Proteomics, Genomics and Bioinformatics
- Other

Disease Area: Anti-Microbial Resistance

- Arf GTPases as broad-spectrum microbial drug targets
- Co-crystals of antimicrobials: Drug resistance in HIV and TB infections
- Design and synthesis of inhibitors of Plasmodium falciparum calcium dependent protein kinases 1 and 4
- Enhancing antibiotic delivery via the development and evaluation of a pH responsive bacterial cell penetrating nano-drug delivery system for Vancomycin
- Frequency of mutation Arg463Leu of the katG gene in multidrug-resistance Mycobacterium tuberculosis cultures
- HIV resistance to tenofovir in the presence of dysbiotic microbiota
- One Health Approach to Containing Antibiotic Resistance
- Pharmacokinetics and Pharmacodynamics of second line antimycobacterial drugs in patients with multidrug-resistant tuberculosis and in patients co-infected with multidrug-resistant tuberculosis and HIV
- Prevalence of faecal carriage of Carbapenemase-producing Enterobacteriacae in adult patients admitted to a Medical, Surgical and Trauma Intensive Care Unit at a Quaternary Level Hospital in Durban South Africa.
- Risk assessment of the use of colistin in poultry medicine on human health in South Africa
- Unlocking the potential of marine natural products as a source of novel antimicrobial compounds

Disease Area: Cancer

- Bioluminescence Imaging Probes for Cancer Research
- Design and development of assays for the detection disease biomarkers
- Identification of protein co-factors that mediate the oncogenic functions of the transcription factors TBX2 and TBX3 with the view to revealing targets for anti-cancer drug discovery
- Mutational analysis of susceptibility loci in the RET and other gene promoters in congenital neuronal dysganglionosis in African populations
- Preparation and In Vitro Analysis of Novel Polymeric Multi-Drug Delivery Systems
- Progestin and breast cancer development: Significance of steroid receptor crosstalk
- Rational Design of Glycoenzyme ST3Gal-I inhibitors and their Targeted Delivery for Blocking Metastatic Pathways in Breast Cancer Tumours
- Retinoblastoma binding protein 6 (RBBP6) as an Antitumor agent in early cancer development.
- The effect of asymptomatic gastro-oesophageal reflux pattern as a risk factor for oesophageal cancer in rural Africa
- Three dimensional cell culture systems as models for multidrug-resistance in cancer
- Vitamin D's anti-cancerous action and metabolism in in vitro cervical cancer

Disease Area: Environmental Health

- Building evidenced based environmental health capacity through multi-disciplinary research collaboration and intervention development: The Case of Sustainable Reduction of Pesticide Use and Poisonings in Low Income Communities in South Africa
- Environmental Pollution and Early Childhood Lung Function Trajectories - the MACE Birth Cohort
- Genetic screening of ticks collected in the Eastern cape and Limpopo regions for the presence of tick-borne bacterial pathogens; implications for environmental health
- Impact of classroom indoor air quality on cardiorespiratory health in 6-8 year old school children in the Eastern Cape

Disease Area: Health Systems and Services

- Addison's disease associated with advanced HIV may explain the high mortality
- Aspects on Advanced Procedures During Endoscopic Retrograde Cholangiopancreatography (ERCP) for Complex Hepatobiliary Disorders.
- Bone mass and fractures in South African children on prolonged oral glucocorticoids for chronic non-malignant illnesses
- Computer Aided Diagnosis for WHO Standardized Chest X-Ray Interpretation in Children
- Exploration of the Service Centres for Older Persons in South Africa
- Health Committees and Human Rights: Intersectoral action from below for Health System Governance
- Human papillomavirus (HPV) awareness and investigation of HPV prevalence in high school learners of Eastern Cape Province
- Prevalence of antibiotic-resistant bacteria and antibiotic-resistance genes in treated effluent of urban wastewater treatment plants and receiving aquatic milieu: Implications on Public Health Systems
- Rationale and design of the pan-African congenital sclerosing poikiloderma registry
- Signing Deaf children and professional medical sign language interpreters: developing appropriate ethical and research methodologies, the first steps towards determining the need for services.
- The immune modulatory effects of omega-3 polyunsaturated fatty acids and iron as applied in an animal pulmonary tuberculosis model
- The South African Cape study on induction Therapy with Mycophenolic Acid or cyclophosphamide in patients with lupus nephritis (CAPTAIN Trial): A sub-study of the ALUGEN registry
- Youth health service access: the impact of violence and crime

Disease Area: HIV, TB and co-morbidities

- Causes of Excess Mortality in HIV-infected Adults Commencing ART with Cryptococcal Antigenaemia: A Post-Mortem Study
- Characterization of FtsEX, a protein complex required by Mycobacterium tuberculosis to survive the host immune system
- Design and synthesis of anti-tuberculosis peptidomimetics
- Early functional decline in adults living with HIV/AIDS
- Frequency, mechanisms, management and outcomes of diffuse myocardial fibrosis in HIV-associated cardiovascular disease
- HIV/AIDS Genomics and Pharmacogenomics
- Impact of immune-driven mutations in HIV-1 RT-integrase on viral fitness and disease progression
- Impact of the Duffy-null trait and neutropenia on NK cell maturation and function in chronic HIV-1 infection
- Investigating the innate immune response in Pneumocystis pneumonia
- Non-pharmacological interventions for reducing pain in people with HIV: a multicentre randomised controlled trial
- Organocatalytic derivatisation of beta lactams targeting TB
- Pharmacokinetic interactions between Efavirenz and Isoniazid and the effect of genetic slow metabolizer status on Efavirenz-related toxicities in patients initiating Isoniazid preventive therapy
- TB Nano Therapy
- The interaction between BST-2/tetherin and HIV-1 Vpu as a novel target for HIV intervention
- The onset of cardio-metabolic complications in a South African HIV-positive population
- The role of inflammation and the metabolic syndrome in promoting the morbidity of accelerated aging in a South African HIV-infected community-based cohort

Disease Area: Malaria

- Analysis of clinical isolates for the prioritization of malaria transmission blocking drug development
- Aptamer based diagnostics for HIV (CD4) and malaria at the cellular level
- Disruption of the paternal epigenome due to pesticide exposure in a malaria area
- Investigation and optimization of dibemequine antimalarials
- Investigation of a novel method to reduce the population of a major malaria vector, Anopheles funestus

Disease Area: Maternal, Infant and Child health

- A double-blind, randomised placebo controlled trial to investigate the efficacy, safety and tolerability of adding a single low primaquine dose to artemether-lumefantrine for treatment of uncomplicated Plasmodium falciparum malaria in Mpumalanga.
- Apolipoprotein-1 profiles in pre-eclamptic and HIV positive Black South African women of Zulu origin
- Motor Skills and Fitness Program for Children
- Nutrition in Pregnancy and Early Development: The NuPED study
- Vitamin D , parathyroid hormone and pregnancy outcomes

Disease Area: Mental Health and Brain Disorders

- Delineation of the genetic causes of complex epilepsies in South African paediatric patients

- Detecting infection in patients with Alzheimer's disease
- Epigenetics of Autism Spectrum Disorder
- Evaluation of the underlying neuro-pharmacological mechanisms and behavioural effects of Efavirenz in rats, as compared to known drugs of abuse.
- Genetic contributions to posttraumatic stress disorder in the Drakenstein Child Health Study
- Ibogaine and its effects on sleep, hemispheric symmetry and autonomic tone
- Investigating the neuropsychological and neuroimaging outcomes of multiple concussions and/or sub concussive head injuries among adolescent rugby players in South Africa.
- Investigation of the genetic aetiology of Black Sub-Saharan African patients with Parkinson's disease using high-throughput next-generation sequencing approaches
- Modeling neuro-inflammation in schizophrenia: a magnetic resonance imaging and cytokine study
- Revealing and targeting the metabolic cost of Alzheimer's disease – a Fret, super-resolution and correlative light-electron microscopy approach
- Targeting the 37 kDa/67 kDa laminin receptor for Alzheimer's Disease treatment
- The clinical and genetic profile of Huntington disease like 2 (HDL2) in South Africa

Disease Area: Non-communicable diseases

- A whole exome sequencing study of familial cardiomyopathies
- African Surgical Outcomes Study (ASOS)
- Assessment of bone integrity and health in type 2 diabetes using a rat model (Zucker Fatty Rat)
- Cardiometabolic aspects of psoriasis and psoriatic arthritis
- Computational modelling of single cell mechanics for non-communicable and infectious diseases
- Controlled non-viral RNAi delivery for myocardial infarction therapy
- Identifying active plant extracts against diabetes - combining chromatographic fingerprint analysis with biological assays
- Investigating the cardio-protective effects of ghrelin in a chronic model of doxorubicin-induced cardiotoxicity
- New drug targets for combatting non-communicable diseases
- Paediatric and Adult African Spirometry II: A determination of spirometry reference equations in South African children and adults.
- Patient-specific 3D bone mineral density distribution from DXA images using statistical appearance models
- Prospective investigation of the haemostatic profile of black South Africans: the PURE study
- Serum circulating miRNA profiling for identification of potential markers of diabetic nephropathy in black type 2 diabetic South Africans
- Stem cell impairment associated with type 2 diabetes: Investigating the effect of lifestyle on mesenchymal stem cell function in three different cohorts of patients.
- Terpenoids: Their role in alleviating the symptoms of obesity
- The epidemiology of hip fractures in South Africa and development of gender and ethnic specific FRAX® models
- Urinary proteomic biomarkers in arterial stiffness – African-PREDICT

Disease Area: Precision Medicine

- Cardiac fibrosis in Peripartum Cardiomyopathy: physiopathology and novel biomarkers
- Development of human 3D adipose tissue models to facilitate drug discovery
- Diagnostic and prognostic biomarkers in African patients with HIV associated Kaposi's sarcoma
- Exosomes in Maternal Health
- Investigation of the role of vitamin D metabolism in breast cancer using a pathology supported genetic testing platform
- Making a case for amyloidogenic blood clotting: using a clotting model and testing the hypothesis in Type II diabetes
- Metabolic fingerprinting: A new era for personalized medicine in cancer treatment?
- The contribution of the IRF6 and GRHL3 genes to the development of cleft lip and palate
- The genetic basis of profound hearing loss following the use of antiretroviral agents among HIV patients: Implications for personalized medicine in constructing HAART regimens

Disease Area: Proteomics, Genomics and Bioinformatics

- Genomics study of anti-tuberculosis drug-induced hypersensitivity reactions
- Identification and characterization of microRNAs and their putative target genes in two Leishmania vectors; Phlebotomus papatasi and Phlebotomus orientalis
- Molecular epidemiology of Respiratory Syncytial Virus strains associated with respiratory illness in rural and peri-urban communities of Mpumalanga and North-West provinces of South Africa.
- Pharmacogenomics of the solute carrier transporters
- Structural characterization of highly mutated, clinically derived HIV-1 subtype C protease
- The role of cell surface vimentin for HPV16 infection.
- Understanding the effect of lifestyle, diet and geographic location on the gut microbiota
- Whole-Exome Sequencing to Detect Mutations in Autosomal Recessive Non syndromic Hearing Loss in Africans

Disease Area: Other

- A prospective cohort study: Examining the impact of pesticide exposure on the reproductive health in pregnant women and the neuro-behavioural health of their offspring in South Africa
- Apoptosis and pathogenicity modulations in Candida Albicans by Eugenol-tosylate and its Congeners
- Characterisation of the genetic and enzymatic variation in the glycine conjugation pathway
- Cross-Sectional analysis of emerging choleragenic Vibrio cholerae (Non O1 and Non O139) and Vibrio cholerae O1 and O139 in Municipal and Surface Waters of the Eastern Cape Province of South Africa
- Determination of the prevalence of illicit drugs in fatally injured drivers in Pretoria, South Africa
- Diarrhoea burden and its etiologic agents in rural communities in the Amathole District Municipality of the Eastern Cape, South Africa
- Diarrhoea related gut microbiota diversity in a longitudinal HIV infected cohort
- Genomic investigation of enteric viruses from human diarrhoeal samples collected in Africa
- Harnessing herb-drug interactions for enhanced delivery of anti-malaria and anti-HIV drugs
- Hepatitis B virus in healthcare workers from Gauteng and Mpumalanga provinces, South Africa
- Identification of novel irreversible kinase inhibitors using a fragment "click" chemistry approach
- In vitro and in vivo interactive efficacies between African fever reducing plants and existing antimicrobials incorporating the use of metal nanoparticles
- Molecular systematics and epidemiology of hookworms
- Novel therapeutics from South African macrofungi
- Probiotics to treat bacterial vaginosis and reduce HIV infection risk in South African women
- Race and postgraduate medical education in South Africa: Throughput, success rates, and organisational culture.
- Vigilance for undeclared adulterants and contaminants in Dietary Supplements

STRATEGIC HEALTH INNOVATION PARTNERSHIPS (SHIP)

SHIP is now a well-established programme within the MRC, having been incorporated into the Grants, Innovation and Product Development (GIPD) division. Formed as a partnership between the Department of Science and Technology (DST) and the SAMRC in April 2013, the work of SHIP has been instrumental in catalysing increased investment in innovation and product development-focussed programmes with a major increase in leveraged international co-funding. The role of SHIP is to focus on multidisciplinary translational research and product development aimed at developing new:

- Diagnostics and medical devices;
- Vaccines;
- Product Development Platforms; and
- Drugs.

With more than 40 projects, funding is provided in the areas of HIV, TB, Maternal and Child Health, Malaria, Precision medicine and Non Communicable Diseases.

FOCUS AREA: Drug projects

- Malaria drug discovery consortium - UCT, UP, CSIR, Wits, NHLS
- TB drug discovery consortium – UCT, AHRI, SUN
- TB child and adolescent multi-drug resistant preventive therapy trial (TB CHAMP) - Phase III Trial
- Development of a better-tolerated and more robust second-line antiretroviral regimen for HIV infection
- Association of therapeutic outcomes with second-line drug exposures in a cohort of patients with drug resistant TB

FOCUS AREA: Vaccine/ prevention projects

- Novel HIV vaccine candidates for South Africa
- A novel dual animal pre-clinical platform: Accelerating HIV vaccine product development in South Africa
- The production and characterisation of CAP256-VRC26 monoclonal antibodies in plants
- Epitope specificities of broadly neutralizing sera from rabbits immunized with HIV-1 Env-2dCD4S60C subunit vaccines
- The selective delivery of broad-spectrum silver-based microbicides and tenofovir using alginate-encapsulation. This interesting project is being assessed for inclusion in the GHIA portfolio of the SAMRC.
- Isolation and characterization of monoclonal antibodies from HIV-1 subtype C infected individuals
- South African Tuberculosis Bioinformatics Initiative (SATBBI) - in support of systems biology approaches to tuberculosis biomarker research. This group conducted key analysis in the recently published TB-RISK4 study

FOCUS AREA: Diagnostics, M-Health and Medical Devices

- Diabetes screening diagnostic has moved into the prototype validation phase and is aimed at developing a rapid screen for early onset diabetes.
- HIVSmart! Transition to scale
- A GIFT (Genital Inflammation Test) for HIV prevention. This interesting project is being assessed for inclusion in the GHIA portfolio of the SAMRC.
- PHC 101 clinical guide app was successfully completed by the NMMU.
- Digitization of adult primary care guidelines – Primary Healthcare guidelines has been a highly successful project for the SAMRC resulting in the establishment of a spin out company
- Targeting the abnormal MicroRNA and splicing signatures in HIV-associated cancers
- A handheld, low cost aptamer-based Surface Enhanced Raman Scattering biosensor for TB diagnosis is currently being clinically validated. In addition, we are in discussion with other funders to take this innovation to market
- A non-sputum-orientated ultra-sensitive point of care diagnostic device for TB using a lateral flow assay coupled to an electrochemical readout (TB-PROTEC) has been clinically validated and has produced exciting data. Currently optimising the TB-PROTEC prototype. We are in discussion with other funders to take this innovation to market
- A case series of patients with postpartum haemorrhage due to atonic uteruses managed by using the SINAPI uterine balloon tamponade (UBT) The case series was completed in the 2017/18 financial year and showed an 88% success rate in treating PPH in the absence of uterine tears. It is now being tested in the hands of mid wives as well as in a rural setting in the Eastern Cape.
- Differential diagnosis of 5 febrile illnesses (including EBOLA on a multi-lateral flow point-of-care assay
- Molecular epidemiology of Ebola virus disease in West Africa and the development of diagnostic capacity
- Tshwane Khulelwe Project: An integrated ICT-enabled community-orientated antenatal care study with Doppler ultrasound (Umbiflow) assessment. This program has provided ground breaking data on the prevalence of placental insufficiency in apparently low risk pregnancies in SA. After WHO review, the study has been expanded to all 9 provinces in SA, together with 3 other countries in sub-Saharan Arica and India.
- Implementing the Annual Antenatal HIV Seroprevalence Survey in South Africa 2017
- Identification of novel biomarkers in active and latent TB in conjunction with HIV coinfection is currently being clinically validated

FOCUS AREA: Genetics and Precision medicine

- Establishment of technology platforms in support of future Precision Medicine Applications in South Africa
- Development of a clinical exome sequencing solution and its application to diabetes mellitus and related disorders
- Increasing the capacity of the Seq2Res HIV drug resistance testing pipeline to facilitate the implementation of high-throughput, cost-effective HIV resistance genotyping in South Africa and other resource-limited setting
- Enabling low-cost TB drug resistance testing and surveillance through the implementation of an easy to use, cloud-based next generation sequencing analysis pipeline
- Development of a clinically applicable diagnostic test kit and pharmacogenomics algorithm for breast cancer

STRATEGIC RESEARCH INITIATIVES

The following key partnership programmes are managed:

The SAMRC flagship program

- Progressive research on risk factors of type 2 diabetes and cardiovascular diseases in South Africa (VMH Study)
- Development to the Clinical Phase of Oxidant and Redox Drug Combinations for Treatment of Malaria, TB and Related Diseases (MALTB REDOX)
- Integration of bioassay capacity, target identification and multidisciplinary research for the discovery of drug lead compounds (CCBRU)
- Evaluating a new drug regimen for patients with drug-resistant TB – a randomised controlled trial (NExT)
- Understanding the SHARED ROOTS of Neuropsychiatric Disorders and Modifiable Risk Factors for Cardiovascular Disease (SHARED ROOTS)
- Tuberculosis Transmission: Host, Bacterium and Environment (CCAMP)
- High energy X-ray Beam Advanced Radiation Dosimetry and Verification (HARD)
- A multi-disciplinary approach to understand the causes and consequences of HIV transmission and drug resistance in hyper-epidemic setting in rural South Africa (HIVEPI)
- Stem cell research and therapy – addressing South Africa's disease burden (Stem cells)
- Comprehensive Bacterial Analytical Toolkit for Tuberculosis Research (COMBAT-TB)
- Antiviral properties of HIV vaccine-elicited antibodies (VacAb)
- Investigation of the Management of Pericarditis Trial II: A Randomized Comparison of Complete Percutaneous Pericardiocentesis plus Interferon Gamma Testing Versus Empiric Treatment Without Pericardiocentesis in Suspected Tuberculous Pericarditis (IMPI-2 Trial)
- Effectiveness of an alcohol-focused intervention in

improving adherence to antiretroviral therapy (ART) and HIV treatment outcomes (AlcoholHIV)
- 2nd South African Comparative Risk Assessment (SA CRA 2)
- Improving TB diagnosis and treatment through basic, applied and health systems research (BAR-TB)
- The impact of rape in women on HIV acquisition and retention linkages to care: a longitudinal study (RICE)
- South African Guideline Evaluation Project (SAGE)
- Climate Change, Heat and Health in South Africa: Assessment and Facilitation of the Preparedness of the Health System. (CCHHSA)
- A multi-disciplinary allied health care integrated approach in reducing maternal morbidity and mortality rates in a selected district in KwaZulu-Natal
- African Prospective study on the Early Detection and Identification of Cardiovascular Disease and Hypertension (African-PREDICT) – A-PREDICT

THE SAMRC INTRAMURAL RESEARCH FUND GRANTS

- A health economic evaluation of scaling-up HIV care coverage among children and adolescents in South Africa: An examination of efficiency, equity, providers and household costs, supply and demand factors, and quality of life and care
- Geo-spatial mapping of cardiovascular co-morbidities in South Africa: A novel approach to assess disease burden, hotspots and resource allocation
- "Investigating the novel markers of cardio-metabolic and renal diseases risk in the Cardiovascular Risk in Black South Africans (CRIBSA) Study"
- The Social Anatomy of Public Protests in Gauteng Province
- Evaluation of availability and quality of morbidity data in routine health information systems (RHISs) in hospitals in National Health Insurance pilot districts
- Lead exposure and cognitive impairment in the older people living in communities located near mine tailing dumps in Johannesburg.
- Influence of Natural Products on Bioavailability and Metabolism of Hormonal Contraceptives: Implication for Unintended Pregnancy in HIV/AIDS Women
- Environmental Health Hazards of the Traditional Medicine Trade
- Brief Intervention reducing Alcohol and Drug Use and Risk Behaviours in Adolescent Learners in Cape Town, South Africa: A feasibility study
- Biomarker profile predicting the risk of developing diabetic cardiomyopathy
- Feasibility and Acceptability of Dried Blood Spots and Hair Sampling for Measuring Antiretroviral Therapy Concentrations Amongst Hazardous/Harmful Alcohol Users
- Eliminating Residual Malaria transmission in KwaZulu-Natal Through Winter Larviciding
- Epigenetic modulation during obesity and insulin resistance

THE SAMRC – NIH COLLABORATION

- A study of transmission risk behaviour in a clinical population of adolescents with perinatally-acquired HIV in Soweto, South Africa
- Enhanced STI management to reduce genital inflammation and HIV risk
- Diversity of CD4+ Th subsets in TB immunity - Impact of HIV infection
- Integrin a4b7 as a predictor of HIV acquisition and pathogenesis
- Drug permeation and activity in Mycobacterium tuberculosis infected macrophages
- Fate of M. tuberculosis Antibiotic Survivors
- Combining Xpert and GIS to identify areas of high tuberculosis transmission
- Mechanisms of altered immune responses in HIV exposed infants
- Linking high-risk young women to HIV prevention and care for comorbid conditions
- Congenital CMV infection in the era of Option B in South Africa
- Origin and Lineage of Differentiation of Kaposi's Sarcoma
- The coding genome of HIV-associated plasmablastic lymphomas in South Africa
- Altered immune-endocrine axis in type 2 diabetes and tuberculosis risk
- Timing of establishment of the HIV latent reservoir in subtype C infected women
- Analysis of National Lab Database to evaluate the HIV treatment rollout in South Africa
- Immune mediators associated with HPV clearance as predictors of HIV acquisition
- Pharmacometric optimization of second line drugs for MDR tuberculosis treatment
- Optimizing and operationalizing pediatric drug-resistant tuberculosis treatment
- Combination treatment for protection against HIV1 and pregnancy
- Screening for atherosclerotic vascular disease in HIV-infected children
- Using Information to Align Services and Link and Retain Men in the HIV Cascade
- Innovations in HIV testing to enhance care for young women and their partners
- Hormone induced mucosal susceptibility and HIV risk in South African adolescents
- HIV's Effects on Breast Cancer Treatment and Outcomes in South Africa
- Design and delivery of combination HIV prevention in young South African women
- Identifying sources of HIV infection in adolescent girls in rural South Africa
- Risk assessment of HIV infected to HIV infected transplantation in SA
- CAPRISA HIV-1 neutralizing antibodies: Harnessing ontogeny for immunogen design
- Inflammatory determinants of disease severity and treatment outcome in TB patients
- Characterizing HIV-1 diversity, evolution, and integration sites in children initiating cART in early infection
- Replisome dynamics in M. tuberculosis linking persistence to genetic resistance

ABBREVIATIONS

ABV	Antiretroviral therapy, Bleomycin and Vincristine
ARIC	Audit, Risk and IT Committee
ART	Antiretroviral Therapy
ARV	Anti-Retroviral
BCM	Body Cell Mass
BMD	Bone Mineral Density
BMI	Body Mass Index
BODS	Burden of Disease Survey
CCMA	Commission for Conciliation Mediation and Arbitration
CDC	Centre for Disease Control
CDM	Clean Development Mechanism
CEO	Chief Executive Officer
CFO	Chief Finance Officer
CHC	Community Health Centre
CHW	Community Health Worker
COX	Cyclooxygenase
CRA	Comparative Risk Assessment
CRS	Clinical Research Site
CSG	Child Support Grant
CSRI	Council for Scientific and Industrial Research
CVD	Cardiovascular Disease
DH	District Hospital
DSM-5	Diagnostic and Statistical Manual
DST	Department of Science and Technology
EAP	Employee Assistance Programme
EE	Employment Equity
EDCTP	European Developing Countries Clinical Trials Partnership
EMC	Executive Management Committee
ERMU	Entity-wide Risk Management Unit
FFS	Fee for Service
GACD	Global Alliance for Chronic Disease
GBV	Gender-Based Violence
GCP	Good Clinical Practices
GIPD	Grant Innovation Product Development
GLP	Good Laboratory Practices
GPCR	G Protein-Coupled Receptor
GRAP	Generally Recognised Accounting Practice
LDL	Low Density Lipoprotein
HIV	Human Immunodeficiency Virus
HIVR4P	HIV Research for Prevention
HPV	Human Papilloma Virus
HLA	Human Leukocyte Antigen
HPCSA	Health Professional Council of South Africa
HPV	Human Papillomavirus
ICT	Information Communication Technology
I-R	Ischemia-Reperfusion
KMC	Kangaroo Mother Care
LRA	Labour Relations Act
MARP	Most at Risk Population
MIC	Minimal Inhibition Concentrations
MTB	Mycobacterium Tuberculosis
MDR TB	Multi Drug Resistant Tuberculosis
MTEF	Medium Tern Expenditure Framework
NCD	Non-Communicable Disease
NEHAWU	National Education Health and Allied Workers Union
NDoH	National department of Health
NDoST	National department of Science and Technology
NHI	National Health Insurance
NHRC	National Health Research Committee

NIH	National Institute for Health
NIAID	National Institute of Allergy and Infectious Diseases
NSDA	National Service Delivery Agreement
OSD	Occupational Specific Dispensation
PFMA	Public Finance Management Act
PHC	Public Health Clinic
PD	Pharmacodynamics
PK	Pharmacokinetics
PLWHA	People Living with HIV/Aids
PMTCT	Prevention of Mother to Child Transmission
PPIP	Perinatal Problem Identification Programme
POC	Point of Care
PSCBC	Public Service Coordinating Bargaining Council
SACENDU	South African Community Epidemiology Network on Drug Use
SCM	Supply Chain Management
SHIP	Strategic Health Innovation Partnership
STAT	Signal Transducer and Activator Transcription
SWEET	Study of Women Entering and in Endocrine Transition
TB	Tuberculosis
TESA	Trials of Excellence in Southern Africa
TENET	Tertiary Education and Research Network
TIA	Technology innovation Agency
US	United States
VCT	Voluntary Counselling and Testing
VF	Ventricular Fibrillation
VIPRU	Violence Injury and Peace Research Unit
VT	Venticular Tachycardia
WHO	World Health Organisation
XDR	Extensively Drug-resistant tuberculosis

NOTES

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