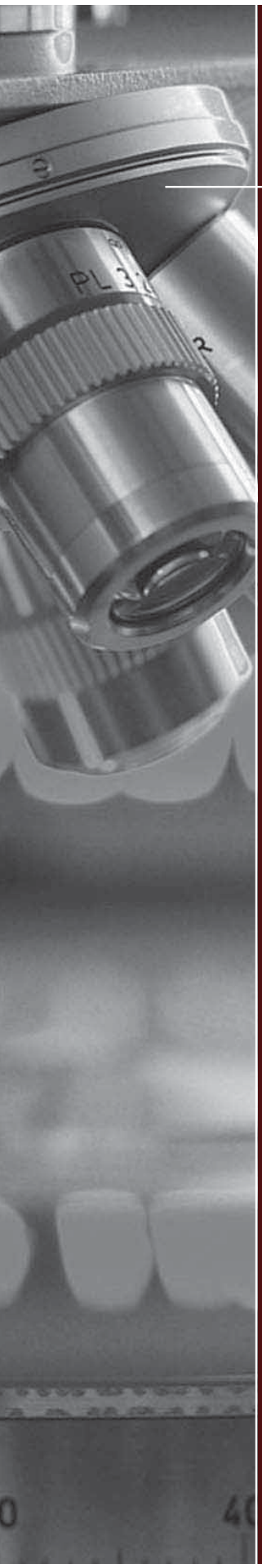
South African Medical Research Council Annual Report 2006-2007

South African Medical Research Council

ANNUAL REPORT 2006/7

Building a healthy nation through research



MANDATE OF THE MRC

The mandate of the South African Medical Research Council is legislated in terms of Act 58 of 1991:
'The objects of the MRC are, through research, development and technology transfer, to promote the improvement of the health and the quality of life of the population of the Republic, and to perform such other functions as may be assigned to the MRC by or under this Act.'

VISION

Building a healthy nation through research.

MISSION

To improve the nation's health and quality of life through promoting and conducting relevant and responsive health research.

VALUES

The five shared values of the MRC are reflected in sixteen key words:

- **Communication:** transparency, freedom to challenge.
- **Accountability:** responsibility, teamwork, leadership, participation.
- **Respect:** dignity, honesty, fairness, integrity.
- **Excellence and innovation**.
- **Capacity development:** reward and recognition.

STRATEGIC OBJECTIVES

The nine MRC strategic objectives are grouped into three categories:

PROMOTING AND CONDUCTING RESEARCH

Promoting and conducting research is the core business and primary strategic objective of the MRC as a knowledge-producing organisation. Without research, the vision of the MRC of 'building a healthy nation through research' cannot be achieved.

1. Research strategy and business plan

PROFESSIONAL SUPPORT FOR RESEARCH

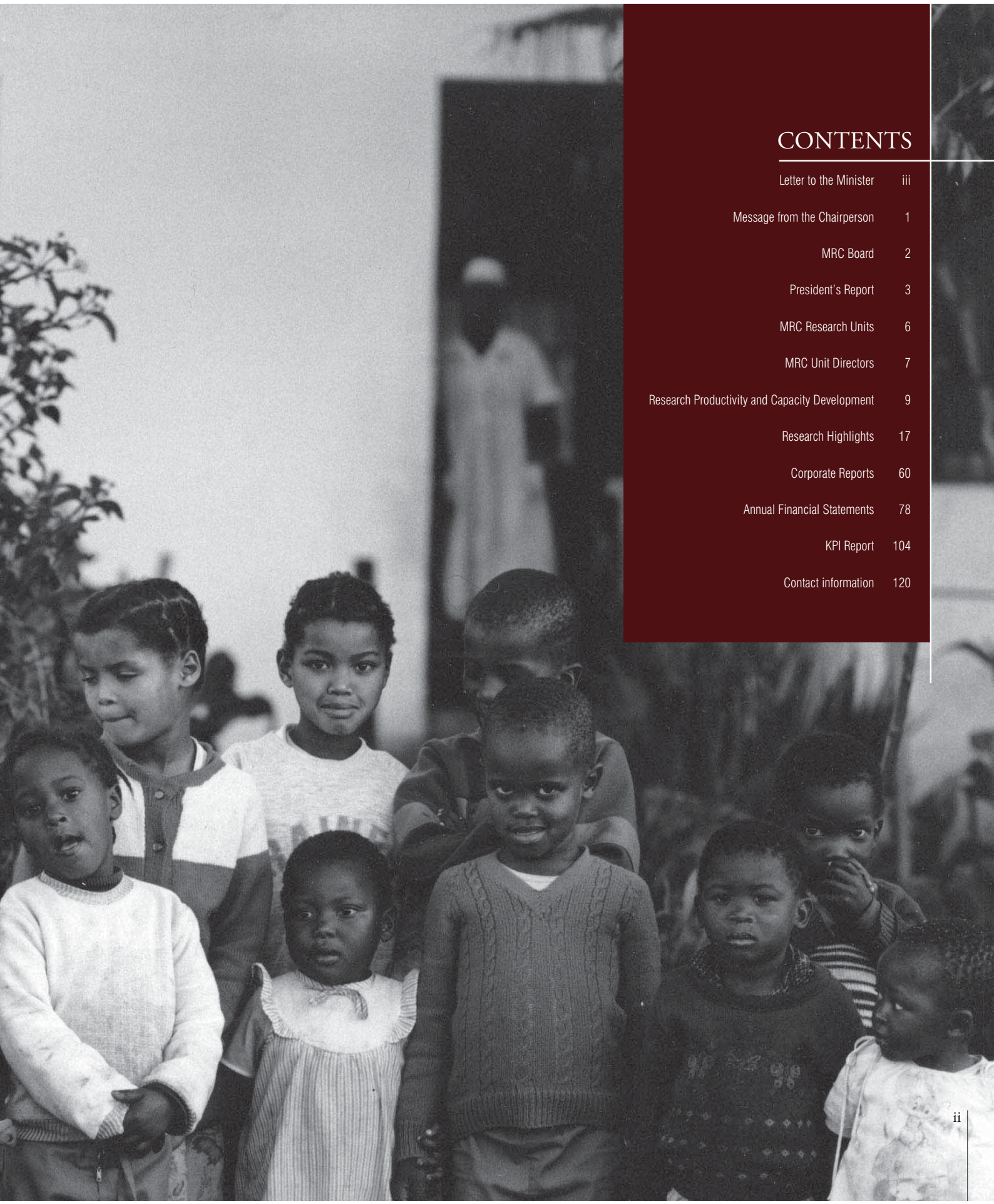
Research cannot take place, and staff cannot develop, unless supported by professional corporate services.

2. Financial model strategy and plan
3. Opportunity and risk management
4. Capacity development
5. Transformation and development

RESEARCH TRANSLATION

Research makes no difference to health and quality of life unless it is translated into interventions such as policy, practice, health promotion and products which have an impact on the health and quality of life of the nation.

6. Innovation management and technology transfer
7. Informatics and knowledge management
8. Research translation
9. Stakeholder management



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TO THE HONOURABLE MINISTER OF HEALTH DR ME TSHABALALA-MSIMANG

The South African Medical Research Council respectfully submits the following Annual Report on its activities from 1 April 2006 to 31 March 2007. The council acknowledges and is very grateful for the support received from the Honourable Minister and the National Department of Health, and thanks the Ministry for its contribution to the MRC's efforts to respond to the health research needs of the nation. The council thanks all of its colleagues in the scientific community for their continued contribution to health research in South Africa. Finally, the council wishes to state its appreciation for the work of its own members of staff and all the other researchers it supports, and expresses its gratitude for all the advice and guidance received from members of the MRC Board committees, evaluation panels and task teams.

Prof. M F Ramashala
Chairperson

Prof. AD MBewu
President

Prof. MF Ramashala

MESSAGE FROM THE CHAIRPERSON

Over the past year the MRC has busily engaged in communicating and implementing the *MRC Strategic Plan 2005 – 2010* and the *MRC Research Strategy 2005 – 2010* that were both developed by the Board and its Executive during 2005. Progress has been made towards improving the evaluation of the MRC's research portfolio as well as restructuring this portfolio into 4 types of research entities: National Collaborative Research Programmes (NCRPs), Collaborative Research Groups (CRGs), Research Units, and Research Projects. In this process extensive consultation has taken place with the research leaders in each field at nationally convened workshops.

This restructuring will ensure that MRC research is more effective, productive, prioritised and embraces multidisciplinarity, and multi-institutional patterns of work. It will also ensure that more institutions (including historically disadvantaged institutions) and more black and women scientists are drawn into the research process through regional and national research consortia.

The increased focus of MRC work on research and the professional support for research endeavours is taking effect, and is reflected in the continual increase in the quantity and quality of research publications and research units reflected in the annual assessments by the Grants Committee.

External income for research generated by MRC scientists continues to grow steadily, and the transformation in the demography of the organisation has reached the point where 82% of the staff are black (49% African black) and 67% are female.

The MRC Board continues to be vigilant about examining those factors which might put the organisation at risk. The Risk Management Committee of the Board continues to define and identify risks and together with the Executive Management has put structures in place to manage these risks.

The MRC Board is confident therefore that, as it enters the last year of this 3-year term, it will leave the MRC stronger and more enabled to deliver on its mandate of using research, development and technology transfer to improve the health status and quality of life of all South Africans.

Prof. M F Ramashala
Chairperson
MRC Board

"External income for research generated by MRC scientists continues to grow steadily and the transformation in the demography of the organisation has reached a point where 82% of the staff are black (49% African black) and 67% are female."

THE BOARD OF THE MEDICAL RESEARCH COUNCIL


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1. Prof. MF Ramashala (Chairperson)

2. Mr Abel Dlamini
Sekela Chartered Accountants

3. Prof. AA Azad
Australia

4. Dr JF Hartzell
Co-ordinator: Traditional Complementary and Alternative Medicine
Nelson R Mandela School of Medicine
University of KwaZulu-Natal, Durban

5. Prof. LJ King
Aga Khan University
Regional Office, Nairobi, Kenya

6. Ms JN Makhanya
Durban Institute of Technology

7. Dr LE Makubalo
Cluster Manager
National Department of Health

8. Ms MK Matsau
Deputy Director-General
Department of Health

9. Prof. DL Mkize
Department of Psychiatry
University of KwaZulu-Natal, Durban

10. Prof. MS Mokgokong
University of Limpopo, MEDUNSA Campus, Pretoria

11. Prof. JM Pettifor
Mineral Metabolism Research Unit
University of Witwatersrand and
Chris Hani Baragwanath Hospital
Johannesburg

12. Col DC Qolohle
Head of Department: Obstetrics & Gynaecology, 1 Military Hospital, Pretoria

13. Prof. H Schneider
Centre of Health Policy SAIMR
Johannesburg

14. Prof. K Voyi
Head: School of Public Health
Faculty of Health Sciences
University of Pretoria

15. Dr C Walsh
Department of Human Nutrition
University of Free State, Bloemfontein

16. Prof. AD MBewu (MRC President)
Ex-officio member

PRESIDENT'S REPORT

Prof. AD MBewu

The employees of the MRC have worked hard throughout the past year to realise the mandate of the MRC, as expressed in Act of Parliament (Act 58, 1991):

"The objects of the MRC are, through research, development and technology transfer, to promote the improvement of the health and quality of life of the population of the Republic, and to perform such functions as may be assigned to the MRC by or under this Act."

The template for their work has been the *MRC Strategic Plan 2005–2010* which describes exactly how the MRC will deliver on its statutory mandate by promoting and conducting relevant and responsive health research to improve the health and quality of life of the nation. The *Strategic Plan* has been extensively communicated to both employees and external stakeholders over the past 18 months; and the entire organisation is galvanised in implementing the strategy.

The *MRC Business Plan 2006–2007* was the blueprint for implementation of the *Strategic Plan* during 2006–2007: through operationalisation of the 9 strategic objectives contained in the *Strategic Plan*. It provided details, for each of the 9 strategic objectives, of the actions, measures, timeframes and persons responsible for implementing the *Strategic Plan*; as well the resources, both human and financial, that were deployed to implement the Plan.

The *Key Performance Indicator Report (KPI) 2006/2007*, contained in this *Annual Report*, indicates the measure of success the MRC has had in the past year in completing work outlined in the *Business Plan*. In most areas targets have been met and even exceeded, as the MRC continues to develop and deepen its research portfolio to address the health priorities of South Africa.

Health research is the core business of the MRC; and implementation of the *Research Strategy 2005 – 2010* has also been a priority over the past year. MRC research must be validated and of high quality if it is to impact on the health of South Africans; and the MRC has systems of peer review and audit in place that ensure such high standards are met. MRC research, development and technology transfer encompass all spheres of knowledge generation that impact on health and quality of life – from basic to applied research. Following international best practice, all the broad disciplines of human health research are within the ambit of the MRC; from laboratory to clinical, to public health, to policy and implementation. This work is often done in an integrated, multidisciplinary fashion. Frequently, a participatory approach is used in setting the research agenda; performing and analysing the research; and, disseminating the research results.

The portfolio of MRC research must also address the health and development priorities of South Africa as defined by the National Health Research Committee (NHRC), set up under the National Health Act – to advise the Minister of Health on health research priorities for South Africa. The MRC research priorities are agreed upon annually in consultation with the staff of the Ministry of Health.

Furthermore, the MRC vision of 'building a healthy nation through research' can only be achieved if research results are translated into policy, practice, health promotion and products. The MRC has therefore been developing a Research Translation Office to facilitate this process; and has expanded its research, development and technology transfer activities in the manner described in this *Annual Report*.

The MRC is a 'knowledge-creating company' and therefore people are its most valuable resource. Human resource development, individual and institutional capacity development, as well as transformation and development, are therefore key priorities in the MRC's portfolio of work. This is manifest within a framework of fair and transparent employment practices, including employee relations, job evaluation and promotion processes, recruitment processes, and reward and recognition.

Informatics and knowledge management are also critical for a knowledge-creating company, and this *Annual Report* describes how these areas have been developed.

Nearly 60% of the MRC budget is from external income, and most of the research activities of the MRC take place with operating funds generated from competitive contracts and grants. This is the portion of the MRC budget that has been growing strongly in this and previous years – often by as much as 20% per annum. In the past 12 months external income grew by R60 668 215 from R176 547 313 to R237 215 528 - a 34% increase.

The MRC is probably the most prolific health research institution on the African continent in terms of its success in winning competitive international grants from some of the world's most prestigious agencies. The *MRC Business Plan 2006–2007* outlined strategies for the MRC to manage the risks and opportunities that arise within such a complex research environment and financial model; including how issues such as full-cost recovery in contracts and grants will be dealt with. The Project Office of the MRC is now functional and all grants and contracts are logged and monitored electronically.

Office of the President

The principal stakeholder of the MRC is the National Department of Health (NDOH) – not only because the NDOH provides the MRC baseline budget, but also because the NDOH is the primary agent responsible for the health of the people of South Africa. The Department of Science and Technology (DST) has oversight of all research and development in South Africa, and is therefore an important stakeholder and key enabler for the MRC to deliver on its mandate as set out in Act 58 of 1991. Management of the relationships with these and other key stakeholders has been an important facet of the past year's work.

RESEARCH HIGHLIGHTS

The many highlights of research are too numerous to mention here, emanating from the MRC's portfolio of 571 research projects and 676 publications. Some of them are listed later in this publication; but particular highlights include the award of a National Institute of Health's (NIH) Clinical Trial Unit to Prof. Gita Ramjee's HIV Prevention Research Unit. Already this has resulted in contracts for cutting-edge clinical trials in microbicides and HIV vaccines from the NIH clinical trial networks.

Clinical trial sites of the South African AIDS Vaccine Initiative (SAAVI – a Lead Programme of the MRC) launched in 2007 the first phase IIb 'proof of concept' clinical trial in HIV vaccines in South Africa called 'Phambili'. This augments the portfolio of what is universally acknowledged as probably the leading HIV vaccine development programme in the developing world.

In 2006 President Thabo Mbeki awarded Prof. Lionel Opie of the Inter-university Cape Heart Group the Order of Mapangubwe in acknowledgement of his major contributions to the advancement of research in cardiology.

The Respiratory and Meningeal Pathogens Research Unit conducted studies that demonstrated the long-term level of protection afforded by the Hib vaccine in HIV- infected children.

The Crime, Violence and Injury Lead Programme successfully hosted the 8th World Conference on Injury Prevention and Safety Promotion in Durban in 2006.

The Airborne Infection Research (AIR) Facility was launched as a joint collaborative initiative between the Tuberculosis Epidemiology and Intervention Research Unit, the US Centers for Disease Control & Prevention (CDC), Harvard University, US and the CSIR. It is the only facility of its kind in the world, aimed at studying transmission dynamics of MDR/XDR in biological models by exposing guinea pigs to infectious air from patient wards. In addition, a large demonstration was launched with the National Health Laboratory Service and FIND Diagnostics of two novel diagnostics for drug-resistant *mycobacterium tuberculosis* which can shorten the time for diagnosis of drug-resistant TB in a patient from the current 2 months down to 2 days.

The MRC Clinical and Biomedical Tuberculosis Research Unit is the only research facility worldwide to investigate all the available drugs in the current TB clinical pipeline. The aim of 5 clinical trials with the combined recruitment of almost 2000 TB patients at this unit is to reduce duration of TB treatment from 6 months to 4 or 3 months, thereby hopefully improving compliance to therapy.

The Centre for Molecular and Cellular Biology was instrumental in producing the fourth TB genome sequenced with partners at Harvard. This is the second entire genome to be sequenced out of South Africa

Several MRC Research Units presented data at the 19th World Diabetes Congress in Cape Town; including the MRC Burden of Research Unit which highlighted the impact of diabetes on the African continent.

The MRC Health Systems Research Unit continues to do groundbreaking research on the role of lay health workers in providing care and support for patients receiving comprehensive care for HIV and AIDS, for tuberculosis, and for immunisation promotion.

The South African Cochrane Centre's proposal to establish a registry of randomised trials on HIV and AIDS, TB and Malaria (conducted in Africa) was selected for funding by the EDCTP; and the Centre also serves on the WHO's International Clinical Trials Registry Platform.

Technology and innovation are key activities of the MRC – necessary in order to produce novel products such as drugs, vaccines, biologicals, natural medicines, medical devices and

processes. These products can directly improve and preserve the health and quality of life of South Africans. They also engender economic growth and development through keeping the workforce healthy; fostering social development; growing a nascent South African biotechnology and pharmaceutical industry; creating skilled jobs; and, bringing in foreign exchange to the country. The *Annual Report* describes the considerable progress made in this regard; including the establishment of a consortium with the Agricultural Research Council and the Universities of Southern Denmark to develop diagnostics and therapeutics for Type II diabetes mellitus from South African plants.

Highlights in research translation into policy include the influence that the MRC's Health Promotion Research and Development Unit's data on nicotine addiction in school learners had on the Portfolio Committee on Health's decision to restrict the use of 'snus'. This chewable tobacco product could well serve as a 'gateway drug' to the use of cigarettes by school learners.

At a global level the work of the Malaria Research Lead Programme in contributing to the reduction of malaria prevalence by 88% in the Lubombo Spatial Development corridor contributed to the decision by WHO to recommend the use of residual indoor spraying with DDT in reducing malaria prevalence in regions of the world where the disease is endemic.

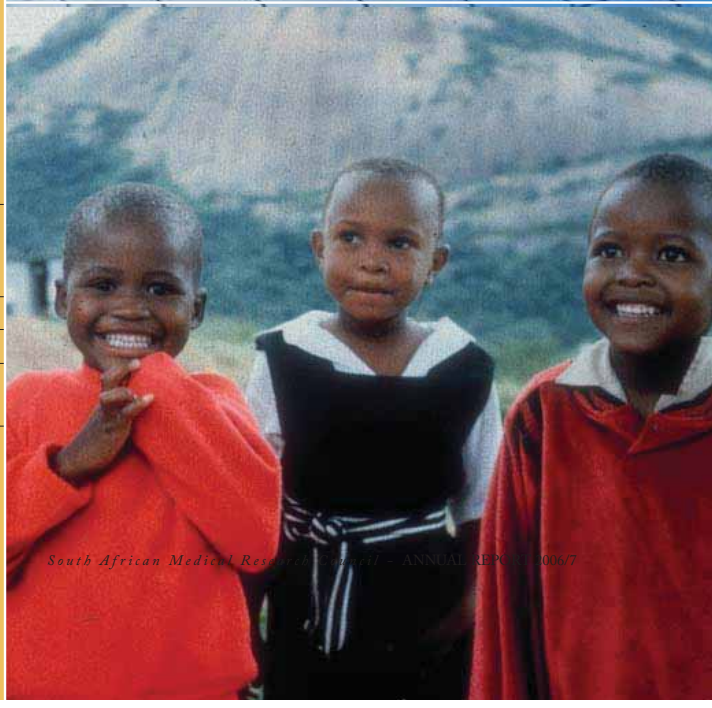
CONCLUSION

The *MRC Annual Report 2007* describes therefore, the past year's work of South Africa's pre-eminent health research institution. It describes how the MRC has succeeded in managing the hectic trajectory of growth the organisation has experienced over the past few years, with year-on-year increases in the global budget of over 10% and in personnel of over 8%. It outlines how the MRC continues to use the tool of health research to derive solutions – such as high-quality validated health information, drugs, vaccines, natural products, medical devices, biologicals and stem cells, health systems processes, health promotion and behavioural interventions – for the formidable health and development challenges South Africa faces in the midst of its health, democratic and socio-economic transitions. These challenges include the prevention, amelioration and cure of the triple burden of infectious disease, chronic disease, and violence and injury.

This record of the past year's work of the MRC bears testimony to the continuing success of the research council in using research, development and technology transfer to promote the improvement of the health and quality of life of all South Africans.

Executive Management Committee (EMC)

MRC RESEARCH UNITS



THE 45 MRC RESEARCH UNITS ARE LISTED IN LINE WITH THE HEALTH PRIORITIES OF SOUTH AFRICA:

HIV and AIDS	South African AIDS Vaccine Initiative (SAAVI)
	HIV Prevention Research Unit
	Genital Ulcer Disease Research Unit
Tuberculosis	Clinical and Biomedical Tuberculosis Research Unit
	Tuberculosis Epidemiology and Intervention Research Unit
	Centre for Molecular and Cellular Biology
	Molecular Mycobacteriology Research Unit
Infectious Disease	Diarrhoeal Pathogens Research Unit
	Immunology of Infectious Disease Research Unit
	Inflammation and Immunity Research Unit
	Malaria Research Lead Programme
	Respiratory and Meningeal Pathogens Research Unit
Cardiovascular Disease and Diabetes	Chronic Diseases of Lifestyle Research Unit
	Diabetes Research Group
	Inter-university Cape Heart Research Group
	Exercise and Sports Science Research Unit
Crime, Violence and Injury	Crime, Violence and Injury Lead Programme
Public Health	Biostatistics Unit
	Burden of Disease Research Unit
	South African Cochrane Centre
	Health Policy Research Group
	Health Systems Research Unit
	Rural Public Health and Health Transition Research Unit
	Telemedicine Lead Programme
Health Promotion	Alcohol and Drug Abuse Research Unit
	Health Promotion Research and Development Unit
Cancer	Cancer Epidemiology Research Group
	PROMEC Unit
	Oesophageal Cancer Research Group
Genomics and Proteomics	Bioinformatics Capacity Development Research Unit
	Bone Research Unit
	Human Genetics Research Unit
	Human Genomic Diversity and Disease Research Unit
	Liver Research Centre
	Molecular Hepatology Research Unit
	Receptor Biology Research Group
Women, Maternal and Child Health	Gender and Health Research Unit
	Maternal and Infant Health Care Strategies Research Unit
	Mineral Metabolism Research Unit
Nutrition	Nutrition Intervention Research Unit
Environment and Health	Environment and Health Research Unit
Brain and Behaviour	Medical Imaging Research Unit
	Anxiety and Stress Disorders Research Unit
African Traditional Medicines	South African Traditional Medicines Research Unit
	Indigenous Knowledge Systems Lead Programme

MRC UNIT DIRECTORS

1. **Prof. C Parry**
Alcohol and Drug Abuse Research Unit

2. **Prof. T Noakes**
Exercise Science and Sports Medicine Research Unit

3. **Dr A Mathee**
Environment and Health Research Unit

4. **Prof. S Reddy**
Health Promotion Research and Development Unit

5. **Dr C Lombard**
Biostatistics Unit

6. **Prof. D Bradshaw**
Burden of Disease Research Unit

7. **Prof. J Volmink**
Cochrane Centre

8. **Prof. L Gilson**
Health Policy Research Group

9. **Dr M Chopra**
Health Systems Research Unit

10. **Prof. S Tollman**
Rural Public Health and Health Transition Research Unit

11. **Dr M Molefi**
Telemedicine Lead Programme

12. **Prof. D Stein**
Anxiety and Stress Disorders Research Unit

13. **Dr L Stein**
Acting Director - Cancer Epidemiology Research Group

14. **Dr N Steyn**
Acting Director - Chronic Diseases of Lifestyle Research Unit

15. **Prof. M Seedat**
Crime, Violence and Injury Lead Programme

16. **Prof. K Vaughan**
Medical Imaging Research Unit

17. **Prof. W Gelderblom**
Acting Director - PROMEC Unit

18. **Dr R Rustomjee**
Director - Clinical and Biomedical Tuberculosis Research Unit

19. **Prof. D Steele**
Diarrhoeal Pathogens Research Unit

20. **Prof. A Sturm**
Genital Ulcer Disease Research Unit

21. **Prof .G Ramjee**
HIV Prevention Research Unit

22. **Ms E Levendal**
Interim Director - South African AIDS Vaccine Initiative (SAAVI)

23. **Dr A Dhansay**
Nutritional Intervention Research Unit

24. **Prof. P Zilla**
Inter-university Cape Heart Research Group

25. Prof. F Brombacher
Immunology of Infectious Disease Research Unit

26. Prof. R Anderson
Inflammation and Immunity Research Unit

27. Dr R Maharaj
(Acting Director)
Malaria Research Lead Programme

28. Prof. K Klugman
Respiratory and Meningeal Pathogens Research Unit

29. Prof. P Smith
(Acting Director)
South African Traditional Medicines Research Group

30. Dr K Weyer
TB Epidemiology and Intervention Research Unit

31. Prof. W Hide
Bioinformatics Capacity Development Research Unit

32. Prof. U Ripamonti
Bone Research Unit

33. Prof. P van Helden
Centre for Molecular & Cellular Biology

34. Prof. R Ramesar
Human Genetics Research Unit

35. Prof. H Soodyall
Human Genomic Diversity and Disease Research Unit

36. Dr M Matsabisa
Indigenous Knowledge Systems Lead Programme

37. Prof. D Kahn
Liver Research Centre

38. Prof. M Kew
Molecular Hepatology Research Unit

39. Prof. V Mizrahi
Molecular Mycobacteriology Research Unit

40. Prof. I Parker
Oesophageal Cancer Research Group

41. Prof. A Katz
Receptor Biology Research Group

42. Prof. R Jewkes
Gender and Health Research Unit

43. Prof. R Pattinson
Maternal and Infant Health Care Strategies Research Unit

44. Prof. J Pettifor
Mineral Metabolism Research Unit

RESEARCH PRODUCTIVITY AND CAPACITY DEVELOPMENT

Number of projects	Staff	Masters students		Doctoral students		Peer-reviewed publications	
		Enrolled	Graduated	Enrolled	Graduated	Published	In press
Alcohol and Drug Abuse Research Unit							
20	12 staff: 4 senior scientists 5 junior scientists 1 technologist 2 support	2	1	3	0	20	6
Exercise Science and Sports Medicine Research Unit							
69	30 staff: 14 senior scientists 6 junior scientists 10 technical staff	6 MPhil Sports Medicine: 9	0 MPhil Sports Medicine: 3	19	5	45	11
Environment and Health Resarch Unit							
11	12 staff: 6 senior scientists 3 junior scientists 1 technologist 2 support staff	4	-	6	2	13	4
Health Promotion Research and Development Unit							
5	29 staff: 3 senior scientists 3 junior scientists 21 technicians and technologists 2 support staff	-	-	6	2	5	6
Biostatistics Unit							
208	27 staff: 9 senior scientists 6 junior scientists 6 technical staff 6 support staff	-	2 MSc	-	-	60	23
Burden of Disease Research Unit							
9	10 staff: 5 senior scientists 1 junior scientist 1 technologist 3 support staff	2	-	1	-	9	1
South African Cochrane Centre							
7	10 staff: 5 senior scientists 3 junior scientists 2 support staff	0	1	1	0	20	3

Number of projects	Staff	Masters students		Doctoral students		Peer-reviewed publications	
		Enrolled	Graduated	Enrolled	Graduated	Published	In press
Health Policy Research Group							
25	16 staff: 4 senior scientists 8 junior scientists 4 support staff	Supervised: 15	Staff: 1 MA Supervised: 2	Staff: 1 Supervised: 13	 Supervised: 2	11	9
Health Systems Research Unit							
11	14 staff: 5 senior scientists 8 junior scientists 1 support staff	3	2	4	1	23	2
Rural Public Health and Health Transition Research Unit							
28	7 staff: 7 senior scientists	7	1	5	0	5 papers, 5 chapters	10 papers, 6 chapters
Telemedicine Lead Programme							
8	8 staff: 2 senior scientists 1 junior scientist 1 technician 4 support staff	1	1	2	-	-	-
Clinical and Biomedical Tuberculosis Research Unit							
24	58 staff: 9 senior scientists 42 technologists and technicians 7 support staff	5	0	6	2	11	3
Diarrhoeal Pathogens Research Unit							
8	2 staff: 1 director 1 acting director	3	1	3	1	9	2
Genital Ulcer Disease Research Unit							
7	2 staff: 2 senior scientists	6	1	1	0	3	0
HIV Prevention Research Unit							
	269 staff: 8 senior scientists 3 junior scientists 250 technologists 8 support staff	8	0	2	0	6	0
South African AIDS Vaccine Initiative (SAAVI)							
34	223 staff: 22 principal investigators	8	2	8	1	23	7

Number of projects	Staff	Masters students		Doctoral students		Peer-reviewed publications	
		Enrolled	Graduated	Enrolled	Graduated	Published	In press
Immunology of Infectious Diseases Research Unit							
10	20 staff: 7 senior scientists 1 junior scientist 9 technologists 4 support staff	9	4	12	5	N/A	N/A
Inflammation and Immunity Research Unit							
6	4 staff: 3 senior scientists 1 support staff	3	1	3	0	7	5
Malaria Research Lead Programme							
10	30 staff: 8 senior scientists 4 junior scientists 23 technologists and technicians 5 support staff	4	0	6	1	18	5
Respiratory and Meningeal Pathogens Research Unit							
23	78 staff: 7 senior scientists 16 junior scientists 47 technologists 8 support staff	2	-	6	-	27	6
South African Traditional Medicines Research Group							
15	14 staff: 11 senior scientists 2 technologists 1 support staff	4	3	12	3	21	3
Bioinformatics Capacity Development Research Unit							
9	5 staff: 2 senior scientists 3 junior scientists	4	3	4	0	4	7
Bone Research Unit							
4	7 staff: 2 senior scientists 2 junior scientists 2 technologists 1 support staff	1	2	1	0	9	3
Centre for Molecular and Cellular Biology							
43	14 staff: 6 senior scientists 8 technologists	10	2	16	3	24	8
Human Genetics Research Unit							
4	2 staff: 2 senior scientists	12	3	7	1	8	0

Number of projects	Staff	Masters students		Doctoral students		Peer-reviewed publications	
		Enrolled	Graduated	Enrolled	Graduated	Published	In press
Human Genomic Diversity and Disease Research Unit							
1	2 staff: 2 senior scientists	4	0	1	0	4	0
Indigenous Knowledge Systems							
	8 staff: 2 senior scientists 2 junior scientists 3 technologists 1 support staff	1	2	2	-	-	-
Liver Research Centre							
17	22 staff: 13 senior scientists 6 technologists 3 support staff	3	1	4	-	16	3
Molecular Hepatology Research Unit							
7	8 staff: 3 senior scientists 4 junior scientists 1 support staff	1	3	6	0	11	12
Molecular Mycobacteriology Research Unit							
4	18 staff: 9 senior scientists 6 junior scientists 2 technical staff 1 support staff	2	0	4	1	6	1
Oesophageal Cancer Research Group							
7	15 staff: 5 senior scientists 3 junior scientists 4 technical staff 3 support staff	9	2	15	4	9	10
Research Group for Receptor Biology							
11	3 staff: 3 senior scientists	6	0	4	1	13	1
Anxiety And Stress Disorders Research Unit							
8	6 staff: 4 research assistants 2 support staff	4	1	6	3	39	0
Cancer Epidemiology Research Group							
6	8 staff: 2 senior scientists 1 junior scientist 2 technical staff 3 support staff	1	1	1	-	6	1

Number of projects	Staff	Masters students		Doctoral students		Peer-reviewed publications	
		Enrolled	Graduated	Enrolled	Graduated	Published	In press
Chronic Diseases of Lifestyle Research Unit							
14	15 staff: 4 senior scientists 2 junior scientists 5 technologists 4 support staff	4	1	4	1	17	6
Crime, Violence and Injury Lead Programme							
15	23 staff: 6 senior scientists 5 junior scientists 6 technologists 6 support staff	4	3	2	-	21	5
Diabetes Research Platform							
5	10 staff: 4 senior scientists 4 technologists 2 support staff	3	0	1	0	0	0
Inter-university Cape Heart Research Group							
Cardiovascular							
7	5 staff: 5 senior scientists	2	-	4	-	6	0
Lipidology							
5	2 staff: 2 senior scientists	1	1	2	2	6	1
Hatter Heart Research Institute							
13	3 staff: 3 senior scientists	3	1	4	0	0	0
Medical Imaging Research Unit							
12	2 staff: 2 senior scientists	12	7	7	1	19	6
PROMEC Unit							
18 internal 24 external	25 staff: 9 senior scientists 4 junior scientists 9 technologists 3 support staff	2	1	10	1	18	6
Gender and Health Research Unit							
7	15 staff: 4 senior scientists 4 junior scientists 5 technologists 2 support staff	5	4	3	0	10	3

Number of projects	Staff	Masters students		Doctoral students		Peer-reviewed publications	
		Enrolled	Graduated	Enrolled	Graduated	Published	In press
Maternal and Infant Health Care Strategies Research Unit							
10	10 staff: 2 senior scientists 8 technical staff	4	-	6	-	12	8
Mineral Metabolism Research Unit							
4	3 staff: 1 senior scientist 2 technical staff	3	0	5	1	10	3
Nutritional Intervention Research Unit							
28	29 staff: 9 senior scientists 1 junior scientist 16 technologists 6 support staff	0	1	2	1	9	8
Tuberculosis Epidemiology and Intervention Research Unit							
14	18 staff: 7 senior scientists 9 technologists 2 support	4	2	-	-	2	3

RESEARCH PRODUCTIVITY AND CAPACITY DEVELOPMENT: 2004 TO 2007

	2007	2006
Research units: number	45	45
Research projects	571	638
Personnel		
- Total intramural staff	838	815
(baseline, contract)	(424, 414)	(431, 384)
- Researchers in 44 units	508	496
- Senior researchers	308	340
Peer-reviewed publications		
Total number	676	618
Publications per senior researcher	2.2	1.82
(% year-on-year increase)	(8.4%)	(8.8%)
Doctoral students		
- Enrolled	234	215
- Graduated	46	49
Masters students		
- Enrolled	210	237
- Graduated	66	60

The core business of the Medical Research Council (MRC) is research, including capacity development. In accordance with the mandate in its Act of Parliament, the organisation also engages in development and technology transfer. In this regard, the key research highlights from the 45 MRC research units for the period 2006/7 are described in this section.

RESEARCH HIGHLIGHTS

HIV & AIDS

HIV PREVENTION RESEARCH UNIT

Director: Prof. Gita Ramjee

Highlights

The HIV Prevention Research unit (HPRU) has established itself as a world-class clinical trials unit, with fully-equipped sites in Chatsworth, Hlabisa, Umkomaas, Botha's Hill, Isipingo, Tongaat, Verulam and Durban City Centre. The unit currently employs 272 contract and permanent staff and 23 services-rendered staff. In 2006, competing with institutions throughout the world, the HPRU was successful in its bid to become a clinical trials unit (CTU) of the USA National Institutes of Health (NIH) under the Microbicide Trials Network (MTN). The CTUs will engage in multi-centre studies spanning 17 locations in 7 countries that seek to determine if topical microbicides can help prevent the sexual transmission of HIV in women. This is another step forward in the search for preventative options for women, who account for over 60% of HIV infections in Sub-Saharan Africa.

Over the past year, the unit has diversified its research foci to incorporate treatment and care research, as well as vaccine trials – including agreements with the EDCTP (European and Developing Countries Clinical Trials Partnership) and the NIH's global HVTN (HIV Vaccine Trial Network) for capacity development and Phase II vaccine trials in Durban.

A new collaboration with the International Partnership for Microbicides (IPM) is to conduct a study on the safety and efficiency vs acceptability of a vaginal ring microbicide delivery method for the prevention of HIV infection in women. Results of the first Phase III microbicide trial are expected in late 2007, sponsored by the Population Council, using the microbicide Carraguard. Another Phase III trial testing the effectiveness of the vaginal diaphragm in preventing HIV among women is complete.

Community education and awareness is an ongoing activity and hopefully will contribute towards safe-sex behaviour change and the course of the HIV epidemic. If the next 1 to 2 years provide a positive outcome from the microbicides trials, the unit will have contributed to stemming one of the largest epidemics in the world. Scientists believe that even if a product is 60% efficacious, it will avert 2.5 million new HIV infections in the world. Furthermore, the microbicide product will impact on women's position in society and empower them to have infection-free reproductive health. Through our 8 clinical research sites, we are able to educate over 15 000 women, men and children on HIV/AIDS, safe sex and healthy living each year in each of the communities in which we conduct research. In addition, we screen over 12 000 women in clinical trials, all of whom receive education on HIV/AIDS/STIs and referral for treatment and care if HIV positive.

In July 2006 the HPRU Carlisle Street clinic and adjacent PEPFAR (President's Emergency Plan for AIDS Relief) Wellness Clinic was visited by former US President Mr Bill Clinton and Bill and Melinda Gates. The Gates Foundation has committed over a billion dollars to funding research that finds ways of empowering women to protect themselves from HIV infection, including microbicides.

Capacity development

Apart from continued education and financial assistance, the unit provides its staff with ongoing skills development, in-house training and workshops. Staff also attended training sessions hosted by external organisations including Good Clinical Practice, Good Laboratory Practice, Fogarty AIDS Training – Laboratory training, etc, both nationally and internationally. Currently 8 staff members are enrolled in Masters and 2 in PhD programmes.

Research collaboration

HPTN 035: Phase II/IIb study to assess the safety and efficacy of BufferGel and 0.5% PRO2000/5 gel in the prevention of HIV among women. Division of AIDS (DAIDS), National Institute of Allergy and Infectious Diseases (NIAID), National Institute of Child Health and Human Development (NICHD), National Institute of Mental Health, National Institute on Drug Abuse, National Institutes of Health (NIH), Family Health International (FHI), SCHARP, ReProtect, Indevus Pharmaceuticals, CAPRISA, etc.

Microbicides Development Programme: Phase III study of 0.5% PRO2000/5 gel and 2% PRO2000/5 gel in preventing HIV-transmission among women. Dept for International Development (DfID), MRC UK, Imperial College London, Reproductive Health Research unit (RHRU), Africa Centre for Health and Population Studies, University of Zambia, Medical Research Council of Uganda, NIMR/AMREF/LSHTM collaboration Tanzania, Ministry of Health, Cameroon.

SPARTAC: Short Pulse AntiRetroviral Therapy At HIV seroConversion. A Multi-centre Randomised Trial of Therapeutic Intervention at Primary HIV-1 Infection. Imperial College (London), Desmond Tutu HIV Centre (South Africa), Africa Centre (South Africa), Reproductive Health and HIV Research unit (South Africa), University of New South Wales (Australia), Medical Research Council (Uganda), University of Rio de Janeiro (Brazil), San Raffaele Hospital (Italy).

MUVAPRED: A phase I, open label, randomised, parallel

group trial to evaluate safety and immunogenicity of 3 nasal immunisations using a fixed dose-level of HIV gp140 v2 loop deleted protein adjuvanted with ltk63 followed by intramuscular boosting with HIV gp140 v2 loop deleted protein adjuvanted with mf59 when administered to healthy adults. Department of Infectious Diseases, St George's Hospital Medical School.

Science communication and research translation
The KZN AIDS Forum has returned to its original home in the HPRU, an effective and powerful platform for sharing of research topics to a wide spectrum of audiences.

The unit continues to hold community meetings every 6 months to share research findings with the community and their leaders. The inaugural HPRU newsletter, *iThemba* ('hope') was launched, with the objective of sharing information about the HIV Prevention Research unit.

External income generated:
R277 030 520 over 3 years

SOUTH AFRICAN AIDS VACCINE INITIATIVE (SAAVI)

Interim Director: Elise Levendal

Highlights

Product development: Despite manufacturing problems necessitating the reconstruction of the DNA vaccine with a new plasmid backbone and promoters, the two SAAVI-produced vaccines, (i.e. SAAVI DNA-C2 and SAAVI MVA-C) developed by researchers at the University of Cape Town, are on track to enter phase I trials in 2007/2008. The researchers, and the SAAVI Directorate, are working with the US National Institutes of Health, to ensure that the documentation for regulatory approval by the US Food and Drug Administration and the South African Medicines Control Council is prepared timeously.

Antibody research: Data from the National Institute of Comminicable Diseases' (NICD) Humoral Immunity Group on the magnitude and breadth of neutralising antibody (NAb) responses among HIV-1 subtype C infected people have been presented internationally. In collaboration with international groups, additional anti-HIV envelop monoclonal antibodies have been characterised. The group is working towards standardising the HIV gag ELISAs that will be used to measure antibody responses among vaccine recipients and is working towards accreditation of a T cell line adapted neutralising antibody assay. The group participates in a WHO-UNAIDS-sponsored initiative to standardise methods to measure anti-HIV-1 NAbs in HIV vaccine research and clinical trials. The group has performed the anti-gag antibody measurements for the South Afican trials.

Successes include passing an ELISA Proficiency Panel with a US laboratory, establishing the pseudovirion assay including the cloning of envelop genes; and extensive analysis has shown that subtype C sera are effective at neutralising South African subtype B viruses – important for cross-clade neutralisation.

The group has capacity to perform – PBMC neutralisation assays; TCLA assay using subtype B and C strains; single-cell pseudovirion assay with recombinant envelopes; validated ELISA assays as end-points for HIV vaccine trials; and, peptide ELISAs for measuring linear antibody reactivities. They have also developed well-characterised subtype C isolates for neutralisation assays; cloned envelopes from subtype C for use in PSV assay; identified large volumes of plasma with high titres of NAbs; and, HIV-1 subtype C envelop glycoproteins for use in ELISAs. The unit has investigated neutralising antibody levels in subtype C infection; activities of subtype C antibodies against subtype B viruses; sensitivity of subtype C viruses to broadly cross-neutralising MAbs; and, immunogenicity of envelop immunogens in humans and animals.

Cellular immunity: The Cellular Immunity Core is investigating the frequency, breadth and magnitude of CD4 T cell responses across HIV. Preliminary findings show how detection of CD4 T cells compare to CD8 T cells in different HIV protein regions and provide a basis for mapping HIV-1 subtype C CD4 T-helper cell epitopes across the HIV genome.

The laboratory has been involved in developing new assays to measure the functional nature of HIV-specific T cells that can be applied to vaccine studies. and has optimised the whole blood peptide mapping intracellular cytokine mapping assay that allows direct comparison of CD4 and CD8 T cell responses.

Evolutionary conserved regions containing dominant gag CTL epitopes may be useful in vaccines as they may be cross-reactive between subtypes. The team has focused on understanding lineage of cells that recognise specific HIV epitopes. Samples have been collected from HIV-infected individuals to identify the function and phenotype of CD4+ and CD8+ T cells that recognise epitopes across the genome. The goal is to identify a marker of T cell function that correlates with viral control and the emergence of long-lived memory T cells.

Clinical trials: Two phase II trials commenced during 2006 at trial sites funded by SAAVI. One was the first trial

for a therapeutic vaccine which started at the Soweto site. (A therapeutic vaccine is one that would be given to HIV-positive people to prevent disease progression.) The second was the HIV Vaccine Trials Network (HVTN) 204 trial which commenced in the North West Province, Johannesburg and Cape Town.

Extensive preparatory work was undertaken for the first phase IIb trial which commenced at the beginning of 2007. Preparatory work is also under way for the start of phase I clinical trials on the SAAVI DNA-C2 and SAAVI MVA- C products in South Africa and the USA.

HIV vaccine clinical trials in South Africa, March 2007

Phase I

- HVTN 042 (VEE, gag C), commenced November 2003, developed by Alphavax, sites: Johannesburg and Durban, Principal Investigators (PIs): Glenda Gray, Andrew Robinson.
- IAVI 001 (MVA), commenced November 2003, developed by the International AIDS Vaccine Initiative, sites: Johannesburg and Durban, PIs: Eftyhia Vardas, Glenda Gray, Andrew Robinson.
- HVTN 050 (Ad5, gag B), commenced October 2004, developed by Merck, site: Johannesburg, PI: Glenda Gray.
- HVTN 059 (VEE, gag C), commenced April 2005, developed by Alphavax, sites: Johannesburg and Durban, PIs: Glenda Gray, Andrew Robinson.

Phase II and IIb

- IAVI A002 (AAV), commenced November 2005, developed by Targeted Genetics, sites: Johannesburg, Medunsa, Cape Town, PIs: Eftyhia Vardas, Linda-Gail Bekker, Anwar Hoosen.
- FIT Biotech DNA therapeutic vaccine, commenced April 2006, developed by FIT Biotech Plc, site: Johannesburg, PI: Eftyhia Vardas.
- HVTN 204 (DNA/Ad5 ABC), commenced August 2006, developed by the Vaccine Research Center, sites: North West Province, Johannesburg, Cape Town, PIs: Gavin Churchyard, Glenda Gray, Linda-Gail Bekker.
- HVTN 503 (MRK Ad 5 polyvalent B), commenced February 2007, developed by Merck, sites: Soweto, Cape Town, Durban, MEDUNSA, North West Province, National PI: Glenda Gray.

Capacity development

The new funding allocations (2006 - 2009), led to an increase in the number of PIs; with an increase in the proportion of black and female investigators. Funding has been allocated to developing clinical infrastructure in historically disadvantaged institutions and in rural areas, with the trial sites doubling from 3 to 7 encompassing 7 provinces.

Funding has also been granted for new areas in the basic science of vaccine development and for community involvement research.

Research collaboration

SAAVI is a national initiative involving over 200 people across the country, with links to international groups involved in AIDS vaccine R&D.

Fruitful collaboration with the HVTN and the US National Institutes of Health has led to the commencement of two HVTN-funded trials and the manufacture of the SAAVI-developed vaccines.

Relationships have been maintained with the International AIDS Vaccine Initiative and with the AIDS Vaccine Advocacy Coalition, among others.

Science communication and research translation

The Masikhulisane Community Involvement Programme has continued with awareness-raising workshops amongst sectors of the South African population. Workshops were held in the North West Province, in Gauteng and Limpopo, in the Western Cape and in KwaZulu-Natal. National fora were held for vaccine educators and Community Advisory Group members. These allow skills sharing and the exchange of lessons learned.

Masikulisane staff are in the process of developing various position papers and documents.

Communications activities were ongoing including media outreach and training of journalists, the writing and placement of articles and adverts, development of promotional materials, and direct outreach via presentations and exhibitions at conferences and events. The co-ordination of communication plans with partners continued, as did updating of the website and quarterly reporting to funders.

In-depth communications planning was undertaken for the HVTN 503 (Phambili) trial – the first phase IIb trial in South Africa. Media workshops were held in Klerksdorp and Cape Town. PIs and communications staff also undertook one-on-one briefing sessions with journalists in Johannesburg. Materials were developed in collaboration with HVTN and their communications company (Fleishman Hillard). This included developing a name, a logo, a video, brochures and promotional items, press releases and background materials.

External income generated

Eskom:	R15 million
DOH:	R10 million
DST:	R20 milllion
Impala Platinum:	R500 000
European Union:	€ 1.8 million 2003–2006

TUBERCULOSIS

TUBERCULOSIS EPIDEMIOLOGY AND INTERVENTION RESEARCH UNIT

Director: Dr Karin Weyer

Highlights

The unit houses the WHO Supranational Reference Laboratory (SRL) for Africa, one of 25 SRLs established globally in 1994 to ensure laboratory capacity strengthening and provides technical assistance, consultancy and training on TB laboratory issues to the countries of the Southern African Development Community (SADC) region. Supervision and external laboratory quality assurance are provided to countries in support of drug-resistant TB surveillance. The unit director is Chair of the Green Light Committee, an international expert body which serves as a technical advisory agency to WHO on management of MDR/XDR; and is also Chair of an International Writing Committee tasked with the revision of the WHO Guidelines for Programmatic Management of Drug-Resistant Tuberculosis, identified by the Global XDR-TB Task Force as an urgent priority to effectively respond to clinical and programmatic management challenges around XDR-TB. She is a member of the WHO Strategic and Technical Advisory Group on TB (STAG-TB); and several strategic WHO sub-committees such as the Subgroup on MDR/XDR Research.

The THAT'S IT project, funded by the US President's Emergency Plan for AIDS Relief (PEPFAR), is a public-private partnership aimed at improving access to integrated TB-HIV care through a best-practice, evidence-based approach. More than 12 000 individuals will be enrolled for integrated TB-HIV care. Results from the integrated approach show a dramatic decrease in TB mortality (from 40% down to 12%), and increased TB case findings by up to 20% in clients presenting for HIV care.

The Airborne Infection Research (AIR) Facility is a joint collaborative initiative between the unit, the US Centers for Disease Control & Prevention (CDC), Harvard University and the CSIR. It is the only facility of its kind in the world, aimed at studying transmission dynamics of MDR/XDR in biological models by exposing guinea pigs to infectious air from patient wards. The impact of environmental infection controls is quantified and guinea pig infections are linked to human source strains by molecular fingerprinting. The overall aim of the AIR Facility is to develop the evidence base for airborne infection control interventions, particularly in congregate settings and in vulnerable populations (especially HIV-infected individuals).

An International Training and Research Centre (ITRC) on MDR/XDR was established in 2006 by the unit, in a joint collaboration with the CDC and WHO.

Capacity development

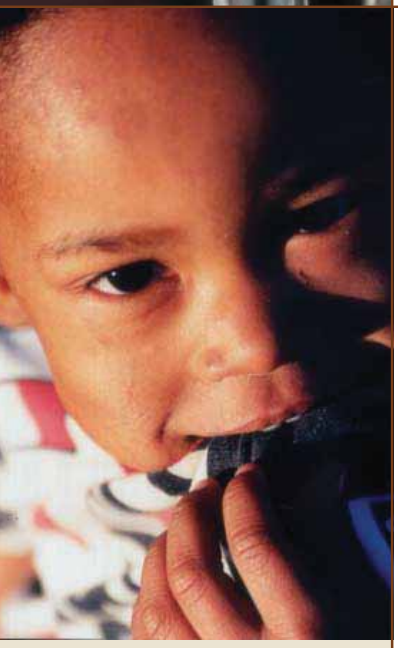
The roll-out of the training course on Infection Control in high burden TB/HIV settings in the nine South African Provinces and in SADC countries involved 500 health officials, and training of International Consultants; whilst SADC TB Managers have received training on MDR/XDR clinical and programmatic management though a WHO course facilitated by the ITRC faculty.

Research collaboration

Collaborations exist with the CDC, Harvard Medical School and WHO. A request was received from WHO and SADC countries for the unit's WHO Supranational Reference Laboratory (SRL) for TB (established in 1994) to provide essential laboratory support and capacity strengthening for SADC countries to conduct surveys of XDR-TB – 1 of only 2 WHO SRLs in Africa.

Science communication and research translation

- 'THAT'S IT' rolls out to North West. Statement on Enforced Quarantine of Patients with Extensively Drug-Resistant Tuberculosis was made.
- Trials of two new tests for MDR-TB happened in South Africa.
- Position Statement on the Need for a Revised Definition of XDR-TB was released.
- Legal Issues in the Management of MDR TB in South Africa. Policy Brief.



CLINICAL AND BIOMEDICAL TUBERCULOSIS RESEARCH UNIT

Director: Dr Roxana Rustomjee

Highlights

The unit has embarked on clinical trials investigating the safety and efficacy of the fluoroquinolones, the new diarylquinoline (R207910) and (OPC). New drug regimens are needed because of poor adherence to the current 6-month regimen, interactions with antiretroviral drugs with the need for concomitant therapy and the emerging issue of drug resistance. The unit is the only research facility worldwide to investigate all available drugs in the current clinical pipeline. The aim of 5 clinical trials with the combined recruitment of almost 2000 TB patients at this unit is to reduce duration of TB treatment. Shorter regimens would increase the proportion of patients who complete treatment, reduce the number who relapse and improve the overall effectiveness of TB control programmes. These new drugs under investigation have broad therapeutic scope and hold promise for simplifying the management of TB, MDR-TB and safe co-administration with antiretroviral agents.

A persistent difficulty in TB management is the lack of specific, sensitive, inexpensive and rapid methods of diagnosis of the disease. As many as 20% of patients who present with symptoms have sputum smear negative pulmonary disease or extra pulmonary disease which cannot be confirmed with sputum smear microscopy which is currently the recommended method and is in widespread use. WHO/TDR has developed an enabling infrastructure for new diagnostics that includes banks of reference material and clinical trial sites. The unit for Clinical and Biomedical TB Research has made a consistent commitment to supporting this infrastructure by providing well-catalogued, quality specimens to the bank and clinical trial sites to test new diagnostics. New partnerships with FIND will provide a platform for the testing of new diagnostics in the research laboratory in Durban. Given the alarming levels of XDR tuberculosis reported from certain parts of KZN it is critically important to establish the overall prevalence of MDR-TB and XDR-TB across the province to plan effective control measures. A project is under way to conduct rapid survey of drug-resistant tuberculosis in KwaZulu-Natal.

Capacity development

Weekly research updates at both the research update meetings: (i) Doris Duke Research Institute (Tuesday 8am), and the MDR Tuberculosis Clinical Meeting, King George V Hospital, Durban, (Wednesday 8.30am) as well as UKZN teaching and examination (Basic Epidemiology) – Pharmacology Masters Programme to the HIV Masters Programme (STI Module) and the Masters in Public Health. The unit is a recognised training centre for registrars in public health medicine.

Research collaboration

EDCTP Networking Grants with University College London; National Institute of Medical Research (NIMR), Tanzania; National Tuberculosis Control Programme, Mozambique; Medical Institute at Macha, Zambia; London School of Hygiene and Tropical Medicine; INTERTB (International Consortium for Clinical Trials of Chemotherapeutic agents for TB).

Science communication and research translation

Memorandum of understanding with KwaZulu-Natal Department of Health TB Programme and TB Services. The unit has an established collaboration with WHO/TDR which has agreed to support the management plan by providing technical support and materials in accordance with South African TB policies.

MOLECULAR MYCOBACTERIOLOGY RESEARCH UNIT

Director: Prof. Valerie Mizrahi

Highlights

Prof. Valerie Mizrahi is the first woman to be awarded the Gold Medal from the South African Society for Biochemistry and Molecular Biology – and one of few individuals to have received both the Gold as well as the Silver Medal (which she won in 1990). The Department of Science and Technology (DST) gave Prof. Mizrahi the DST Distinguished Women Scientist Award for 2006. She also won the Shoprite-Checkers/SABC 2 Woman of the Year Award in the category of Science and Technology in 2006. During the same year she was appointed to the Scientific Advisory Committee of the EU-funded New Medicines for TB Programme (NM4TH), which is Paris-based.

The Dr Gordhan's Career Development Award from the MRC was renewed for a third time. Three members of the unit were awarded training fellowships from the Columbia University-Southern African Fogarty AIDS Training and Research Program (CU-SA Fogarty AITRP). Dr Kana spent his postdoctoral fellowship at the Public Health Research Institute in New Jersey from August

to November 2006 under Prof. G Kaplan's supervision. Dr Matsoso completed her four-month postdoctoral fellowship in Prof. D Sherman's laboratory at the University of Washington, while Ms M Mowa completed her 6-month pre-doctoral fellowship in the laboratory of Prof. Kaplan in February 2007.

Ms Mowa's Scarce Skills Doctoral Bursary from the NRF was renewed for a further year; she and Prof. Mizrahi received a Mellon Postgraduate Mentoring Programme Award from University of Witwatersrand. Dr Warner co-received the Best Oral Presentation Prize in the Molecular, Cell and Evolutionary Biology Category at the University of Witwatersrand's Faculty of Health Sciences Research Day.

Over the past year research has been focused in four thematic areas, namely DNA metabolism (with an emphasis on mutational mechanisms underlying the evolution of drug resistance and inter-strain variation), the role of resuscitation-promoting factors in growth and resuscitation of *M. tuberculosis*, molecular mechanisms of drug tolerance in *M. tuberculosis*, and Vitamin B12 biosynthesis and the role of B12-dependent enzymes in growth and persistence of *M. tuberculosis*.

An article published in the *Journal of Bacteriology* described an assay system for monitoring the rate and spectra of mutation in PE_PGRS genes in mycobacterial genomes. Although this study provided evidence supporting the plasticity of PGRS-containing sequences, the data argued against marked hyper-mutability of such consequences. These results hold important implications for the contribution of mutagenesis at PE_PGRS loci to the overall rate of genome evolution in *M. tuberculosis*.

In a paper in the *Journal of Bacteriology*, which was in press at the time of compiling this document, researchers provided evidence that the vitamin B12-independent methionine synthase enzyme in *M. tuberculosis* is regulated by a riboswitch and discuss the implications of this finding in terms of the differential methionine synthase function in a clinical setting compared with a laboratory strain of this organism.

Capacity development

All three new students recruited over 2006 – 2007 hail from previously disadvantaged backgrounds: Dr G Abrahams (post-doctoral fellow), Ms B Ahidjo (PhD student) and Ms A Moosa (MSc student). Dr M Cholo, based at the MRC in Pretoria, undertook an extended working visit to the unit from April to November 2006 to further develop her skills in mycobacterial genetics through the construction of various mutant strains of *M. tuberculosis*.

Dr Edith Machowsky supervised Mr P Mahasha from Stellenbosch University in gene knockout methodology. The departmental allocation from Prof. Mizrahi's International Research Scholar's grant from the Howard Hughes Medical Institute was used to provide Honours-level bursaries to four Molecular Medicine Honours students from Wits University.

Research collaboration

Prof. G Kaplan from the Public Health Research Institute, New Jersey; Prof. A Kaprelyants from Bakh Institute, Moscow; Prof. D Sherman from the University of Washington; Drs H Boshoff and C Barry from the National Institute of Allergy and Infectious Disease (NIAID), the National Institutes of Health (NIH); and Dr A Gupta from the University of Delhi. Dr Kana undertook a 2-week exchange visit to Prof. Kaprelyants's laboratory in Moscow to discuss progress on phenotyping of the unit's collection of Rpf-like mutant strains. Prof. Mizrahi formed part of a consortium of 11 researchers from the USA, UK and South Africa who helped to develop a research proposal (with a pending review) on innovative methods for TB drug discoveries.

Science communication and research translation

The Women in Science and Woman of the Year awards of Prof. Mizrahi featured prominently on television, radio, and print. The unit liaised extensively with the media around the issue of XDR-TB. Dr Kana hosted 14 journalists and 2 presenters attending a science communication workshop. Prof. Mizrahi presented a talk on 'TB research in the Post-Genomic Era' to the IEB Biology School Teachers' Forum in Johannesburg. Dr Gordhan organised job-shadowing exercises for Grades 10 and 11 learners. Prof. Mizrahi delivered a talk at the 20th Annual Conference of the SA Society for Biochemistry and Molecular Biology in Pietermaritzburg; two lectures at the EMBO/FEMS Spetsai Summer School in Greece; and a plenary lecture at the NICD Academic Day in Johannesburg.

External income generated: R2.6 million

When Prof. Mizrahi received the Award in 2006 she said: "I am delighted to receive the Award and grateful that it will help to encourage outstanding young scientists to reach for the top".

CENTRE FOR MOLECULAR AND CELLULAR BIOLOGY

Director: Prof. P van Helden

Highlights

The centre was instrumental in producing the fourth TB genome sequenced with partners at Harvard. This is the second entire genome to be sequenced out of South Africa. Dr N Gey van Pittius was invited to attend the Euro-Mediterranean Workshop on Health of Populations in the Mediterranean in the Post-genomic Era in Tunisia, and was thereby able to extend collaborations and create new connections in Brazil, Argentinia, and France. Ms A Falmer and Ms O Strauss received IAEA fellowships to spend 1 month in collaborative research in the Institute of Tropical Medicine in Antwerp, Belgium. Ms Heldey spent 3 months in Denmark and Ms Moller spent 8 months in Kiel, Germany.

XDR-TB is a serious threat to control programmes. In this project researchers selected MDR isolates (N= 250) from their collection of drug-resistant samples originating from the Western Cape. They are optimising methods to test for resistance to second-line drugs. This will allow us to measure when and where XDR strains were found or originated in the region. Research has shown that both the culture media and drugs used during Drug Sensitivity Testing (DST) can change the ratio of mixed drug-resistant strains.

The centre is investigating whether differential growth rates impact on the time for DST in different strain types and therefore delay diagnosis of certain strain types. Strains are currently grown in culture medium until mid log phase before growth curves can be done. A great deal of standardisation must be done before crucial experiments can begin.

Capacity development

A number of postgraduate students graduated with BSc Hons, MSc and PhD during the year. Members of the unit examined PhD and MSc theses for the University of the Witwatersrand, the University of Pretoria, and other universities; and BSc Hons courses run by Univesity of Cape Town. Dr C Pheiffer was awarded a 3-month Fogarty traineeship to investigate gene expression of nutrient-starved *M. tuberculosis* H37Rv with Prof. M Gennaro at the Public Health Institute, New Jersey, USA. They investigated expression patterns of genes that can potentially aid the identification of new drugs or vaccines active against persistent bacteria.

Research collaboration

Collaborations exist with Harvard University and Broad Institute, Boston; the MRC unit for Clinical and Biomedical TB Research; Institut de Recherche pour le Développement, Dakar, Senegal; Special Programme for Research and Training in Tropical Diseases (TDR), WHO, Geneva, Switzerland; Wellcome Centre for Clinical Tropical Medicine/Department of Pharmacology, University of Liverpool, UK; MRC Biostatistics unit; Department of Medical Microbiology, Nelson R Mandela School of Medicine, University of KwaZulu-Natal; Division of Cellular & Molecular Medicine, St George's, University of London, UK.

Science communication and research translation

The Centre will be presenting on the CBTBR (DST/NRF Centre of Excellence in Biomedical TB Research) website (www.tuberculosis.org.za), hosted by the MRC via www.mrc.ac.za and also on the SA Health*Info* knowledge network (www.sahealthinfo.org) module for TB. A further powerful enabling environment for our researchers is foreseen with the implementation of the SHARED Africa regional portal in South Africa, linking with the SA Health*Info* knowledge network.

External income generated: R8.3 million

INFECTIOUS DISEASE

IMMUNOLOGY OF INFECTIOUS DISEASE RESEARCH UNIT

Director: Prof. Frank Brombacher

Highlights

Prof. Frank Brombacher was Guest Professor at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland, and keynote speaker at the workshop of the Immunology Society in Hamburg, Germany and the International Society for Parasitology (ICOPA) in Glasgow, Scotland.

Symptoms associated with parasitic worm infections are similar to that of other intestinal illnesses, including Irritable Bowel Syndrome (IBS). It is likely that the immune response required to expel the worm can also, when activated inappropriately, cause the symptoms of IBS. Previous studies demonstrated the crucial importance of Interleukin-4 receptor alpha (IL-4Ra) responsiveness for worm expulsion in global IL-4Ra deficient mice. This study specifically addressed the role of IL-4Ra responsiveness in a novel smooth muscle cell-specific IL-4Ra deficient mouse model. These mice showed decreased ability to control the worm infection with delayed expulsion and reduced protective immune responses.

Tumor necrosis factor (TNF) is an important cytokine for host protective functions and mice die in the absence of this protein, as demonstrated by us and others previously. Recently, by using transgenic mouse models, it was found that the membrane part alone is protective against TB. Moreover, researchers were able to better define cells producing TNF using sophisticated cell type specific gene-deficient mouse models. They found that TNF derived from macrophages is required during innate immunity with the host developing excessive bacilli burdens. However, the process is transient and the onset of adaptive immunity restores immunity.

In collaboration with CNRS, both reverse as well as forward genetic approaches were used to identify genes required for cerebral malaria (CM) development using PbA infection in mice. The former approach revealed that LTa signalling through LTbR is critical. Blocking LTa-LTbR might be a novel therapeutic approach to treat the fatal condition of CM. In a major effort to identify novel genes, forward genetics was used to establish a chemical mutagenesis programme. So far five families who are resistant to *Plasmodium*-induced CM have been identified.

Capacity development

Three black students are currently registered on exchange programmes with Strathclyde and Glasgow universities in the UK and are enrolled for an MSc, PhD and postdoctoral degrees.

Science communication and research translation

Ms Thabang Mokheti's work on the potential of traditional South African medicinal plants as sources for identifying lead compounds for the treatment of tuberculosis was featured in the *Cape Argus* in 2006. Over the past year the unit has produced 15 peer-reviewed publications of which 2 articles were in press at the time of this document going to print.

DIARRHOEAL PATHOGENS RESEARCH UNIT

Director: Prof. Duncan Steele

Highlights

As the reference laboratory for Rotavirus in Africa, the unit is constantly evaluating new techniques. These have been incorporated into the Unified Rotavirus Laboratory Manual produced by WHO with assistance and input from the unit. This year the unit was requested to evaluate the Coris immuno-chromatography strip for the detection of rotavirus antigen in diarrhoeal stool by WHO. Dr Page has been an invited technical expert to WHO and has been invited to attend and participate in WHO consultancies for rotavirus research, surveillance and strain characterisation.

Human and animal stool specimens have been collected in Limpopo Province, and archival animal specimens from Botswana, Cote d' Ivoire, Tanzania and Tunisia are being analysed. Polyacrylamide gel electrophoresis (PAGE) results showed that only two animal specimens (bovine and chicken) gave clear RNA patterns. Of 78 human specimens 28 (36%) were rotavirus-positive.

Both Ridascreen rotavirus and Rotaclone exhibited a 100% correlation between the H_2O and kit diluent. However, when the astrovirus kits were assessed, there appeared to be a number of false-positive results occurring suggesting that, when testing for astrovirus, it is essential to use only the kit buffer. Amongst 179 specimens from an outbreak of diarrhoea among food handlers, norovirus antigen was detected in 16/179 (8,9%) of cases after ELISA screening.

Capacity development
Three students completed first year training and received research protocol approval.

Research collaboration
Ongoing collaboration with WHO and the other Regional Laboratories, and with Dr Karen Keddy, Enteric Bacteria unit, NICD.

Science communication and research translation
Prof. Steele had several WHO health and science development consultancies, international workshops and international seminars. Dr Page has been an invited technical expert to WHO.

External income generated: R2.7 million

INFLAMMATION AND IMMUNITY RESEARCH UNIT

Director: Prof. R Anderson

Highlights
Highlights include the engineering of potassium transport gene knockout mutants of *Mycobacterium tuberculosis*, which will be used to probe the validity of mycobacterial potassium transporters as novel targets for drug and vaccine design; the identification of strategies to optimise the treatment of community-acquired pneumonia caused by the bacterial pathogen, *Streptococcus pneumoniae*, a common cause of mortality or morbidity in the very young, the elderly, and those infected with HIV; and the documentation of the mechanisms by which inadvertent exposure to heavy metals in the workplace or environment may compromise innate host defences.

During the past year we have focused on identifying those classes of conventional antimicrobial agents which directly target pneumolysin production by clinical isolates of the pneumococcus. Of particular interest was the observation that macrolides, at sub-minimal inhibitory concentrations, inhibited the production of pneumolysin by both macrolide-susceptible and macrolide-resistant (expression of ribosomal methylase or efflux pump genes) strains of the pneumococcus. These observations may explain the benefit of combination therapy of a beta-lactam with a macrolide on the outcome of bacteremic pneumococcal pneumonia, as well as the so-called '*in vivo*/*in vitro* paradox', whereby relatively few failures of macrolide therapy have been noted, even in patients with pneumococcal pneumonia who are infected with macrolide-resistant pneumococci.

Researchers studying the interaction of heavy metals of industrial and occupational significance, as well as cigarette smoke, with cellular and humoral components of innate host defence have identified several unusual mechanisms by which heavy metals, more specifically cobalt, palladium, platinum and vanadium, interact with human neutrophils to increase the reactivity, as opposed to the generation of toxic reactive oxidants. We have discovered that palladium (as well as cigarette smoke) inactivates key mediators of innate host defence of both endogenous and microbial origin.

Capacity development
Training University of Pretoria-registered postgraduate students. Training courses and updates on laboratory equipment, methodology and applications. Sophisticated equipment housed in the unit, as well as research supervision, guidance and equipment is made available to researchers from other academic departments at University of Pretoria, other institutions (University of Limpopo, Tswane University of Technology, University of the Witwatersrand) and HDUs.

Research collaboration
Collaborations include the University of the Witwatersrand/NHLS Central/NICD/Baragwanath Hospital (Prof. V Mizrahi, Prof. K Klugman, Prof. C Feldman, Prof. G Richards, Prof. M Tikly), the unit also has close working relationships with researchers at TUT (Prof. L Smith) and with the Turfloop/MEDUNSA Campuses of the University of Limpopo (Ms V Thaver/Prof. L Mampuru). Dr H Boshoff (NIH, USA), Prof. NG Stoker (St George's Hospital Medical School, London, UK), and Prof. TJ Mitchell (University of Glasgow, UK).

Science communication and research translation
Communication is achieved through publications and congress presentations.

External income generated: R150 000

RESPIRATORY AND MENINGEAL PATHOGENS RESEARCH UNIT

Director: Prof. Keith Klugman, Co-Director Dr Shabir Mahdi

Highlights

Prof. Klugman was given Honorary Membership of the South African Paediatric Association in 2006. Prof. Shabir Madhi was awarded the European Society for Infectious Diseases Young Investigators Award for 2006. He delivered an Invited Lecture on Paediatric Grand Rounds, SUNY Downstate Medical Center, Brooklyn in April 2006. Linda de Gouveia was an invited lecturer for the South African Field and Laboratory Programme, Short Course, Combined Epidemiology and Laboratory Track, 24 May 2006, NICD.

An analysis of combination therapy for pneumococcal pneumonia showed that this was associated with decreased mortality in severely ill patients and was published in 2004.

Following our initial studies on the long-term level of protection afforded by Hib vaccine in HIV-infected children, a national study on the effect of HibCV on the burden of invasive Hib disease in South Africa was published in the *WHO Bulletin* in 2006.

In a study of pneumococcal pneumonia, over 600 isolates have been characterised by pulsed-field gel electrophoresis and over 40 representative isolates of interest were further characterised by multi-locus sequence typing. The results of this study indicate that for each of the 5 serogroups studied (A, B, C, W135 and Y) hypervirulent clones/clonal complexes, known to have repeatedly caused epidemics and outbreaks worldwide, are circulating in the South African population. The continuous monitoring of the changing epidemiology in South Africa of the clonal composition of meningococci has direct implications for public health decisions, with regard to the development of effective control and intervention strategies.

Capacity development

Ms Linda de Gouveia attended seminars on data management and analysis, leadership and business skills development. Ms Azola Fali attended training on Gelcompar II software by Applied Maths (Belgium).

Research collaboration

Dr Ken Hamese, Consultant Paediatrician, Polokwane; Dr Andrew Whitelaw, Microbiology, Red Cross Hospital; Dr Rena Hoffman, Tygerberg Hospital; Dr Elizabeth Wasserman, Tygerberg Hospital; Prof. John Frean, NICD; Dr Gavin Churchyard, Aurum Health Research.

Science communication and research translation

Linda de Gouveia as a Laboratory Expert for WHO-AFRO trained 10 laboratory technicians from Uíge province, Angola. RMPRU hosted and assisted in the facilitation of the laboratory practical sessions for the laboratory track of the South African Field and Laboratory Programme and took part in training workshops or site visits to laboratories throughout the country, co-ordinated by the NICD.

MALARIA RESEARCH LEAD PROGRAMME

Acting Director: Dr Raj Maharaj

Highlights

Dr I Kleinschmidt was appointed President of the South African Statistical Association. Dr R Maharaj has been appointed as the chairperson of the WHO Committee on Indoor Residual Spraying, as well as an Advisor to the Regional Director of the WHO (AFRO).

As a result of the tremendous success of the malaria control component of the Lubombo Spatial Development Initiative (LSDI) in Maputo Province, a Global Fund allocation was made for the extension of the project into Gaza Province, Mozambique. Malaria control infrastructure has been set up in collaboration with the Mozambiquan Ministry of Health. Vector-control interventions are being implemented to reduce malaria transmissions by 30% over the next five years.

As part of the Innovative Vector Control Consortium (IVCC), funded by the Bill and Melinda Gates Foundation, the lead programme is involved in the screening of indigenous plants for biological activity against the vectors of malaria transmitting mosquitoes.

Capacity development

F Maartens attended the European Course in Tropical Epidemiology in September 2006 at the University of Liverpool in the UK. Lawrence Kazambe completed a PhD in Statistics through the University of KwaZulu-Natal.

Research collaboration

Dr Gupta (CDRI, MRC, India); Dr Bharti Odhav (Durban University of Technology); Prof. Peter Folb; Dr Calley Roper (London School of Hygiene and Tropical Medicine); Dr Tom Smith (Swiss Tropical Institute); Dr Karen Barnes (University of Cape Town).

Science communication and research translation

The programme has published 22 papers in the past year. Participation in policy meetings at the 56th Regional Committee for Africa Health Ministers Meeting in Addis Ababa in September 2006 influenced the decision to continue the use of DDT in Africa for malaria control purposes. The experiences of the LSDI helped to shape policy in favour of the use of DDT and influenced the decision of WHO to endorse residual indoor spraying with DDT globally in malaria-endemic areas.

External income generated: R50 575 504

CARDIOVASCULAR DISEASE AND DIABETES

EXERCISE SCIENCE AND SPORTS MEDICINE RESEARCH UNIT

Director: Prof. Tim Noakes

Highlights

Prof. Vicki Lambert hosted the Centers for Disease Control International Union for Health Promotion Education International Physical Activity and Public Health Course for the Africa region. Working with the MRC Chronic Diseases of Lifestyle Research unit, members of the unit have been working on a systematic review for WHO of best practice interventions for implementing the WHO Global Strategy on Diet, Physical Activity and Health. WHO launched the *Best Practice* report in May of 2007.

At the 30th Anniversary Conference on Science and Medicine of the Marathon held in conjunction with the 2006 Chicago Marathon, ESSM members were invited to provide state-of-the-art lectures on muscle cramping during exercise, guidelines for fluid ingestion during exercise, management of post-exercise collapse and neural control of exercise performance.

The unit has been involved with numerous Discovery Vitality health awareness tools, some of which are summarised below.

The 'Risk Related Age' model was launched as one of the Discovery Vitality health awareness tools, and members are able to complete this assessment, with appropriate feedback, online. A systematic review and meta-analysis explored risk factors, physical inactivity, body mass index (BMI), smoking behaviour, fruit and vegetable intake, blood cholesterol levels, alcohol intake and hypertension.

The '10 000 steps' campaign, launched in 2006, encourages individuals to accumulate 10 000 steps per day. ESSM developed the model intervention for Discovery Vitality, which now rewards members based on the number of steps they accumulate each day. Two preliminary research studies were conducted and investigated (1) whether 10 000 steps was equivalent to 30 minutes of moderate intensity physical activity per day and (2) whether access to and the use of pedometers has an effect on adherence, self-efficacy and weight loss in persons entering a multidisciplinary weight management programme. Preliminary findings from the first study was that 10 000 steps exceeded the recommendations of 30 minutes of daily moderate physical activity.

Discovery Index: through joint planning with industry partner Discovery Health, the unit developed a series of linked questionnaires building on existing instruments including the Discovery Age and expanding these for the Pharmacy Network and Corporate markets. A telephone-based survey was conducted in a random sample of Discovery Health Vitality members ($N = 1\ 906$) and this will be compared to those from the corporate wellness data.

Capacity development

Ms Zandile Mcize received a R60 000 bursary from the Ziphele Mbambo Memorial Scholarship Fund for a PhD study on *Instruments for measuring dietary intake and physical activity, knowledge attitudes, and health behaviours in South African mothers and their daughters*. The Fund was set up in memory of Ziphele Mbambo, who was tragically murdered before he could make a meaningful contribution to the field of sports science.

A proposal for evaluating the Community Health Intervention Programmes (CHIPs) and effectiveness in the implementation of the CHIPs programmes was developed. In addition, focus groups comprised of the teachers who were trained and are responsible for the ongoing implementation. The CHIPs (Healthnutz) groups were conducted to gain insight into factors associated with successful physical activity intervention. Preliminary data analysis has been completed on the situational analysis and the results were presented at the National Health Promoting Schools Conference in Cape Town in September 2006. Learners receiving physical activity intervention demonstrated significantly greater improvements in health-related fitness compared to children from control schools, after only 2 months of intervention.

Research collaboration

Professors Schwellnus and Derman and Dr Collins are part of an international collaboration, organised by the International Olympic Committee, to study the pathogenesis, pathology, treatment and prevention of tendon injuries in sport. This follows from the identification by Dr Collins and his group of two genes (COL5AI and tenascin-C) linked to Achilles tendinosis. Very recently, Dr Collins' group has confirmed that the same genes also predict this risk of tendon injury in another (Australian) population, confirming the universal applicability of their findings.

The director has initiated an international collaboration with groups of scientists in France, Australia, Finland and South Africa whose expertise is in the neuromuscular control of human exercise performance, a discipline formerly known as 'motor control'. The initial focus of the group will be to produce a review article describing all the evidence that human exercise performance is regulated by the brain through alterations in the extent of skeletal muscle recruitment. The rate of heat storage mediates an anticipatory reduction in exercise intensity during cycling at a fixed rating of perceived exertion. The goal is to counter-

balance the prevailing opinion that human exercise performance is regulated by the cardiovascular system and terminates when the cardiovascular response becomes inadequate to provide sufficient oxygen to the exercising muscles.

The director gave his inaugural lecture as Visiting Professor at the University of Glasgow in October 2006. As a result of this collaboration, a joint University of Cape Town/University of Glasgow proposal has been submitted to the Royal Society to hold a workshop in Cape Town to define the nature of this collaboration and how it can be advanced for the benefit of both groups.

Science communication and research translation

Development of a relationship with LoveLife, through which the unit (ESSM) will provide content for the sporting programmes provided by LoveLife to 600 000 South African learners predominantly in rural, under-serviced areas, was successful.

The unit's International Cricket Council (ICC)-accredited laboratory for the evaluation of bowlers with suspicious bowling actions evaluated a number of international bowlers during the year. In addition, the ESSM re-trained a South African spin bowler so that his action could fall within the legal range. During this process, it was noticed that an illusion (caused by a large carrying angle in the forearm) is the principle reason why cricket umpires believe that they can detect a thrown delivery with the naked eye. It showed that this is impossible, since rotation of the elbow during the delivery would require the umpire to be in at least three different positions during the bowler's delivery action.

With Ian MacFarlane of the Cape Town Medi-Spa, research is under way to make bio-feedback accessible to poverty-stricken learners in an effort to overcome the spiralling violence and drug abuse prevalent in these communities. The research is aimed at measuring brain-body responses during a cognitive task before initiating this programme into township communities. These measurements will be taken again after every month the learners have completed training at their respective schools.

Members of the unit gave talks at public workshops for the *Cape Argus* Pick 'n Pay Cycle Tour 2007 and the Two Oceans Marathon. Professors Noakes and Schwellnus and Dr Ross Tucker spoke at the Two Oceans workshop on: *Optimal fluid intake* (Professor Noakes), *Latest findings on cramping and how to avoid common injuries* (Professor Schwellnus), *Training perspectives: Important issues* (Dr Tucker). Professor Noakes was a keynote speaker on the topic *A balanced lifestyle: What is it?* at the Western Cape Education Department's Life Orientation mini-congress on 2 February 2007. This formed part of the department's *Life orientation in the school curriculum* conference. Prof. Noakes gives a weekly radio interview on Friday mornings on Radio CCFM on various sports medicine topics.

External income generated: R2 569 862

INTER-UNIVERSITY CAPE HEART RESEARCH GROUP

Director: Prof. Peter Zilla

Highlights

In 2006 President Thabo Mbeki awarded Prof. Lionel Opie with the Order of Mapungubwe in acknowledgement of his major contributions to the advancement of research in cardiology.

A substantial reduction in intimal hyperplasia in a vein graft in the peripheral position was achieved through the use of a novel external stent. The involvement of two critical growth factors in guiding the invasion of peripheral blood monocytes was discovered and the mechanism partially delineated. Precise growth factor dosages required for neo-vascularisation of polymeric scaffolds have been defined.

Capacity development

Several staff attended the UCT animal accreditation course on humane use and care of laboratory animals. Ms Lacerda also attended a course on flow cytometry analysis at the University of Stellenbosch. The group also promotes the education of those who became academic cardiologists, both from the UK as well as South Africa. A combined UK-SA senior registrars in cardiology meeting takes place in December of every year.

Research collaboration

With the University of Ulm in Germany on the Analysis of cardiac stem cells in patients with dilated cardiomyopathy, and with the University of Roche, Germany, around the Provision of mehangioblast clones for stem cell transplantation; with the Joslin Diabetes Centre in Boston on the Generation of skeletal muscle specific cytokine knockouts; and with USARIEM, Natick, USA on Cytokine signalling in satellite cell activation, proliferation and differentiation.

Science communication and research translation

As a supplement to the *SA Heart Journal*, the European guidelines on cardiovascular disease prevention in clinical practice – guide to lipid management was published in 2006.

DIABETES RESEARCH GROUP

Specialist Scientist: Dr Abram Madiehe

Achievements in Health Research

Drs Abram Madiehe and Amanda Skepu were awarded extraordinary senior lectureship and extraordinary lectureship, respectively, by the University of the Western Cape.

Research collaboration

The group has a strong collaboration with the Biotechnology Department at University of the Western Cape and benefits from access to critical equipment at the university and also has access to postgraduate students. The Diabetes Research Group also has a collaboration with the Flanders Inter-university Institute of Biotechnology, affiliated to the University of Ghent, Belgium, receiving vectors and clones to test in their system and to measure the lepton binding domain in serum and culture media.

External income generated: R464 000

CHRONIC DISEASES OF LIFESTYLE RESEARCH UNIT

Acting Director: Dr Nelia Steyn

Highlights

A Salt Sensitivity study (randomised controlled trial) with black patients with hypertension in Langa, Cape Town showed that the healthier (low salt, high potassium) foods (bread, margarine, salt substitute) reduced blood pressure significantly compared with the control group.

In South Africa stunted children are found in homes with obese mothers who are hypertensive and have diabetes; thus formative assessment of all the factors of undesirable behaviours of schoolchildren and their families in urban and rural areas is under way.

Capacity development

During 2006 all the Nutrition Interns attended the Biennial Nutrition Congress in Port Elizabeth to present their findings.

Research collaboration

The unit is closely collaborating with the Western Cape Department of Education for a school-based intervention programme involving diet and physical activity. Other collaborators include the Heart and Stroke Foundation of South Africa, the Diabetes Association of SA, and the Universities of Cape Town and the Western Cape. The smoking cessation project is a collaboration with the National and Provincial Health Departments, the Department of Obstetrics and Gynaecology of Tygerberg Hospital, the International School of Public Health at Umeå University in Sweden, Richard Windsor (a leading researcher from George Washington University in the USA) and the University of Maastricht in Holland.

Science communication and research translation

The results of the audit of primary health care facilities by Mrs Whadiah Parker have been presented to the new director of chronic diseases at the National Department of Health and to Western Cape health authorities. The smoking cessation intervention has been developed and will be implemented in selected antenatal clinics over the course of 2007. A central component of the intervention is the training of the midwives, nurses and doctors in using an evidence-based smoking cessation protocol, the so-called 5As model for brief smoking cessation counselling as outlined in the US Clinical Practice Guideline Treating Tobacco Use and Dependence.

A technical report on Dietary Changes and the Health Transition in South Africa: Implications for Health Policy was published in 2006.

External income generated: R1 910 000

CRIME, VIOLENCE AND INJURY

CRIME, VIOLENCE AND INJURY LEAD PROGRAMME

Director: Prof. Mohamed Seedat

Highlights

The programme successfully hosted the 8th World Conference on Injury Prevention and Safety Promotion, held in Durban in 2006. Two of the three editions of the journal *African Safety Promotion* that were published in 2006 contained the keynote and plenary speeches of the Durban World Conference. The articles published were disseminated to all conference delegates as well as the more than 500 scientists on the journal's mailing list. The programme further assisted the Child Accident Prevention Foundation of South Africa in co-hosting the 15th International Safe Communities Conference in Cape Town in 2006.

It is estimated that between 60 000 and 70 000 injury deaths occur annually, making injuries the fourth major source of death in South Africa. Further estimations show that for every violent death, there are 20 non-fatal accidents which result in some form of disability. In 2004 the major contributors to the injury burden comprised homicide (45%), transport-related incidents (27%), suicide (10%) and other unintentional injuries like burns and poisonings (10%). The bulk of the injury burden is concentrated in low-income communities where a disproportionate share of such injury risk is located. The Childhood Burns project was developed in response to the lacunae of systematic non-fatal burn injury data. The 2006 research output for this study was also used in a keynote address on Childhood Burns: Emerging Evidence for Prevention Action and Policy in South Africa, presented at the 8th World Conference in April. The principal researcher was also invited to serve on the Burns and Scalds WHO panel for the World Report on Child and Adolescent Injury Prevention.

Research collaboration

Collaboration with the Child Accident Prevention Foundation on the Childhood Burns Study and the Home Visitation (Child Survival) Project and with the WHO Poisonings Expert Group on the epidemiology of childhood poisoning injuries in South Africa.

Science communication and research translation

The Durban World Conference hosted by the programme led to 224 press clippings as well as interviews and reports from more than 70 journalists who registered for the conference – in addition to the two editions of *African Safety Promotion* journal that mentioned the successes of the conference. A policy brief outlining the need for paraffin packaging to be made safer for children was published in January 2007. Three others with the following topics: 'Violence', 'Keeping pedestrians safe' and 'Childhood Burns' were released at the 8th World Conference on Injury Prevention and Safety Promotion in 2006.

PUBLIC HEALTH RESEARCH

BIOSTATISTICS UNIT

Director: Dr Carl Lombard

Highlights

Dr Carl Lombard received an invitation to serve on the Statistical Expert Panel for the *International Journal of Tuberculosis* in June 2006. He also serves on the Data and Safety Monitoring Committee for a Family Health International (FHI) study. Lize van der Merwe was responsible for the finalisation of the statistical analysis for the update of the Cochrane review: Antiretrovirals for reducing the risk of mother-to-child transmission of HIV infection.

In collaboration with the John Snow Research and Training Institute, the Centers for Disease Control and Prevention (CDC), the Council for Health Service Accreditation of Southern Africa and the Biostatistics unit of the MRC, a National Injection Safety Survey was done in Public Hospitals of South Africa in 2006. This was done with approval from the Quality Assurance Directorate of the NDOH. The Biostatistics unit was responsible for the sampling design of the survey which consisted of 159 hospitals across all provinces.

Dr Rene English from the Lung Health Institute collaborated in a study to evaluate the diagnostic accuracy of the integrated Practical Approach to Lung Health in South Africa (PALSA) guideline in identifying patients requiring bacteriological screening for tuberculosis (TB), and to determine which clinical features best predict suspected and bacteriologically-confirmed TB among patients with respiratory symptoms. The nurse using the guideline identified 516 patients as TB suspects compared with 365 by the primary care physicians, representing a sensitivity of 76%, specificity of 77%, positive predictive value of 53%, negative predictive value of 90%. The study showed that the PALSA guideline is an effective screening tool for identifying patients requiring bacteriological screening for pulmonary tuberculosis in a primary care setting.

Housing is recognised to be one of the most powerful determinants of public health. Women, children, the elderly and the chronically ill are particularly vulnerable to housing-related health hazards, because of the high proportions of their time spent within the home environment. Under the umbrella of the Johannesburg-based World Health Organisation Collaborating Centre for Urban Health, a panel study of housing conditions and health status was initiated in Johannesburg in 2005. The overall study objective is to monitor change in housing conditions and health status in selected Johannesburg sites. During the pilot phase (2005) of the study, structured questionnaires were administered to a total of 584 household respondents from study sites that were selected to represent some of the main low-income housing types in Johannesburg (high-rise, degraded inner city, new low-cost, apartheid-era and informal settlement housing).

Capacity development

Belinda Phipson and Rebecca Shanmugam both obtained their MSc. The Biostatistics unit has close links with many universities across South Africa. Many of the unit's projects support postgraduate students. The biostatisticians provide advice on the protocol, and analysis of the study and in some cases handle the statistical analysis. This is a substantial input into the capacity development of researchers in South Africa. Statistical support given to postgraduate students: 78 studies from post graduate students were supported by the unit in 2006, 22 of them were PhD studies. Projects for the year 2006 amounted to 208.

Research collaboration

Dr Lize van der Merwe attended a workshop at the National Health Laboratory Services (NHLS) Genetics Laboratory; and the National Bioinformatics Network. The SUPPORT proposal, funded by the EU, involves 11 countries focusing on the implementation of policies in maternal and child health relevant to developing countries as well as tools and training for the conduct of trials of health systems interventions.

Science communication and research translation

The unit contributed to a policy brief: *Change the Package*, *Save a Life – A Child's Right to be Safe from Paraffin Poisoning*. Their research demonstrated the effectiveness of child-resistant containers in reducing ingestion, which could save at least 80 lives per year.

The research team with principal investigator Dr Lara Fairall from the Knowledge Translation unit at UCT was asked to introduce the PALSA intervention in the primary care clinics of the Western Cape using cluster randomised trials. The PALSA intervention was also extended to a PALSA PLUS intervention within the ARV roll-out programme in the Free State and evaluated within a randomised controlled trial. The nurses were trained in an integrated approach to the diagnosis and care of patients with both respiratory diseases and HIV.

Prof. Stefan Maritz collaborated with Prof. Donald from Stellenbosch University and Dr D Maher from the Stop TB Department, WHO on a review of Ethambutol (EMB) dosage for the treatment of tuberculosis in children.

External income generated: R377 000

BURDEN OF DISEASE RESEARCH UNIT

Director: Prof. Debbie Bradshaw

Highlights

Prof. Debbie Bradshaw is a member of the Health Metrics Network Technical Advisory Group based within the WHO. Dr Rosana Norman is a member of the Air Quality Management Plan Health Working Group for the City of Cape Town. At the 19th World Diabetes Congress in Cape Town Prof. Bradshaw highlighted the impact of diabetes on the African continent.

In efforts to improve the health information system, the unit has provided technical support to the National Department of Health (NDOH) with its national health survey, the 2003 South Africa Demographic and Health Survey. This is the second national health survey following the first in 1998 and makes an important contribution as a central element of monitoring government programmes and their impact on population health. It also provides useful data to monitor trends in aspects of population policy, and should provide information regarding South Africa's progress towards meeting the Millennium Development Goals.

The second survey had more extensive questions around sexual behaviour, anthropometric measurements on children under 5 years, enhanced with questions on physical activity and micro-nutrient intake, and a chapter on the health and living conditions of older persons. The survey showed decreased prevalence of smoking in adult men, very high levels of physical inactivity among South African adults, and lack of knowledge regarding HIV and also some aspects of child health.

Progress has been made in the development of a mortality surveillance system to capture and collate cause of death data for public health use at the local level. It has been rolled out in the Boland-Overberg health region. Such a surveillance system has been particularly important to these health districts for purposes of monitoring and planning. Boland Overberg has been able to monitor the continued decline in the infant mortality rate. However, at the same time it has highlighted variations in the child mortality rates by sub-district. The City of Cape Town has been able to monitor a decline in the homicide rate between 2001 and 2004. However, the rates are still very high, particularly among young adult men.

Capacity development

A 1-day workshop was presented by Footprints Consultancy. The STATA programming workshop for basic biostatistics was presented by R Sayed and P Groenewald. Members of the unit are supervising four PhDs and two Masters projects. Dr Rosana Norman presented an Effective project planning and evaluation in health research skills building course.

Research collaboration

Prof. Bradshaw has participated in several technical meetings with officials in the National and Provincial Departments of Health. Dr Norman has contributed to the steering group of a WHO project to develop project management skills in health research. Support has been given to the Limpopo and Western Cape Departments of Health and the team of researchers at the Walter Sisulu University who are doing burden of disease studies in the Eastern Cape. Collaborations are under way with the Africa Centre and UCT's Centre for Actuarial Research.

Science communication and research translation

Burden of Disease research results have been summarised in straightforward terms for the SA Health*Info* website including causes of death, non-fatal outcomes and risk factors.

Prof. Bradshaw did several interviews with the media regarding burden of disease in South Africa. The unit has made presentations to local government, provincial government and national government. Two chapters were published in books and 2 lay publications were made during 2006. Four posters were presented at conferences (3 local conferences and 1 international conference) and 20 presentations were made at conferences (12 local, 8 international).

External income generated:
OrcMacro : R245 000
WCDoH : R259 265

HEALTH SYSTEMS RESEARCH UNIT

Director: Dr Mickey Chopra

Highlights

Lay health workers (LHWs) are increasingly being used to provide care and support, including for antiretroviral treatment, for people living with HIV/AIDS and their families or carers. Research by this unit has indicated that LHW interventions may be effective for health issues such as TB control and immunisation promotion.

Because of high defaulter rates, a new pilot TB programme has been initiated in Cape Town. The programme is based on the antiretroviral programme which has achieved high adherence rates and utilises home-based treatment support and adherence counselling to improve TB treatment outcomes. This unit will evaluate the processes and impacts of the pilot programme.

Capacity development

The unit ran a training workshop on qualitative research methods, the Health Systems Research Course, at the University of the Western Cape (UWC) and supervises 10 MSc and 4 PhD students.

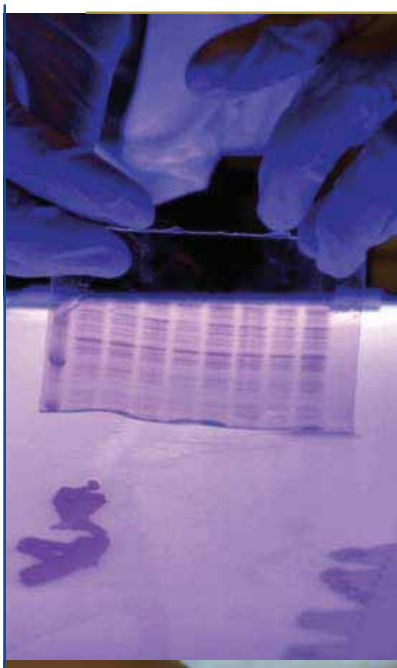
Research collaboration

With Health Systems Trust (HST) and UWC to evaluate a district-based intervention to introduce and support the introduction of integrated clinical guidelines and improve continuity of care. With the Adolescent Health unit at the University of Cape Town in an evaluation project of the peer educators' programme against HIV in high schools across the Western Cape. With WHO to develop and test a management tool to assess the level of integration of the prevention of mother-to-child transmission programme into the broader maternal and child health care system. The Alliance for Health Policy and Systems Research commissioned a systematic review of reviews on human resources for health.

Science communication and research translation

The unit has had another successful year of publications in high impact, international peer-reviewed journals such as the *American Journal of Public Health, British Medical Journal, Bulletin of WHO* and *Journal of Nutrition*. Dr Mickey Chopra made multiple conference presentations as well as plenary presentations at the International Obesity Conference held in Sydney, Australia. He was also an Invited Speaker at an International Symposium at the 2006 International AIDS Conference in Toronto. A 5-country review of the Child Health Day outreach programme was conducted in Uganda, Ethiopia, Zambia, Tanzania and Madagascar and was completed in May 2007.

External income generated: R7 million



HEALTH POLICY RESEARCH GROUP

Director: Prof. Lucy Gilson

Highlights

Members from the unit were appointed hub co-ordinators for the Knowledge Network on Health Systems of WHO's Commission on the Social Determinants of Health. The unit is leading a bid for, and securing funding from, the Canadian Teesdale-Corti Global health Research partnership programme for a 4-year term of research entitled Researching Equity and Access to Health Care (REACH). Prof. Lucy Gilson received a research rating of B3 from the South African National Research Foundation in early 2006 and was appointed Professor of Health Policy and Systems by the London School of Hygiene and Tropical Medicine. Prof. Schneider co-edited a special supplement of *Acta Academica* entitled *Perspectives on public sector antiretroviral access*.

Capacity development

Our capacity development and networking activities include four specifically related to the field of policy analysis, an area in which the group is currently one of the very few skilled institutions within Africa: mentoring support to a new sub-directorate of policy analysis within the national Department of Health; and the development of a proposal for a policy analysis capacity building programme in this field for Africa. The development of a second programme of capacity building in the field of Policy Analysis for the Regional Network on Equity in Health (EQUINET), in collaboration with several regional organisations.

Research collaboration

Exploring the influence of workplace trust over health worker motivation; developing a model for wider inquiry in South Africa; HEU, Tanzania; Ifakara Health and Research Development Centre and the Economic and Social Research Foundation, LSHTM. Review of the role of non-state provision in the health system, LSHTM. Analysis of public-private interactions in South Africa and their potential role in tackling equity problems within the health system; A discourse analysis focusing on Public Private Interactions in South Africa, Equinet; Assessment of geographic patterns of deprivation and health inequities in South Africa,

Namibia, Zambia and Tanzania, Health Economics Unit, Equinet; Investigation of models, strategies and indicators to measure the extent to which equity is being realised in the allocation of PHC resources, HEU with Curtin University; Developing trade-sensitive health policy, Southern and East African Trade Information and Negotiations Initiative (SEATINI) and Equinet; assessment of private wards in public hospitals, HEU, LSHTM; exploration of transaction cost economic approaches to TB programme organisation, TDR, WHO Queen Margaret College, Edinburgh.

Science communication and research translation

Jane Goudge works on a Department of Social Welfare and Development project to consider policy options around providing social security benefits to people with chronic diseases. Loveday Penn-Kekana made a presentation on CHP's human resource work to a Gauteng Health Portfolio Committee workshop on The shortage of health professionals in the province. Helen Schneider visited the – NMF Lusikisiki HIV/AIDS Médecins sans Frontières programme to assist in preparing a summary report and participated in a regional consultation on global public health goods organised by the Swedish Agency for International Development. Lucy Gilson and Jane Doherty have participated in WHO's Commission on the Social Determinants of Health as hub co-ordinators for the Knowledge Network on Health Systems. Helen Schneider sits on a panel for the Alliance for Health Policy and Systems Research's Biennial Review.

RURAL PUBLIC HEALTH & HEALTH TRANSITION RESEARCH UNIT

Director: Prof. Stephen Tollman

Highlights:

The unit now has almost 15 years of trend data spanning socio-political change in South Africa and the emergence of the HIV/AIDS pandemic. This includes mortality and cause-of-death, fertility patterns, health and migration, changing family and household structures, and socio-economic impacts of illness on households.

Projects in the field include: (i) Child & adolescent growth survey with HIV testing of children under 5 years and (ii) the Kulani Child Health and Resilience Project which aims to develop and evaluate a sustainable primary school-based intervention that decreases emotional and behavioural problems, encourages resilience and improves the school environment.

Stephen Tollman is Co-principal Investigator (PI) for an INDEPTH-World Health Organisation (WHO) collaboration examining physical and cognitive function of older adults in nine health and demographic surveillance sites in Africa and Asia.

Mark Collinson is PI for the INDEPTH Migration and Urbanisation research initiative involving analysis of data from a number of demographic surveillance sites in Africa and Asia. Preparation of chapters for an INDEPTH book publication is underway.

Grants awarded to the unit: by the South African AIDS Vaccine Initiative (SAAVI) to develop the Agincourt study site for phase IIb/III vaccine trials; by the European Union for a PIME study (HIV prevalence, incidence and molecular epidemiology); by Anglo American Chairman's Fund to build a platform for the evaluation of antiretroviral roll-out.

Capacity development

There are currently three PhD graduates, one PhD submitted, and eight candidates enrolled. The Wellcome Trust has awarded funding for five Masters Research Fellowships. Postdoctoral fellows have produced a number of peer-reviewed publications, and contributed to curriculum development and teaching in demography, population studies, etc.

Collaboration

Stephen Tollman and Mark Collinson lead INDEPTH initiatives involving several health and demographic surveillance sites in Africa and Asia, in adult health and aging, and migration and urbanisation respectively.

Science communication and research translation

A series of monographs on migration, changing settlement patterns, and migration, have been produced with Statistics South Africa. They combine data from the National Census 2001 and the unit's health and demographic surveillance system. These reports, with a clear policy orientation, have been presented to the chairperson of the Social Cluster, a policy-making body in the Office of the Presidency, by the Statistician General, Mr Pali Lehohla. This national level interaction impacts positively on the region by contributing to planning for the 2010 censuses in SADC countries.

External income generated: R17 247 287

SOUTH AFRICAN COCHRANE CENTRE

Director: Prof. Jimmy Volmink

Highlights

Dr Jonathan Ipser from the University of Stellenbosch, who received training through the HIV/AIDS Mentoring Programme, won the Kenneth Warren Prize. This prize is awarded by the Cochrane Collaboration to Cochrane review authors whose reviews are of high methodological quality and relevant to health problems in developing countries. The SACC's proposal to establish a registry of randomised trials on HIV/AIDS, TB and Malaria (conducted in Africa) was selected for funding by the EDCTP. The Centre serves on the WHO's International Clinical Trials Registry Platform and on various Cochrane Collaboration Advisory Groups.

Capacity development

Seven participants from Kenya, Malawi, Nigeria, Uganda and Zimbabwe completed the Reviews for Africa (RAP) protocol development course in September 2006. The SACC also co-ordinates a mentoring programme for novice Cochrane authors in Africa working in the field of HIV. Mentorship is being provided to authors from South Africa, Kenya, Nigeria, Gambia, the Cameroon and Uganda. In May 2006 the centre facilitated a protocol development and RevMan workshop which was attended by participants from South Africa, Kenya and Nigeria. The SACC staff also facilitated sessions at the Reproductive Health and HIV Annual Research Methods Course, the Effective Care Research unit Research Methods Course, and conducted an intensive research synthesis course for MRC interns in February 2007. Monthly systematic review problem-busting sessions are held for new authors of Cochrane reviews or researchers interested in conducting a Cochrane review. SACC staff presented numerous sessions on searching electronic databases for MRC staff and university students.

Research collaboration

The SACC received funding from EDCTP to establish a registry of randomised trials (conducted in Africa) focusing on HIV/AIDS, TB and Malaria. In collaboration with international partners the SACC is part of the SUPPORT Collaboration (SUPporting POlicy relevant Reviews and Trials) which aims to improve evidence-based policy relating to maternal and child health in low- and middle-income countries. A Nigerian branch of the SACC was established in 2006. The SACC is a collaborator in the Effective Health Care Research Programme Consortium.

Science communication and research translation

The centre produces and disseminates two newsletters annually and awareness-raising brochures on evidence-based health. An initiative called STEPP (Supporting Translation of Evidence into Policy and Practice) is done in collaboration with the Western Cape Department of Health in an effort to strengthen evidence-based policy in the Western Cape. Nationally, the Centre is contributing to the South African Academy of Science consensus study entitled Nutritional influences on the human immune system, which aims to clarify the evidence on the effects of nutritional supplementation outcomes in people suffering from HIV/AIDS and tuberculosis.

Income generated: R3.8 million

TELEMEDICINE LEAD PROGRAMME

Director: Dr Moretlo Molefi

Highlights

Dr Molefi has been appointed to the Action Team Six of the United Nations (UN-COPUOS) on the use of space-based technologies to improve Public Health Services and to NEPAD in the Telemedicine Task Force (TTF) set up by the European Union (EU).

This project will be implemented in the KwaZulu-Natal Province. The unit has been awarded R750 000 for the monitoring and evaluation of the existing and planned telehealth systems in the Eastern Cape by the Provincial Department of Health. With CyberMDx a pilot project will start in South Africa which will evaluate the potential of the MDxNet Tele Ultrasound Machine. The Innovation Fund Primary Healthcare Telemedicine workstation project is a user-friendly telemedicine workstation that addresses the health care needs in rural underserved areas in South Africa.

Capacity development

One Masters Degree complete; and 1 under way.

Research collaboration

The SumbandilaSat project of DST aims to evaluate the use of satellite link-up as a communication medium to serve

primary health care in rural underserved areas without connectivity. World Vision International requested that the MRC collaborate with them on the use of telemedicine to address psycho-social concerns in the fight against HIV/AIDS.

Science communication and research translation

Dr Molefi presented a paper on the decentralisation of AIDS testing and treatment through the rapid deployment of pathology laboratories at the 11th ISfTeH International Conference, as well as the use of ICTs in health care delivery and consumer knowledge diffusion and the psycho-social and ethical implications for the treatment, care and prevention of HIV/AIDS in Africa.

External income generated: R5.75 million

HEALTH PROMOTION

ALCOHOL AND DRUG ABUSE RESEARCH UNIT

Director: Prof. Charles Parry

Highlights

Ms Bronwyn Myers was Rapporteur at the WHO Technical Consultation on Assessment of Prevention and Treatment Systems for Substance Use Disorders. Prof. Charles Parry was appointed to the WHO Expert Panel on Drug Dependence and Alcohol Problems. Mr Andreas Plüddemann was a member of the 2007 conference organising committee for the SA Association of Child and Adolescent Psychiatry & Allied Professions Conference. In 2007 Prof. Parry was also appointed as Extraordinary Professor in the Department of Psychiatry at Stellenbosch University for a period of 3 years.

Qualitative research methods were used to assess HIV risk behaviour (drug use and sexual behaviour) among drug-using men who have sex with men, commercial sex workers, injecting drug users and non-injecting drug users. A clear relationship existed between drug use and sexual risk behaviour including multiple partners, group sex and irregular use of condoms.

In a study on methamphetamine use and associated health risks among adolescents, 9% of the 1 561 students surveyed in phase I had used methamphetamine at least once in their life (LT). Of these students 20% had used the drug in the past 7 days. In addition, a number of risk factors were investigated using the Problem Oriented Screening Instrument for Teenagers (POSIT). T-tests showed that LT methamphetamine users had significantly higher scores (minimum $P < 0.05$) on the 6 POSIT risk scales than those who had used other substances. The proportion of methamphetamine users who had sex at least once was significantly higher (45%) compared with users of other substances (23%).

A study showed that the risk of having an alcohol-exposed pregnancy was significantly higher among rural women primarily due to their greater involvement in the use and misuse of alcohol and lesser involvement in the use of family planning methods. Demographic factors (especially socio-economic status and education), levels of substance use (tobacco and alcohol), fertility-related norms, spousal/partner characteristics and community factors are all multiple level factors associated with the women's risk of having alcohol-exposed pregnancies.

Capacity development

Three postgraduate students and one intern were under supervision within the unit during the past year, with three staff members also studying towards higher degrees. Prof. Parry and Ms Myers taught a graduate course on Alcohol Abuse in South Africa at Stellenbosch University. Ms Tara Carney and Ms Myers developed and presented a course on Best Practice Counselling in a call centre to school counsellors, volunteers and staff members of the Drug Education Agency.

Research collaboration

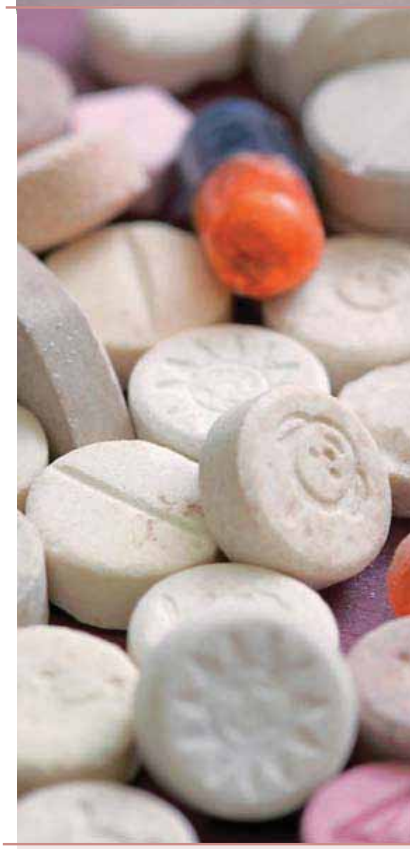
The unit works collaboratively with the CDC in the area of drugs and HIV. ADARU also hosted a high-level joint workshop in August 2006 with the CDC that involved a broad range of local and national experts. Prof. Parry is on the RTI International Advisory Board for the Pretoria Women's Co-operative study. The collaboration led to a NIDA supplementary grant which is supporting one of ADARU's staff members to do fieldwork for his PhD. The South African Community Epidemiology Network on Drug Use (SACENDU) project is part of an ongoing collaboration with the Child, Youth and Family Directorate of the HSRC.

Science communication and research translation

Over 100 contacts with the media including Carte Blanche about drunk driving and another on treatment effectiveness; an interview by the *Wall Street Journal* on methamphetamine use in the Western Cape; an interview by BBC World on Foetal Alcohol Syndrome; an interview by 3rd Degree on substance abuse and HIV; and, a documentary on methamphetamine that was screened both at a film festival as well as on M-Net.

Prof. Parry and Mr Plüddemann presented findings from the SACENDU project to the Departments of Health and of Social Development.

External income generated: R5 394 247



HEALTH PROMOTION RESEARCH AND DEVELOPMENT UNIT

Director: Prof. Priscilla Reddy

Highlights

Prof. Priscilla Reddy is a Member of the Academy of Science of South Africa, and was appointed to the Academy's Council in 2006. She serves as the Associate Editor of the journal *Health Education Research*. Prof. Reddy also serves the Institute of Medicine (IOM) as a member of the core committee and prevention sub-committee for the assessment of programmes and methods implemented under the HIV/AIDS, Tuberculosis and Malaria Act of 2003 (USA), which established the President's Emergency Plan for AIDS Relief (PEPFAR). Drs Sifunda and James both successfully completed their PhDs at Maastricht University in the Netherlands.

The year 2006 was a historic year for the Health Promotion Research & Development unit as two doctoral level behavioural scientists joined the unit. This is the first year since the unit's inception that it has acquired a critical mass of scientists. Furthermore, 2006 saw the completion of several large research projects. These included research on the development and testing of interventions using the randomised control trial method. These studies were made possible through internationally competitive grants from the National Institutes of Health (USA) and the Population Council (USA). These study settings included developing and testing interventions for schools (tobacco control), prisons (HIV prevention) and community settings (Grandparents and AIDS Orphans). Another highlight for 2006 was the initiation of the first bio-behavioural intervention study in the unit. This is a randomised control trial of HIV-negative women with both biological and self-reported behavioural outcomes (NIH-funded). Our research has expanded to include community participation in vaccine trials and further developments in the science of men's health and behaviour.

Drs Sifunda and James are also contributing to broadening the behavioural science research agenda, with Dr Sifunda focusing on men's health and behaviour and Dr James establishing an office in Pietermaritzburg, exploring behavioural issues relating to antiretroviral utilisation behaviour amongst other studies.

Capacity development

The unit continues to apply for grants to meet the research needs for doctoral studies, i.e. 4-year grants with the potential for a minimum of 5 publications. In addition to registering for doctoral studies, the unit runs courses in Statistics, Intervention Mapping, and Research Methods with faculties at Columbia University, Maastricht University and others. Doctoral candidates also attended courses at the Summer School programme of Maastricht University. Currently the unit has 6 doctoral candidates, 4 internal and 2 external. In addition, the unit is preparing 4 candidates to engage in Masters level studies. This preparation includes scientific reading, scientific writing and practical and academic skills in data collection including instrument development.

Research collaboration

The unit continues to share mutually beneficial partnerships with MEDUNSA, Emory University, Georgetown University, Michigan University, Maastricht University and more recently the University of Massachusetts, Amherst. Our efforts to strengthen community partnerships resulted in the signing of an MOU with the Eastern Cape House of Traditional Leaders. This relationship will enable the unit to establish appropriate research priorities and methodologies as well as enabling the development of sustainable projects in the event of creating evidence-based intervention programmes. The unit collaborated with the University of the Western Cape in 2006, jointly hosting the Health Promoting Schools Conference 2006.

Science communication and research translation

The year 2006 saw the end of an evaluation of the Life Skills Programme focusing on HIV/AIDS in KZN. The Department of Education was the prime stakeholder in this initiative. The research results were widely distributed, from province to parliament. The research findings demonstrated that, in order for the curriculum to make a difference to the psychosocial determinants of STIs and HIV among school-going youth, there needs to be full implementation of the curriculum. The modules that consist of teaching learners the skills to engage in safer sexual practices are key to the intervention. These findings have been recommended to the curriculum developers within the National Department of Education.

The unit provided the evidence necessary for facilitating the promulgation of the tobacco control legislation in 2007. This includes preventing the issue of 'smokeless' tobacco products such as snus as 'gateway drugs' for cigarettes to cause nicotine addiction in children.

External income generated
R5 772 300

CANCER

MOLECULAR HEPATOLOGY RESEARCH UNIT

Director: Prof. MC Kew

Highlights

The unit published the first successful attempt to develop an animal model for iron as a direct hepatocarcinogen. It also showed, for the first time, that the mutagenic effects of storage iron and the fungal toxin, aflatoxin B1, are synergistic. Prof. Kew delivered the first Professor N Madanagopalan Memorial Lecture at the 15th Indian National Association for the Study of the Liver meeting in Levorre, India, and was made an Honorary Member of the Indian National Association for the Study of the Liver. Prof. Kew was one of the editors of the official publication of the International Association for the Study of the Liver, *Liver International*. He also served on the Editorial Boards of the *Journal of Hepatology, Journal of Viral Hepatitis, Lancet Oncology* and *World Journal of Gastroenterology*; and on the International Advisory Board of the *Journal of Gastroenterology and Hepatology*. He was a member of the International Organising Committee of the 13th Triennial Meeting on Viral Hepatitis and Liver Disease held in Paris, France.

Research collaboration

Dr S Abel and Dr Lena Cunha in Maputo, Mozambique; Dr M Feilelson in Philadelphia, USA; Dr J Wands in Rhode Island, USA; Dr M Yu in Connecticut, USA; Dr N Herath in Queensland, Australia; Dr G Minuk in Ontario, Canada; Dr M Mizokami in Japan; and Dr G Francois in Antwerp, Belgium.

Science communication and research translation

The director delivered the annual AJ Orenstein Memorial Lecture in Johannesburg.

PROMEC UNIT

Acting Director: Prof. Wentzel Gelderblom

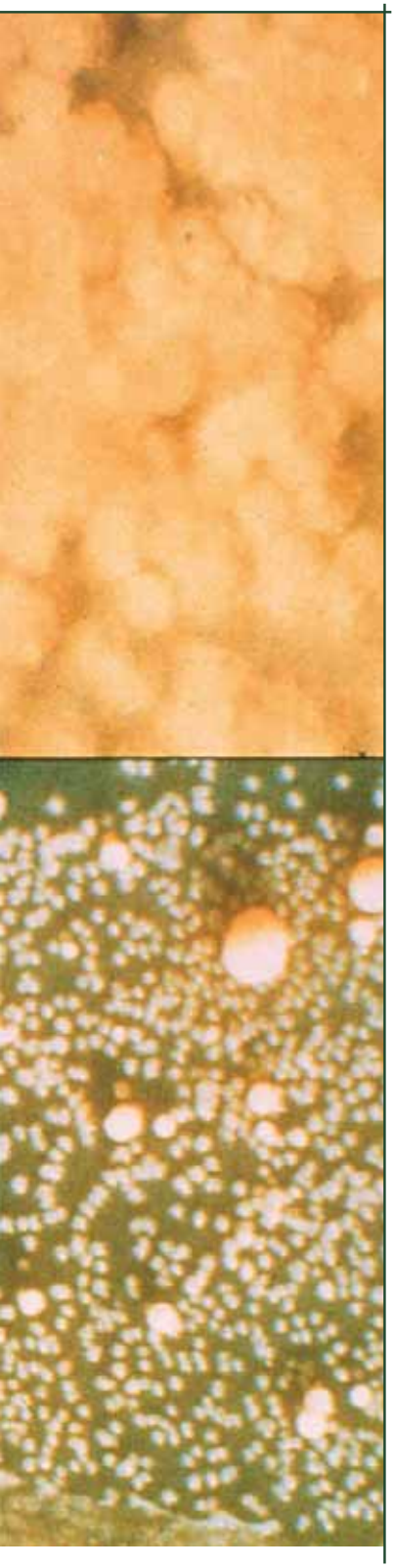
Highlights

Prof. WFO Marasas, former Director of the unit, was awarded a gold medal by the Academy of Science of South Africa for his excellent and innovative contributions in the field of fusarium taxonomy and mycotoxicology. This award is a well-deserved recognition of the major impact Prof. Marasas has made during his career of which more than 32 years were spent at the PROMEC unit of the MRC. Prof. Marasas published over 300 papers and has trained numerous MSc and PhD students from across the globe, including many African countries. Dr Wentzel Gelderblom was appointed Extraordinary Professor in the Department of Biochemistry, University of Stellenbosch for the period of 2006-2008 and Associate Editor of *Mycopathologia*. He was invited to serve on the NRF Biochemistry and Microbiology Review Panel. Dr JP Rheeder has been appointed to the Editorial Board of the newly established scientific journal *Asian Journal of Plant Pathology* for the period 2006–2008.

The mycotoxin patulin is produced by the fungus *Penicillium expansum* which occurs as a blue mould rot on apples. It is a frequent contaminant of processed apple juice and is a marker of the quality of apples used in the juice-manufacturing process. A small survey of 20 apple juice products purchased at random in Cesena, Italy and Tygerberg, Cape Town, South Africa revealed that although 11 of 12 Italian samples had no detectable levels of patulin (1 was slightly above the lowest EU regulatory limit of 10 ppb) five of the eight South African samples were all contaminated with patulin levels above 10 ppb. One sample had a level of 75 ppb, well above the South African regulated limit of 50 ppb. This result led to a more targeted investigation with 14 samples being purchased in the low-income areas in the northern suburbs of Cape Town where this initial contaminated sample was sourced. These samples confirmed that there might be a problem of mycotoxin contamination in apple juice products sold to low-income consumers because half of the samples showed patulin contamination of which 4 had levels well above the acceptable limit. The contaminated samples were found to be those packaged by small independent businesses and marketed at retail outlets the low-income areas of Cape Town. There appears to be a correlation between the quality of apple juice and the social status in Cape Town.

Capacity development

Ms NIM Somdyala participated in the 2006 International Union against Cancer (UICC) World Cancer Control Congress in Washington DC from 8 to 12 July 2006 and was invited by the International Society for Nurses in Cancer Care (ISNCC) in collaboration with the Canadian Association of Nurses in



Oncology (CANO) to act as chairperson of one session. She was also invited to present a plenary lecture at the 14th International Conference on Cancer Nursing in Toronto, Canada. Dr S Abel was awarded an International Investigator Opportunity Grant to attend the 5th Annual AACR International Conference on Cancer Chemoprevention.

Research collaboration

Dr C Abnet from the National Cancer Institute, USA in connection with determination of fumonisins in nail samples collected in China; Profs A Botha and E van Zyl, University of Stellenbosch on oligotrophic, toxigenic fungi and the study of *Cryptoccocus* species isolated from nature and human infections; Burden of Disease Research unit of the MRC: professional and technical support regarding the cancer registry; Cancer Registry: hospitals in and outside the registration area, collection and follow-up of cancer cases. Dr ZAW de Beer, FABI, University of Pretoria, on the ecological distribution and teleomorphic stage of *Sporothrix schenckii*; Prof. M de Kock, Medical BioSciences, UWC; Dr B Flett and K Van Rensburg, GCI/ARC, Potchefstroom regarding maize field trials; Geographic Information System at MRC unit in Durban: information regarding population census, demography, population density, municipalities' boundaries, etc. of the registration area; Dr SA Ghiasian, Hamedan University of Medical Sciences and Health Services, Hamedan, Iran as visiting scientist regarding fumonisin determination in Iranian maize; Dr S Gibbons, Centre for Phytochemistry and Phytomedicine, University of London in connection with isolation and elucidation of new anti-fungal natural products for use as pesticides; Dr B Hammond and Mr W Green, Monsanto USA and SA, respectively, on the effect of transgenic Bt-maize hybrids on fumonisin-producing fungi in maize.

Science communication and research translation

Ms Somdyala led a workshop for science teachers in the Bizana District; Drs HF Vismer and Katerere, Prof. V Sewram and Mr KM Thembo attended a thematic workshop at North-West University. Prof. Gelderblom advised the MEC of Health of the Western Cape, Mr P Uys, to discuss the future and support of the newly formed City of Cape Town Cancer Registry.

External income generated: R750 000

CANCER EPIDEMIOLOGY RESEARCH GROUP

Acting Director: Dr Lara Stein

Highlights

The unit continues to run a large-scale cancer case-control study to examine the leading causes of cancer among black South Africans, such as breast, cervical, prostate, and oesophageal, oral and HIV-related cancers. HIV infection was associated with increased risks of Kaposi's sarcoma, B-cell non-Hodgkin's lymphoma, other non-Hodgkin's lymphoma, vulval cancer, squamous cell carcinoma of the skin, anogenital cancer, cervical cancer and Hodgkin's lymphoma.

In an analysis of 1 608 Black South African women, it was found that the use of oral and injected contraceptives was associated with a doubling of the risk of invasive breast cancer.

Sera from 3 757 HIV-seronegative South African subjects revealed an association between HPV-16 and cancer of the cervix, anogenital cancer, oral cancers and oesophageal cancer. Prostate cancer was not associated with HPV-16 seropositivity. Emerging and available HPV vaccines may be useful to reduce the incidence of several leading cancer types.

Capacity development

Dr Stein serves on the advisory board of the South African National Cancer Registry.

Research collaboration

With Prof. Freddy Sitas of the New South Wales Cancer Council, Sydney, Australia; and Dr Denise Whitby (Head of Viral Epidemiology, National Cancer Institute, Frederick, USA); with Prof. Anna-Lise Williamson of the Faculty of Health Sciences, UCT, on the association between Human papilloma viruses and various cancers; a number of collaborative projects with WHO's International Agency for Research on Cancer, including the Namibian Cancer Registry, and the current meta-analysis of worldwide studies on risk factors for cervical cancer.

Science communication and research translation

Four poster presentations and one oral presentation at several conferences were done during 2006/7.

OESOPHAGEAL CANCER RESEARCH GROUP

Director: Prof. M Iqbal Parker

Highlights

Prof. M Parker is the South African National Contact Point for Health for the European Union Framework 7 Programme. Prof. Parker received an NRF South African Research Chair Award in Cancer Biology. Dr Virna Leaner received an MRC Career Development Award.

Recent studies have shown that HPV DNA is integrated in the genome of about 40% of oesophageal cancer biopsies. Even more interesting is the fact that more than half of the HPV DNA corresponds to the low-risk HPV 11. Immunohistochemistry has shown that the tumour cells also have accumulated levels of P53 protein although no significant P53 mutations (<10%) have been detected in these patients. Elevated P53 protein is accompanied by an elevation of the P53-related protein P73. The group is currently investigating the manner by which HPV 11 E6 protein binds to and inactivates P53. Researchers have already designed peptide nucleic acids (PNA) to the E6 gene as potential therapeutic agents.

Research found that fumonisin B1 (FB1) significantly increases lipid peroxidation in the liver resulting in oxidative damage. It has been suggested that lipid peroxidation is a secondary event to FB1-induced hepatotoxicity implying that protection against lipid peroxidation will not necessarily reduce FB1-induced hepatotoxicity. The pro-oxidative effects of rooibos tea during FB1-induced hepatotoxic effects and the protection against the subsequent lipid peroxidation seem to be two distinct events. Processed rooibos and unprocessed and processed honeybush teas significantly ($P<0.05$) reduced the FB1-induced lipid peroxidation suggesting that the antioxidant potency of the herbal teas is likely to exhibit this protective effect.

An association was found between self-induced vomiting and oesophageal chronic inflammation. Home-brewed beer consumption is not associated with iron overload in the rural population of the Eastern Cape, but the novel ferritin-H gene has been detected in patients with oesophageal cancer.

Capacity development

The group hosted 9 students and academics, including 3 from Nigeria, 3 from Sudan, 2 from Tanzania and 1 from Mali, who were funded by the United Nations Commission of Trade and Development to receive training in molecular biology techniques. Dr Collet Dandara is currently supervising one MSc and one PhD student in the group.

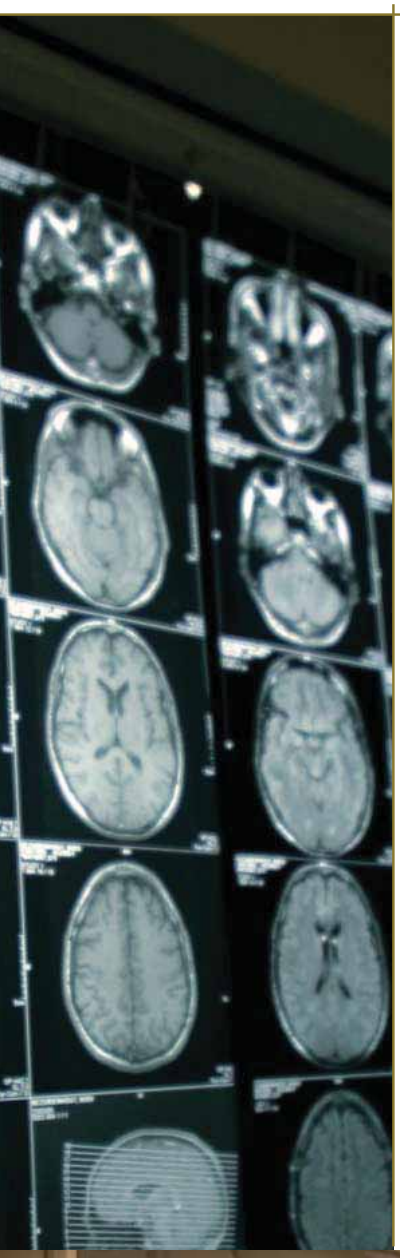
Research collaboration

Prof. R Erasmus is collaborating on a project with Prof. Stephien at the Walter Sisulu Medical School. Dr Denver Hendricks maintains a very active collaboration with researchers at Rhodes University, the University of Pretoria and the Council for Scientific and Industrial Research. Prof. Parker also collaborates with Dr Lidia Boffa at the National Cancer Institute in Genoa, Italy, funded by the SA/Italy bilateral agreement. Their project is on the use of peptide nucleic acids to inactivate HPV gene expression.

Science communication and research translation

Prof. Parker featured in the *Higher Education South Africa Bulletin* on his research in oesophageal cancer. He also wrote a presentation on the same topic for the SAGES congress.

External income generated: R780 000 in 2006.



GENOMICS AND PROTEOMICS

BONE RESEARCH UNIT

Director: Prof. Ugo Ripamonti

Highlights

Prof. U Ripamonti delivered the Marshall Urist Lecture at the 6th International Conference on Bone Morphogenetic Proteins in Croatia and was invited speaker at the International Association for Dental Research (IADR) South African Division. Prof. Ripamonti has been awarded the NRF rating of Internationally Acclaimed Researcher.

A study on the efficacy and safety of recombinant human bone morphogenetic and osteogenic proteins (hBMPs/OPs) and naturally-derived BMPs extracted and purified from bovine bone matrix was undertaken by the unit recently. It showed that a recombinant human osteogenic protein (hOP-1) completely regenerates induced periodontal defects in *Papio ursinus*. Working on previous world-first and now published discoveries the research currently aims to exploit the synergistic induction of bone formation whereby binary applications of recombinant human osteogenic protein-1 (hOP-1) with relatively low doses of TGF-β1 induce massive extraskeletal heterotopic and calvarial orthotopic bone. The unit has shown and published as a world-first that hOP-1 induces the expression of TGF-β1 highlighting the fact that the expression and synthesis of the TGF-β1 protein is mandatory for optimal osteogenesis in clinical contexts. TGF-β proteins synergise this with recombinant osteogenic proteins to induce massive ossicles which are required for therapeutic applications in human patients.

For the first time in the world, a juvenile patient with a massive mandibular defect has been reconstructed at Chris Hani Baragwanath Hospital with the recombinant human TGF-β3 protein. Current experiments are focused on the induction of bone formation by the TGF-β3 mammalian isoform. Harvested specimen ossicles are prepared for morphological analyses as well as for RNA analyses by reverse transcription polymerase chain reaction (RT-PCR).

The unit has now finalised the study on systemic bone loss in a non-human primate model and local administration of recombinant human morphogens. The study entailed injecting recombinant human morphogens including hOP-1 and hTGF-β3 locally into affected lumbar vertebrae and neck of the femorae to restore locally systemic bone loss. *In vivo* models for osteoporosis are limited, and few studies on primate species have been reported.

Capacity development

Louise Renton attended a course on how to cut undecalcified titanium and/or hydroxyapatite specimens in Germany, supported by the NRF. Rugayya Parak attended a course in Davos, Switzerland on how to improve decalcified technology sectioning.

Research collaboration

The unit's Musculoskeletal Molecular Biology Department has an ongoing collaboration with the University of California, Davis and collaborates with the University of Chieti, Italy on Tissue Engineering. The unit is currently collaborating with the Council for Scientific and Industrial Research with regards to a project on bone inductive biomimetic ceramics and plastics. There is also existing collaboration between the unit's Department of Molecular Cell Biology and Leiden University Medical Centre, The Netherlands. The Functional Genomics Group is collaborating with Regeneron Pharmaceuticals, Tarrytown, New York.

Science communication and research translation

At the 10th ISACB Meeting in 2006 Prof. Ripamonti delivered a presentation on Embedding molecular signals in smart biomimetic matrices to self-inducing tissue constructs in antiogenesis; and co-authored a chapter on Sculpturing the architecture of mineralised tissues.

External income generated

R451 026

BIOINFORMATICS CAPACITY DEVELOPMENT RESEARCH UNIT

Director: Prof. Winston Hide

Highlights

The unit has, as a result of its provision of workshop/training courses in HIV data management, brought together key researchers from Stanford, UWC/SANBI, the NICD and the MRC to lead an initiative to monitor the antiretroviral roll-out in South Africa at the molecular level. The network aims to establish an international working group to collect, curate, store and analyse HIV-1 genetic sequence data from isolates obtained from Southern African patients with selected patient, treatment and laboratory data in order to identify and analyse genetic correlates and determinants of drug resistance and treatment failure. Development of the network and its funding, is ongoing.

The HIV Molecular Integration Database system is now in production for the Centre for AIDS Research in South Africa (CAPRISA) project, supporting laboratories at the University of Cape Town (UCT), the National Institute for Communicable Diseases (NICD) and the University of KwaZulu-Natal. The system manages submission of samples, sequencing reactions, assemblies of these reactions and subsequent finishing, phylogenetics, recombination screening and places HIV sequence collections into a database. The database for the sequences, submitted by laboratories in the Cape and Gauteng, compares the clinical, immune and sequence diversity of HIV genomes. This allows researchers to integrate across different laboratories, providing novel insight into the process of infection relevant to vaccine design and studies of acute infection. Importantly, their work can be shared with the rest of the world as it becomes published.

The Cancer/Testis (CT) genes exhibit a testis tropic expression profile, are involved in gametogenesis and are expressed in a diverse range of cancer types. Additionally, the CT genes are immunogenic and thus considered attractive targets for immunotherapy. We have characterised gene-expression profiles of CT genes in human and mouse embryonic, fetal and adult tissues, and in both normal and cancerous tissues. As a result of determination of what appear to be three promotor element modules shared between developmental regulation in human and mouse, we are able to describe links between transcription factor networks in human and mouse development relevant to cancers.

Capacity development

The unit houses the WHO regional bioinformatics training centre for Africa. A total of 18 black African scientists from throughout the continent were trained in using bioinformatics to control Tsetse fly infestation over the past year.

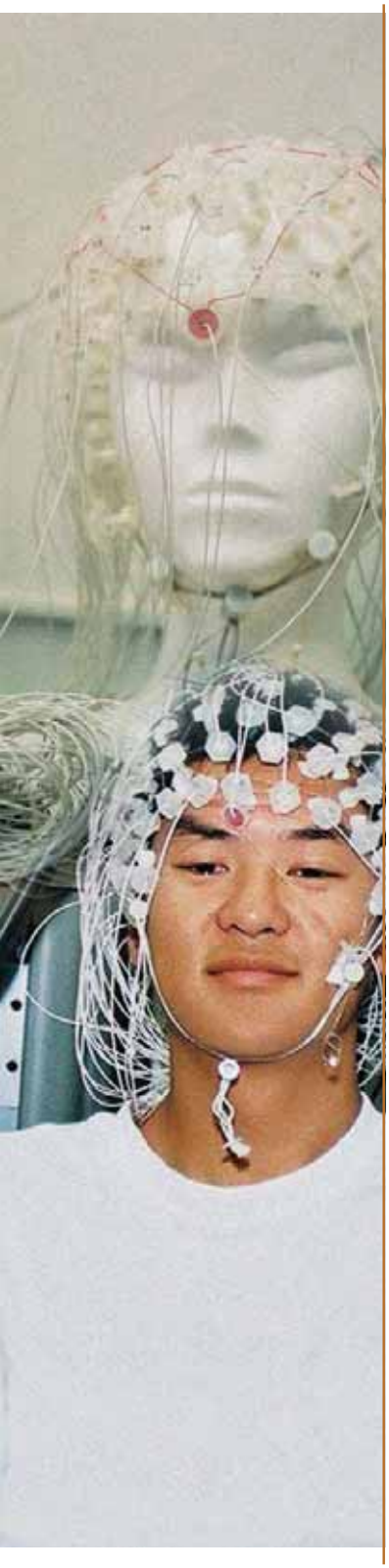
Research collaboration

Members of a collaboration in Japan include the Director of the Riken Genome Sciences Institute, Dr Yoshihide Hyashizaki; and the Director of the National Institute of Japan, Dr. Takashi Gojobori. About 62% of the 29 postgraduates trained in the unit over the past 3 years are from disadvantaged backgrounds, with 55% being female.

Science communication and research translation

With a total of over 700 citations to date, the unit has delivered 16 health-related publications containing significant discoveries, with 60 known print citations, over the past 2 years, including a *Nature Genetics* publication, a *Public Library of Science* publication and a paper in *Science*. The director is on the editorial boards of *Genome Research, Genomics*; and the electronic journal, *PLoS One*. More than 50 000 unique web visits have been made to this unit in the last 12 months, a 36% increase over the last reporting period. About 4239 sites have now established web links to SANBI, an increase of 42% over the last reporting period.

External income generated: 8 million



HUMAN GENETICS RESEARCH UNIT

Director: Prof. Raj Ramesar

Highlights

The director was invited amongst a wide-range of senior medical human geneticists internationally by Prof. Cotton and colleagues to represent emerging countries in an international effort to take the Human Genome Project to the next level. Furthermore, as new therapeutic trials are being developed (particularly for specific forms of recessive retinal disorders), our database identifies those individuals with the specific genetic fault, who are most likely to benefit from such therapies. Ms Lisa Roberts obtained her MSc with distinction in 2006.

Following the development of a research protocol aimed at establishing baseline measures of various ophthalmological parameters in individuals carrying the CA4 mutation, we have begun systematically doing the baseline studies on mutation-positive individuals at Tygerberg Hospital, and the Inkhosi Albert Luthuli Hospital in Durban. The baseline protocol has been approved by the research and ethics committees of several institutions nationally (having originally gone through the same process at the University of Cape Town [UCT]). Rather than being a conventional *retinitis pigmentosa* (RP), it is likely that this disorder, because of its origins in the choriocapillaris, is a chorio-retinal disease.

Capacity development

Recognition of expertise has also lead to the director being asked to join an international project as co-principal investigator with researchers at the World Health Organisation and the Joint Centre for Bioethics at the University of Toronto in Canada, and to jointly supervise an international MSc student (Adv Charlie Khamala, University of Nairobi, but working through Trinity College, Dublin) in order to develop guidelines and policies regarding sharing the biodiversity of developing countries with developed countries. This is an emerging 'discipline'. This endeavour is in keeping with the work we need to do with the African Society for Human Genetics.

Research collaboration

Prof. Rotimi and the Director have a long-standing relationship through the African Society for Human Genetics, of which Prof. Rotimi is the President. Prof. Ramesar serves on the Executive as the representative for southern Africa, and the AfSHG's delegate to the International Federation of Human Genetic Societies (IFHGS). Prof. Ramesar finalised the relationship of the AfSHG as the seventh and full member of the IFHGS in 2006. The growing collaboration with Prof. Rotimi has to do with Africans taking custody of the vast and rich information emerging from the populations of this continent. A number of other collaborations exist on a project-by-project basis. The most notable being our work on carbonic anhydrases and retinal degenerative disorders, with Prof. Bill Sly at the University of St Louis, USA.

Science communication and research translation

Our outreach clinics as well as the research recruitment expeditions (often to remote parts of the country) are well-planned with continuing professional development workshops (formally edited with 3 Continuing Professional Development (CPD) points) being held in centres such as Clanwilliam, Vredendal, George (W Cape), and Springbok, Kleinzee, Upington, Bloemfontien and Kimberley (in the Northern Cape). The workshops, attended by local health care staff (administrative and clinical), cover epidemiology, topics in clinical genetics, the value of research (using the colorectal cancer project as an example), and topics in gastroenterology. The unit also makes information regarding genomics and heritage available to the public. A Series of Darwin Seminars has been presented in the Faculty of Health Sciences at UCT.

RECEPTOR BIOLOGY RESEARCH GROUP

Director: Prof. AA Katz

Highlights

The co-directors serve as reviewers for several international journals in the field of Endocrinology and Molecular Pharmacology. Prof. A Katz is the portfolio manager of the SA-ICGEB Affiliated Centre and is on the South African ICGEB Steering and Networking Committee. Prof. A Katz served as an Examiner of an MSc thesis of a student from the University of the Western Cape.

The group observed that GnRH agonists cause dramatic inhibition of cell proliferation in cell lines expressing the Type I or Type II Gonadotrophin-releasing hormone (GnRH) receptors. GnRH can be used to treat certain tumours as it can directly cause inhibition of cell proliferation. Ant 135-18 and 135-25 were effective in inhibiting cell growth of MCF-7 cells expressing the Type I GnRH receptor but were much less effective in inhibiting growth of these cells expressing the Type II GnRH receptor and hardly (if at all) had any effect on growth of HEK293 cells. This work can enable the development of GnRH analogues that inhibit cell growth without affecting the reproductive function.

The group found that the Type II GnRH receptor can utilize β-arrestins for internalisation, while the Type I GnRH receptor which lacks a C-terminal tail does not. Although the C-terminal tail of the Type II GnRH receptor is not required for β-arrestin-dependent internalisation of the Type II GnRH receptor, the researchers found employing receptor chimeras that the C-terminal tail of the Type II GnRH receptor can confer β-arrestin dependent internalisation on the human type I GnRH receptor. This finding suggests that the role of the C-terminal tail in interacting with β-arrestin is receptor-context dependent.

In addition to activation of EP receptors by endogenously synthesised PGE2, neoplastic cervical epithelial cells in sexually active women can potentially be under direct stimulation of PGE2 present in seminal plasma. PGs concentration in seminal plasma is 10 000-fold greater than that detected at sites of inflammation and PGE2 is the predominant PG detected. In order to elucidate the role of PGE2 and seminal plasma PGE2 the group generated Hela cells over expressing the EP4 as a model to investigate the role of EP4 and its cognate ligand in cervical cancer. They examined the signalling and changes in the physiology of the cells mediated by the EP4 receptor in response to PGE2 and seminal plasma. They found that activation of EP4 by PGE2 and seminal plasma induces expression of genes such as COX-2 and VEGF. These findings that activation of EP4 receptors leads to induction of COX-2 and VEGF suggests that the up-regulation of COX-2 and EP4 receptors observed in cervical tumour cells results in a autocrine/paracrine stimulation of the tumour cells via the EP2 and EP4 receptors leading to tumour progression. Furthermore, upregulation of these genes such as COX-2 and VEGF that modulate tumorigenesis and angiogenesis of neoplastically transformed cervical tissue may be regulated in part by PGE2 present in seminal plasma. This has prompted the suggestion that seminal plasma PGs may exacerbate cervical tumourigenesis by activating intracellular signalling via the elevated EP2 and EP4 receptors. Thus, although human papilloma virus (HPV) infection is believed to be the initiating step in cervical neoplasias, elevated COX enzymes and the consequent biosynthesis of PGE2 and signalling induced by endogenous and seminal plasma prostaglandins may enhance progression or onset of cervical cancer. Therefore, it should be beneficial to treat patients with selective PGE2 receptor antagonists and modulators of signal transduction in combination with NSAIDs, to block signal transduction and resultant gene transcription, as well as COX-enzyme actions. This may be of particular therapeutic benefit to sexually active women receiving treatment for cervical carcinoma.

The group is studying the interaction of the human immunodeficiency virus (HIV) gp120 with its co-receptor CCR5. The group characterised the binding of the South African CCR5 mutants and found that the Asp2Val mutant shows decreased affinity for CCR5, while the Arg2.69(225)stop shows no binding.

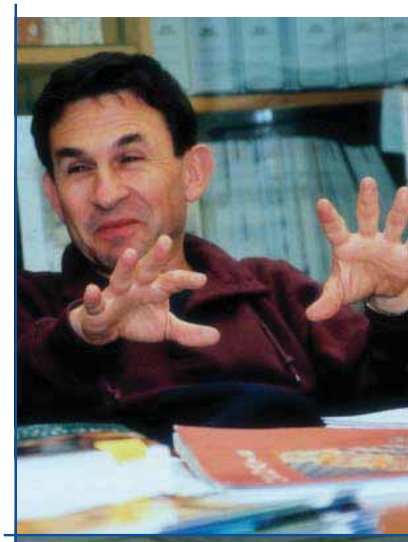
The group have also expressed gp120 from five southern African HIV-1C isolates and two well-described subtype B strains, using the Baculovirus system and purified it using lentil lectin affinity chromatography. We have extended the CCR5 chemokine competition binding assay to determine affinity of CCR5 for different gp120 proteins in the presence and absence of co-expressed CD4. Gp120 proteins that we have expressed and purified bind CCR5 and displace 125I-MIP-1β with high affinity in the presence of CD4. As expected, gp120 proteins of subtype B and C (Du151 and JFRL respectively) have lower affinity for CCR5 in the absence of CD4. Furthermore, they have established that the subtype C, Du151 gp120 has a 10-fold higher affinity for CCR5 than the well-characterised JRFL gp120.

Capacity development

Jason Sutherland (PhD student) attended a course entitled Statistical Analysis of Experimentation, 16 – 20 October 2006, IIDMM, UCT. Pumza Philips (MSc student), attended a course entitled Professional Development Programme in Clinical Research, 21-26 January 2007, IIDMM, UCT.

Research Collaboration

Dr H Jabbour of the MRC Human Reproductive Sciences unit, Edinburgh University, UK collaborates with the group on the role of cyclooxygenases and prostaglandins in cervical cancer. Prof. A Aragay from the Department of Cell Biology, Bergen University,



Norway collaborates with the unit on the internalisation of Type II GnRH receptor and conducts fluorescent microscope studies. Dr Thumbi Ndung'u from the Botswana Harvard AIDS partnership at Harvard University collaborates on the CCR5 Chemokine Receptor and HIV.

Science communication and research translation
Members of the unit attended the various international conferences.

External income generated: R200 000

HUMAN GENOMIC DIVERSITY AND DISEASE RESEARCH UNIT

Director: Prof. Himla Soodyall

Highlights
Fieldwork is a major component of the collective research within the unit and, since September 2005, the unit has been active in fieldwork in the Maldives, Zanzibar, and different regions in South Africa (Colesberg, Buysdorp, Underberg). They believe that the latter is part of the translation of science and visibility of science to the public.

Research collaboration
A collaborative research project is being conducted between the unit and Prof. Mike de Jongh (Department of Anthropology and Archaeology, University of South Africa [UNISA]) with the Karretjie people of Colesberg. This community is of interest because of their suggested San and Khoe ancestry. The study also included the Coloured community from Lowryville who live in close proximity to the Karretjie people; the latter now live in an informal settlement rather than on their karretjies (donkey carts).

Science communication and research translation
Genetic ancestry testing, i.e. tracing one's maternal (using mtDNA) and paternal (using Y chromosome DNA) ancestries has become an interesting topic for discussion among South Africans, and more than 70% of people who call the unit for information, decide to go through with testing. For some, the cost implication appears to be a deterrent. Since Prof. Soodyall first appeared on local TV for a Heritage Day programme in 2004, this has been in the public domain at various levels of discussion. In February 2006 the unit officially launched this service to the public at the National Health Laboratory Service (NHLS), and between February and December 2006, 431 subjects have had their ancestry tested at the unit. The process itself involves a 30-minute consultation with a subject; during this time the test is explained to the subject, the limitations and what the test reveals, etc. and, if interested, the subject signs an informed consent form. Thereafter a cheek swab or a blood sample is taken, followed by laboratory testing and the generation of a report (that includes searches for matches in databases). The subject is then invited for another consultation to have their results explained to them – this usually takes 30-45 minutes. Since 2004 the unit has completed 638 people's genetic ancestry tests.

External income generated
Funds were generated from genetic ancestry testing. Genographic Project (National Geographic Society in partnership with IBM and the Waitt Family Foundation).

LIVER RESEARCH CENTRE

Directors: Prof. P Meissner and Prof. D Kahn

Highlights

The MRC/UCT Liver Research Centre is multidisciplinary with its members comprising physicians, surgeons, biochemists and immunologists. The centre's mission is to better understand the liver and its related processes in health and disease, focusing on those diseases occurring in Southern Africa with a view to identification, prevention and improving health care of patients with liver disease. Apart from its laboratories in the Departments of Medicine and Surgery, the Centre runs the only multidisciplinary, comprehensive Liver Clinic, including a liver transplantation programme in Africa. The world's only fully integrated porphyria clinic, laboratory, diagnostic and drug information service is run by specialist Liver Centre personnel.

Liver surgery: Surgeons have pioneered a novel technique based on the jejunal biliary access loop technique in which a double-entry access loop allows an additional access site, adding little to the basic procedure but contributing significantly to the subsequent management of patients with intrahepatic stones who require repeated percutaneous intrahepatic duct access.

Liver transplantation: An important aspect of the liver transplant programme is that of transplantation in children. The clinical research team have shown that despite limited resources, a successful paediatric liver transplant programme has been established with good patient and graft survival figures and excellent quality of life. Shortage of donors due to Hepatitis B virus (HBV) and Human Immunodeficiency Virus (HIV) leads to significant waiting list mortality and infrequent transplantation.

Liver disease in HIV: Liver disease has emerged as a significant problem in patients with HIV/AIDS and studies from the USA and Thailand in the pre-HAART era have demonstrated different patterns of liver disease. The spectrum of liver disease in patients with HIV/AIDS in South Africa, an epicentre of the pandemic, is largely unknown. Overall, our research has established that drug-induced liver injury predominates in patients with advanced HIV/AIDS and that cotrimoxazole confers a significant independent risk. Although TB drugs and HAART also confer risk; significance is likely influenced by selection bias for biopsy and the limited availability of HAART in the earlier period of this study. Tuberculosis is a common opportunistic infection involving the liver, whilst Hepatitis B is a prevalent viral co-infection. These are important results and likely to influence health services treatment policy in the future.

Capacity development

The Liver Centre has continued to develop human resources capable of fulfilling our mission and given preference where possible to persons disadvantaged as a result of discrimination on the basis of their race or gender. Richard Hift participated in a transformation workshop at UCT during the year. The centre is currently training 3 Masters and 5 PhD students.

Research collaboration

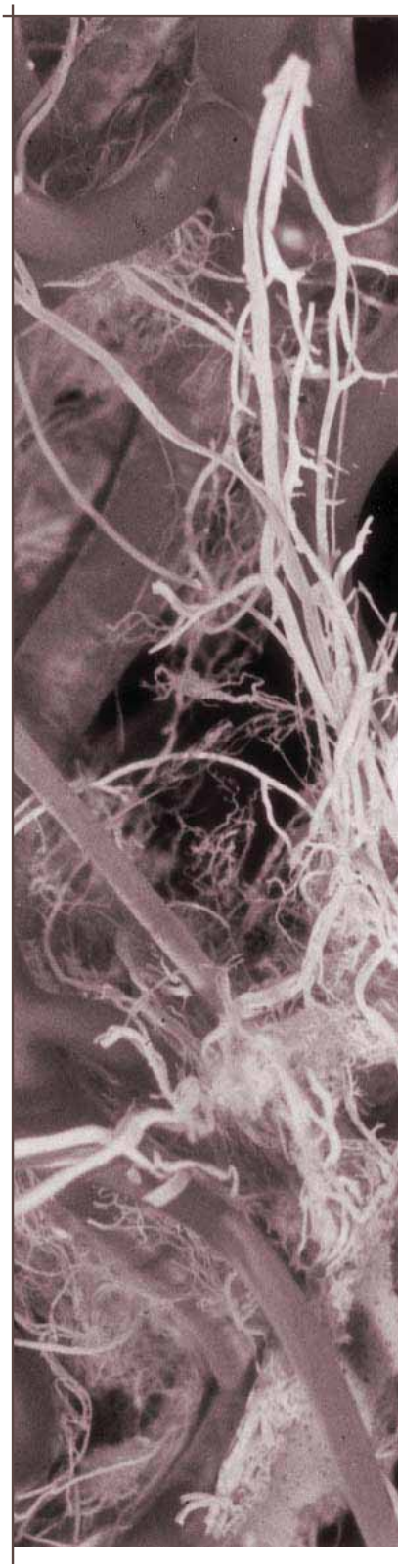
UCT: Radiology, Clinical Immunology, Virology, Rheumatology, Human Genetics, Surgery, Immunology, Molecular Biology, Biochemistry and Microbiology, Laboratory of Viral Oncology, CNRS, Ville Juif, France; Biomedical and Health Sciences Institute, University of Georgia; Gastroenterology, Erasmus University Hospital, Rotterdam; Medical Biochemistry, University of Wales, College of Medicine; Structural Biology, University of Bath; Laboratory Sciences, UCT; Virology, UCT; Genetics, Stellenbosch; Clinical Chemistry, University of Bergen, Norway.

Science communication and research translation

The Liver Centre has its own webpage where patients, public and the medical fraternity can consult with respect to liver disease and the clinical services offered. The group also disseminates information on drug safety in porphyria, and all other information pertaining to porphyria on a webpage, which is one of the most frequently visited porphyria sites in the world.

Nine international conferences – in some cases as a keynote speaker. Prof. Enid Shephard, as part of her research with the UCT Vaccine Development Group, is actively collaborating with the Vaccine Reagent Development Group (Division of AIDS, NIH, USA) and the HIV Vaccine Trials Network (NIH-funded network).

External income generated: None



WOMEN, MATERNAL AND CHILD HEALTH

MINERAL METABOLISM RESEARCH UNIT

Director: Prof. John M Pettifor

Highlights

Prof. Pettifor was granted an A2 rating as a research scientist from the National Research Foundation (NRF) at the end of 2005. This rating is based on his recognition as a scientist recognised internationally as being at the forefront of his field. Dr Shane Norris was awarded a Wellcome Trust Research Training Fellowship for three years until 2010. This is in recognition of his potential as a research scientist. Dr Norris competed internationally for this Fellowship and was interviewed in London before being awarded the Fellowship. He was also awarded a C2 rating by the NRF.

A recent longitudinal study showed that bone mass gain over a period of one year was shown to be greatest in those children who had the highest physical activity. The results further indicated that physical activity is an important environmental factor influencing bone mass accrual in pre-pubertal children and that the amount of physical activity undertaken by black children is insufficient to have an osteogenic effect on bone mass. These results are of importance as the childhood years are thought to be important in determining peak bone mass, which influences the likelihood of minimal trauma fractures in later life. Further, the lack of physical activity in childhood may contribute to the prevalence of obesity in young adults.

It has been suggested from retrospective studies in adults that intrauterine factors, as measured by birth-weight, may play major roles in the development of diseases of lifestyle during adulthood. The diseases most affected are diabetes, obesity and hypertension. However, it is also suggested that bone mass might be adversely affected by low birth-weight. Further studies have shown an effect of birth-weight on bone mass in 10-year-old children. However, the most important determinants are current height and ethnicity with maternal and paternal bone mass also contributing. Researchers recently assessed the hereditability of pre-pubertal bone mass and have found that some 30% of the bone mineral content in children was inherited from the mother with a similar amount from the father.

Capacity development

As a newly qualified paediatrician, Dr Kebashni Thandrayen joined the unit recently. She has been appointed in a joint University and Gauteng Health Departmental position. This appointment will allow the unit to become actively engaged in the training of clinician researchers who do not have considerable clinical workloads. The unit has 7 students who are currently enrolled for postgraduate studies.

Research collaboration

The unit has collaborations with the following institutions: Loughborough University, UK; MRC Human Nutrition Research, Cambridge, UK; Wayne State University, Detroit, USA; Mayo Clinic, Rochester, MN, USA; Jos University Teaching Hospital, Nigeria; Baylor College, Houston, Texas, USA; Shriners Hospital for Crippled Children and McGill University, Montreal, Canada; University of Cape Town, South Africa; and University of the Witwatersrand, Johannesburg.

Science communication and research translation

The most significant translation of research has been the presentation of findings at both local and international conferences, peer-reviewed publications and postgraduate student capacity development. A substantial body of work has been formed and the unit plans to disseminate study findings to create public awareness of the research being conducted.

External income generated: R945 000

GENDER AND HEALTH RESEARCH UNIT

Director: Prof. Rachel Jewkes

Highlights

Yandisa Sikweyiya won the prize for the best poster by a young scientist at the Forum 10 Conference, Cairo, November 2006. Rachel Jewkes is an editorial consultant for *Lancet,* is on the Editorial Board of the *African Journal of AIDS Research; AIDS Abstracts* and during the year was invited to join the International Advisory Board of *AIDS Care*. unit staff reviewed more than 25 articles for peer-reviewed journals in 2006. They gave 2 invited presentations at conferences; presented 7 other oral papers and 7 posters.

During 2006 the cluster randomised-controlled trial of the HIV-prevention behavioural intervention Stepping Stones in the rural Eastern Cape was completed. Two years after the baseline assessment, the HIV incidence in women was lower in the Stepping Stones arm, but this did not approach statistical significance [IRR = 0.85 (95% CI 0.60, 1.20) P=0.35]. Stepping Stones women acquired less herpes simplex virus (HSV) 2 [IRR= 0.69 (95% CI 0.47, 1.03) P=0.07]. There was little difference in behavioural outcomes. Stepping Stones men's HIV incidence was not different, but they had fewer partners, more condom use, less transactional sex, perpetrated less severe intimate partner violence (IPV) and had less substance use. They had a lower HSV 2 incidence rate, although not statistically significance [IRR 0.72 (95% CI 0.36, 1.46) P=0.36]. Our trial provided some evidence that Stepping Stones is a useful HIV-prevention intervention and is gender transformative, with success achieved in changing a range of men's behaviours. It deserves further development and investigation.

During 2006 the Sexual Violence Research Initiative (SVRI) an initiative of the Global Forum for Health Research moved its host site to the MRC in Pretoria and was established with a dynamic new website (www.svri.org). Over the past year the SVRI showed very substantial growth in membership and in the number of visitors to the website, and there were substantial improvements to the materials made available, including the addition of webpages summarising available research on sexual violence from over 60 countries. Highlights of the year included the publication of the global research agenda on sexual violence. The SVRI had a formal launch at the Forum 10 Conference in Cairo in October 2006 and organised a successful session on sexual violence in the Arab world. Throughout the year the unit has been disseminating weekly updates on sexual violence in the news and updates on sexual violence research publications, conferences and funding opportunities.

Capacity development

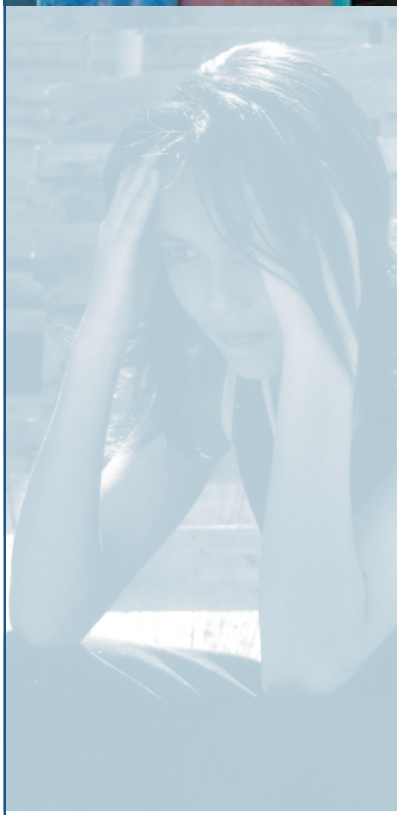
Five of the 6 interns are registered at the University of the Witwatersrand in the Faculty of Health Sciences and all are being supervised within the unit. During the year Yandisa Sikweyiya attended the SARETI programme of training in research ethics. This is a 6-month programme organised by the Universities of Pretoria and Kwazulu-Natal.

Research collaboration

The SVRI is the most important research collaboration of the unit as it is a global collaboration. In addition the unit has active collaborations with Emory University, in Atlanta and the University of Arizona in the USA; the International Centre for Research on Women in Washington; the School of Education of the University of KwaZulu Natal; the Walter Sisulu University of Technology; the Centre for the Study of Violence & Reconciliation; the Tshwaranang Legal Advocacy Centre and the University of the Witwatersrand.

Science communication and research translation

There was extensive media coverage of research findings on the epidemiology of rape perpetration in the Eastern Cape; a *Sunday Times* article around the work on rape perpetration; and an article in the *Mail and Guardian* on the Choice in Termination of Pregnancy Act. Prof. Jewkes was quoted as an expert on child sexual abuse in the *New York Times*. The unit has also written three editorials/commentaries for peer reviewed journals; and 2 book chapters. Work was completed on a World Health Organisation background paper for policy guidance on strengthening health sector policy on sexual violence.



MATERNAL AND INFANT HEALTH CARE STRATEGIES RESEARCH UNIT

Director: Prof. RC Pattinson

Highlights

The Kalafong Kangaroo Mother Care (KMC) unit, under the leadership of Dr Elise van Rooyen, the first MRC research site with regard to the implementation of KMC, received the Khanyisa Award for their training related to the three outreach packages (in KwaZulu Natal, Gauteng and Mpumalanga) researched by the unit. Prof. R Pattinson has been elected as member of the Council of the Academy of Science of South Africa (ASSAf) in the capacity of Health Sciences. ASSAf has over 200 members who are elected on the basis of significant achievement in the advancement or the application of science. The members are drawn from the full range of disciplines including the applied natural sciences and technology, as well as the human, social and economic sciences.

The Perinatal Problem Identification Programme (PPIP) system has come of age in another way by demonstrating its value as a monitoring and evaluation system. A survey on the use of KMC was performed in the PPIP sentinel sites. In the survey, it was demonstrated that the majority of PPIP sites had started implementing KMC. Furthermore, where the data were available before the introduction of KMC and after, there has been a 30% reduction in neonatal mortality. This is the first monitoring and evaluation of a programme put in place by provinces and the national Department of Health. The system can be used to monitor the impact of other interventions such as the new guidelines on intrapartum care. In combination with the Child Health Care Problem Identification Programme (ChIP), the impact of the prevention of mother-to-child transmission of HIV (PMTCT) programme will be monitored closely.

The severe acute maternal morbidity and mortality audit system has been further developed and is now used in evaluating the impact of the new protocols that have been developed. The system has allowed the unit to document the reduction in mortality and changing patterns of morbidity in women with abortion. Since the introduction of the Choice of Termination of Pregnancy Act there has been a significant reduction in maternal mortality in southwest Tshwane. This reduction has been most closely associated with the improved protocols to manage critically ill women and not due to a reduction in the number of critically ill women with complications from abortions.

A new system called the (Child Health Care Problem Identification Programme) ChIP has been developed to audit deaths in children. The first report has been published called *Saving Children* and a second report is under way. This is the first national survey of the causes of childhood deaths and analysis of the problems in the health system. The Centers for Disease Control and Prevention in Atlanta is funding the expansion of the process.

Capacity development

Mrs RV Prinsloo presented Gauteng the PPIP at various training workshops. Drs CR Stephen, ME Patrick, A Krug convened the National CHIP Workshop. BANC (Basic Antenatal Care) training workshops were presented in July and August of 2006.

Research collaboration

CDC-PPIP and CHIP projects – national and provincial Departments of Health and 190 State Hospitals; Yale University: Serithi project and Dr Mbele's PhD on Proteomics; University College Hospital, London – 16srDNA analysis; UNICEF, Ghana – KMC; UNICEF, SA – all provinces, National Department of Health and 18 sub-districts.

Science communication and research translation

The *Saving Babies* reports are available on the PPIP website: www.ppip.co.za as is the Perinatal Problem Identification Programme. *Saving Children* reports will be available on the Saving Children website: www.chip.org.za (under construction at the time of going to press). The contribution of training workshops to the implementation of KMC was highlighted in a poster presentation at the 6th International Workshop on Kangaroo Mother Care, Cleveland, Ohio, US, 11-15 October 2006.

External income generated: R2.6 million

NUTRITION

NUTRITIONAL INTERVENTION RESEARCH UNIT

Director: Dr Ali Dhansay

Highlights

Dr Dhansay was invited by the Commonwealth Secretariat in collaboration with the Commonwealth Association of Paediatric Gastroenterology and Nutrition to participate in the Meeting on Strategies for Addressing Under-five Nutrition in Children, in London, and to make a presentation, Challenges of early childhood nutrition in HIV-positive populations. Dr Dhansay was an invited speaker at the WHO Regional Consultation on Integrated Framework for Promoting Optimal Foetal Growth and Development, in Abuja, Nigeria, and presented a talk on nutrition and health status in South Africa. Dr Faber has been Country Co-ordinator for VITAA (Vitamin A for Africa Partnership) since 2006, and is Chairperson of the VITAA Steering Committee for 2006-2007.

The unit conducted an 8-month randomised-controlled trial in primary school children to evaluate the efficacy of electrolytic iron as fortificant in bread, and also the efficacy of alternative, more bioavailable, iron fortificants, namely NaFeEDTA and ferrous fumarate. The results showed that electrolytic iron, although it did not cause organoleptic changes in bread, did not improve iron status at the level currently used either. NaFeEDTA and ferrous fumarate, although they are more bioavailable than electrolytic iron, caused unacceptable colour changes at very low levels. The amount of these two fortificants that could be added to bread was therefore limited, and no improvement in iron status was observed at these levels. Finding the ideal iron fortification compound (one that is both bioavailable and organoleptically acceptable) therefore remains a challenging and relevant research field, both nationally and internationally.

Iron deficiency is the most common nutritional deficiency in the world, and has important health, social and economic consequences. Too little iron in the body can cause reduced physical work capacity, impaired cognitive performance, inability to concentrate, and in severe cases, increased risk of morbidity and mortality. The fortification of staple foods is an important recognised long-term strategy for addressing iron and other micronutrient deficiencies. The South African national food fortification programme, whereby wheat and maize flour are fortified with various vitamins and minerals (including iron), was introduced in 2003. Iron is, however, not easily absorbed by the body, and it can also cause sensory changes in food to which it is added. It is therefore difficult to find a suitable iron fortificant that is both stable in the particular food and absorbable by the body (bioavailable).

New information on the energy content and nutrient composition of South African wheat and white bread flour has been generated by the unit. The Southern African Grain Laboratory (SAGL) was responsible for the collection of a random sample of South African wheat for nutrient analysis. Wheat samples received annually by the SAGL for the national wheat crop quality survey were used to obtain representative wheat samples for South Africa. Results showed that the energy content per 100 g of wheat was 1554 kJ and for unfortified white bread flour 1506 kJ. The protein values for wheat and unfortified white bread flour were 11.93 g and 11.15 g, respectively. The carbohydrate content was 75.6 g for wheat and 75.9 g for unfortified white bread flour. Analysis of the micronutrient content showed that the riboflavin content of unfortified white bread flour was 0.03 mg and 0.16 mg after fortification. The successful completion of this study resulted in the generation of South African wheat and wheat flour values for the first time.

Capacity development

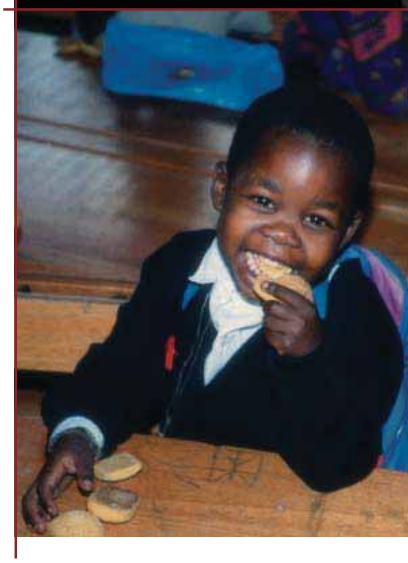
In 2006 NIRU's iodine researchers initiated a project to train salt producers who were not using the quantitative titration method for internal quality control of the iodine content of the salt, because they were responsible for most of the under- and over-iodisation of table salt in South Africa. Seven unemployed people from the local community were recruited and trained as fieldworkers to run the iron fortification project on a day-to-day basis in the school.

Research collaboration

A collaboration with the South African TB Vaccine Initiative's Dr M Hatherill aims to explore the risk of pulmonary tuberculosis associated with infection by the intestinal helminths *Trichuris trichuria* and *Ascaris lumbricoides* at a South African tuberculosis vaccine trial site. The effects of urbanisation on parasite species' diversity and the prevalence in baboons, is part of ongoing collaboration with Damiana Ravisi from UCT's Zoology Department.

Science communication and research translation

In August 2006 the Australian High Commissioner, Mr Phillip Green, visited Ikhusi Primary School in Khayelitsha where the 'Learn about worms' learner support materials were piloted.



Results showed that the energy content per 100 g of wheat was 1554 kJ and for unfortified white bread flour 1506 kJ.

Drs Faber and Van Jaarsveld were interviewed by *Radio Sonder Grense* on home gardens and orange-fleshed sweet potato to address vitamin A deficiency in South Africa. Dr Van Jaarsveld participated in the FARA (Forum for Agricultural Research in Africa)/HarvestPlus Africa Regional Workshop on Biofortification: Interfacing Agriculture and Health in Mombasa, Kenya, where he also participated in a television interview regarding the orange-fleshed sweet potato efficacy trial in South Africa, of which excerpts formed part of a youth programme that was broadcast on *SABC 1*.

Food-based training workshops (with the ARC) were held at: Tau Sebele School, Makapanstad, Hammanskraal; Sapphire School, Port Elizabeth; ARC VOPI; and Hebron. Dr Jooste played a key role in drafting the national priorities for activities to be undertaken during 2006 in the field of iodine nutrition in South Africa through his leading role in the South African Iodine Deficiency Disorders Network. At the request of the Department of Health, Dr Jooste edited changes to the South African salt regulation re-introducing titration as an obligatory internal quality control for salt processors.

External income generated: R2 217 633.

ENVIRONMENT AND HEALTH

ENVIRONMENT AND HEALTH RESEARCH UNIT

Director: Dr Angela Mathee

Highlights

In 2006 the World Health Organisation Collaborating Centre for Urban Health (WHOCCUH) initiated the Johannesburg-based Health, Environment and Development (HEAD) study. It aims to monitor, over a period of at least 5 years, neighbourhood and housing conditions, and health status (including socio-economic conditions, food security, perceptions and experiences of violence and social concerns such as alcohol and drug abuse).

Although still in the preliminary stages of analyses, data from the HEAD study point to elevated levels of chronic diseases, mental ill health, low levels of exercise and high levels of concern around violence in some of the 5 study sites, as well as initiatives that might protect or improve public health in South Africa. Addressing the socio-environmental obstacles (including social capital and social cohesion) to active lifestyles in these communities will be critical in preventing or stemming a considerable proportion of the predicted epidemic of chronic diseases.

Capacity development

Under the auspices of the WHO CCUH, the HEAD study is an important vehicle for research capacity development, providing training opportunities for undergraduate, PhD and Masters students. Two staff members/students associated with the unit were awarded PhD degrees. A further 6 people are currently undertaking PhDs.

Research collaboration

In order to achieve its research goals, the Environment and Health Research Unit currently collaborates with, amongst others, the Council for Geoscience; the Council for Scientific and Industrial Research; the Universities of Johannesburg; and the Witwatersrand; the WHO (AFRO and Headquarters); the City of Johannesburg; the Universities of Tromso and Botswana; the Departments of Minerals and Energy and Department of Health.

Science communication and research translation

The Lead Exposure Surveys contributed to the removal of lead from petrol in South Africa; the regulation of the lead content of paint in South Africa; and a recommendation to discourage the use of the manganese-base additive, MMT, to local petrol. The unit, in conjunction with WHO's head office and AFRO-office, the United States Environmental Protection Agency, the national Department of Health (as well as some provincial health departments) and the Johannesburg Metropolitan Council, has designed, produced and disseminated public awareness materials, including fact sheets, posters and fridge magnets.

Dr Mathee participated in Germany in a WHO global expert working group on lead poisoning. On request from WHO-AFRO, Angela Mathee and Rochelle Spadoni travelled to Windhoek to participate in a Healthy Cities Capacity Development workshop from 26 to 28 September 2006. Dr Mathee was invited to participate in a meeting of urban health experts held in Dar es Salaam, Tanzania from 1 to 4 November 2006 which was held under the umbrella of the World Health Organisation's Commission on the Social Determinants of Health.

External income generated: R1.4 million

BRAIN AND BEHAVIOUR

ANXIETY AND STRESS DISORDERS RESEARCH UNIT

Director: Prof. Dan Stein

Highlights

In 2006, unit members published two books, 54 papers and seven chapters. Prof. Seedat was elected to membership of the South African Academy of Sciences. Jonathan Ipser won the Kenneth Warren Award of the Cochrane Collaboration for the best Cochrane review from a developing country. Christine Lochner was awarded the USA David Caul Graduate Research Grant. Members of the unit collaborated to form the Cross-University Brain-Behaviour Initiative, an NRF RFA.

Capacity development

A significant portion of the unit's resources goes towards post-doctoral and doctoral fellowships. They are building capacity in a number of key basic and clinical neuroscience areas including behavioural pharmacology, brain imaging, neurogenetics and neuroproteomics.

Research collaboration

The unit collaborates extensively with researchers in South Africa, Africa and beyond the continent's borders (including the USA, Europe and Asia). Projects in the unit receive funding from international science agencies, including the National Institutes of Health.

Science communication and research translation

The Mental Health Information Centre is a fundamental structure in the unit, and continues to play a significant role in mental health consumer advocacy in South Africa.

MEDICAL IMAGING RESEARCH UNIT

Director: Prof. Christopher Vaughan

Highlights

Prof. John Polich, a world-renowned neuro-psychologist from Scripps Research Institute in San Diego, visited the unit from 3 to 9 September 2006, giving expert advice to students working on EEG projects as well as presenting two seminars.

Initial data from a pilot functional MRI study aimed at investigating brain development in children with Foetal Alcohol Syndrome (FAS), indicated that there are specific deficits in alcohol-exposed children compared with healthy control subjects in two of the three areas that have been shown previously to play a critical role in number processing, namely the horizontal intra-parietal sulcus and dorsolateral prefrontal cortex. Since FAS has lifelong consequences (behavioural and learning difficulties) for children born with it, early diagnosis is necessary for rapid intervention so that children can develop optimally despite being born with FAS. We are developing a stereophotogrammetric platform to obtain facial images of infants soon after birth; and shape differences between alcohol-exposed and non-alcohol exposed infants will be studied as basis for the development of a FAS-screening method for this age group.

Capacity development

Prof. Vaughan co-supervised Ms Quinette Louw when she lectured in physiotherapy at the University of the Western Cape. Prof. Vaughan was also co-supervisor to Ms Ciara O'Connor, who submitted her PhD thesis in electrical engineering to University College, Dublin in 2007.

Research collaboration

There is an existing collaboration between the Department of Human Genetics, National Health Laboratory Service, Johannesburg; Foundation for Alcohol-related Research; Stanford University and the University of New Mexico to develop a photogrammetic system to screen infants for Foetal Alcohol Syndrome. Together with both Red Cross Children's Hospital as well as Tygerberg Hospital, the unit has formed a collaboration to detect tuberculous meningitis in brain computed tomography images. To optimise brain localisation using structural and functional magnetic resonance imaging, the unit holds an ongoing collaboration with the International School for Advanced Studies in Trieste, Italy.

Science communication and research translation

The *Comprehensive Handbook of Alcohol Related Pathology*, published by Elsevier Science, contains a chapter on Diagnosis of Fetal Alcohol Syndrome: measurement of the facial dysmorphology, written by Drs Ernesta Meintjies and Tania Douglas. Dr Douglas also co-authored a presentation on Digital radiographic measurement of the atlantodental interval in children for the 24th International Congress of Radiology, which was held in Cape Town in September 2006.

External income generated: R13 660 000

AFRICAN TRADITIONAL MEDICINES

SOUTH AFRICAN TRADITIONAL MEDICINES RESEARCH UNIT

Acting Director: Prof. Peter Smith

Highlights

Thousands of plants and plant extracts have been tested by the group for antimalarial activity, both *in vitro* and *in vivo*. Collaborative links have been formed with a number of groups within South Africa, including the National Drug Development Platform (NDDP), the South African Malaria Initiative, the CSIR and the Research Centre for Plant Physiology and IKS at the MRC. In addition, links have been established with universities in Kenya, Uganda, Nigeria and India. Work is both focused on the evaluation of the antimalarial activity of crude plant extracts which may be used by healers to treat patients, as well as the isolation and identification of active molecules which are evaluated as potential lead compounds for new antimalarial drugs.

Innovative methods of fractionation of crude plant extracts by HPLC in last year saw collaboration with the Danish University of Pharmaceutical Sciences, which has given the group access to an HPLC-SPE-NMR hyphenated system. This has resulted in a record number (for the group) of compounds being isolated and structures determined. Some of these have significant antimalarial activity.

Chemical modification of a number of these compounds by the group headed by Prof. Chibale, including a number isolated from the medicinal plant, *Harpagophytum procumbens* has produced products with increased antimalarial activity. The NDDP is providing over R1 million for further research into these analogues of antimalarial compounds. The medicinal plant, *Dicoma anomala* has also yielded a number of compounds with significant antimalarial activity. These leads are being followed up in collaboration with the NDDP, Indigenous Knowledge System and the CSIR.

Professor Chibale was promoted *ad hominem* to full Professor in 2006. He served on the steering committee of the South African Malaria Initiative which is receiving significant funding from the Department of Science and Technology and will build on much of the methodology established by South African Traditional Medicines Research Group. In addition, he was recipient of a World Health Organisation (WHO) Tropical Diseases Research (TDR) unit Synthetic/Medicinal Chemistry 'workstation' award. The significance of the award is that there are only 5 academic institutions around the world (3 in the USA, 1 in the UK and 1 in South Africa/Africa, which happens to be Prof. K Chibale's laboratory) selected as centres. The significance of the award is that only 1 award was made to the entire Department of Chemistry via Prof. K Chibale. Overall a total of 10 awards were made across the UCT Faculty of Science.

Tracy Seaman was awarded the prize for the Best Young Scientist at the National Meeting of the South African Pharmacology Society.

Perhaps the most complete example of the scientific evaluation of a medicinal plant by the group, which validates its use by healers, is that of *Warburgia salutaris*, which, among other uses, is used to treat tuberculosis. Dr Eliya Madikane established that crude extracts of the plant could inhibit the growth of *mycobacterium tuberculosis in vitro*. After obtaining a scholarship to carry out further work in the Department of Pharmacology in Oxford, he isolated and characterised the active compounds and also established the mechanism by which they inhibit mycobaterial growth. Plans are under way to synthesise the active compound and modify them to improve activity. It is not often that both the isolation and characterisation of a bioactive molecule as well as its mechanism of action are elucidated in the course of a single project.

Capacity development

Eight PhD (4 black, 2 coloured, 2 white), 4 masters (2 white, 2 black) and 3 Honours students (2 black, 1 coloured) have graduated from the group. It is gratifying to see graduates of the group playing significant roles in promoting research in the country including Dr Matsabisa (IKS, MRC), Drs Pefile and Ntutela (CSIR) and most recently, Dr Gumede who has been appointed to head the preclinical drug development portfolio at the CSIR.

Research collaboration

Collaboration with Dr Henry Staines and Prof. J Clive Ellory, University of Oxford (UK) on antimalarial inhibitors of the new permeability pathways (NPPs). In terms of future direction, collaboration will focus on identifying new inhibitors of the NPPs and studying their effect on metal ion transport across the membrane of the malaria parasite. In terms of benefits of the collaboration, provision of assays to screen potentially any compound (including plant-derived natural products) against the NPPs will widen the drug discovery horizon for our entity in the field of malaria. During 2006 a collaborative programme which will focus on investigating the antibacterial, antimycobacterial and antimalarial activity of a variety of South African seaweeds was initiated with Dr Denzil Beukes of Rhodes University.

Science communication and research translation

The South African Traditional Medicines Database – TRAMED III – is available to the general public on the MRC website. In addition, the group fields a wide variety of questions from the general public regarding traditional medicines. *The Traditional Healers Primary Care Handbook,* which comprises both traditional and modern applications of primary health care, continues to sell and be distributed by Traditional Healer Philip Kubukeli, among others.

External income: R2 903 750

INDIGENOUS KNOWLEDGE SYSTEMS LEAD PROGRAMME

Director: Dr Gilbert Matsabisa

Highlights

Regional Expert Committee member on Traditional medicines for WHO Africa region – the Programme Director serves as member of this committee for WHO Consultancies as an expert on traditional medicines for the African Union (AU). The programme has on a number of occasions been invited to contribute to the AU meetings and has acted as technical advisor to the SADC secretariat to develop research methodologies for evaluating traditional medicines (TMs).

Patent for malaria – the programme filed a PCT at National Phase on novel compounds with antiplasmodial activity. These compounds are derived from traditional medicinal plants.

Manufacturing plant for traditional medicines – the facility is running a multimillion rand project for building a state-of-the art manufacturing facility for medicinal products and products derived from medicinal plants. This project is at the MRC's Delft site. This facility is 99% complete and operational.

Task team on African malaria research consortium – the programme is involved in a number of African consortia working on traditional medicines. One such consortium is RITAM (Regional Initiative on Traditional Medicines against chronic diseases of Africa), which is a multi African country project.

Clinical trial platform for immune modulators – the programme has developed a toxicology platform for evaluating the safety of traditional medicines using vervet monkeys. The programme has thus far tested 5 traditional medicines. The programme has further developed a clinical trial platform for evaluating the safety (phase I) and efficacy (phase II / III controlled human trials) for immune modulators. Three clinical trials have been approved by the ethics committee so far and 1 phase I clinical trial has been completed.

Poverty and job creation (social impact) community projects – the programme has received funding to develop and manage 3 community social impact projects nationally. The projects are based on scientific validation of medicinal plants and these are used to create sustainable community enterprises for creating jobs.

Thus far IKS has completed 6 toxicological studies and 3 clinical trials. Mutagenicity and antimutagenicity studies of selected traditional medicines have been completed. The IKS has also completed *in vitro* drug metabolising studies using major cytochrome P450 metabolising enzymes.

IKS knowledge management: two databases exist, one on traditional claims for cures and a comprehensive database of medicinal plants, including 61 monographs. The programme is working with the Medicines Control Council for the registration and regulation of traditional medicines. The programme contributed to the Traditional Health Practitioners Act, IKS Policy and the Biodiversity Act. The programme is involved at a regional (African regional) level with the WHO and AU on developing guidelines for the protection of IK and TM knowledge. The programme also assisted the SADC secretariat to develop research methodologies for evaluating traditional medicines. IKS has conducted training workshops for traditional healers; has a school outreach programme; conducts workshops on clinical trials to communities, traditional healers and to GPs. The programme has successfully completed a pilot GPS database of traditional health practitioners in 3 districts in KwaZulu-Natal.

Capacity development

Four staff members are enrolled for degrees in MSc and Psychology. Entrepreneurial training of communities in the Eastern Cape – Senqu and Tsolwana Municipalities,– Lady Grey and Hofmeyr.

Entrepreneurial training of communities in Mpumalanga – Mbombela Municipality – Msogwaba community project. The IKS is investing in clinical trial training of GPs as Principal Investigators in traditional immune modulator clinical trials. Fifty-five Traditional Health Practitioner training programmes were run in TB, HIV and AIDS and Diabetes.

Research collaboration

Collaboration with traditional healer practitioners, Universities (Western Cape, Cape Town, Free State, Limpopo, Pretoria, KwaZulu-Natal and Nelson Mandela Medical University) and science councils (ARC, CSIR, South African National Biodiversity Institute, etc.). Africa – Botswana, Nigeria, Zimbabwe, Kenya, Uganda, DRC. Other - India, Switzerland, UK.

Science communication and research translation

Six toxicology reports was published, metabolism and antimutagenicity studies was published this year and 1 publication on the training programme for traditional healers, produced 6 scientific reports and 5 draft scientific reports.

The programme successfully registered a PCT at national phase on antimalarial lead compounds, *The Monographs of South African Medicinal Plants* was posted on the MRC website. Presentation to the Education Department in Western Cape. IKS radio and television interviews are conducted regularly. Presentations are made on a regular basis to Portfolio Committees of Health, Arts and Culture, and Science and Technology.

External income generated : R4.9 million

CORPORATE REPORTS

STRATEGIC RESEARCH INITIATIVES (SRI)

Executive Manager: Dr Niresh Bhagwandin

Dr N Bhagwandin

This sub-directorate forms part of the Executive Research Directorate of the MRC. Current research initiatives include:

- The implementation of the Cancer Research Initiative of South Africa (CARISA), a joint partnership between the MRC and the Cancer Association of South Africa (CANSA). A workshop was held in August 2006 and a strategy and implementation plan has been drafted. The official launch of CARISA is scheduled for 1 August 2007.
- Two workshops on cardiovascular and metabolic disease research took place and included participants from academia, industry and several NGOs. A business plan for an NCRP on Cardiovascular and Metabolic Disease research is planned for official launch on 1 December 2007.
- The Brain and Behaviour Cross University Initiative has expanded into a national collaborative programme while a scientific and funding proposal was developed.
- Drug discovery from SA medicinal plants through funding from the Innovation Fund was re-confirmed after a hold up of funds for 2005.
- A workshop on stem cell research was held in August 2006, the result of which was a proposal to the MRC to develop a collaborative stem cell research programme.
- A nanotechnology research partnership with MINTEK was formed.
- A transfusion medicine research MoU with the SA National Blood Service (SANBS) was also concluded.

The sub-directorate hosted the following delegations as part of its international collaboration activities:

- SRI hosted 5 scientists from the UK, particularly Newcastle. Their visit, sponsored by the Royal Society (UK) and the NRF (SA) under the SA-UK Science Networking Fund, focused on drug development from plants with a view to submitting an FP7 application. The scientists also visited a number of institutions in KZN and Gauteng.
- The SRI hosted a delegation from Tanzania, including Dr Andrew Kitua, DG of the Tanzanian National Institute of Medical Research. The Tanzanian Institute is keen to enter into a MoU with the MRC to collaborate in traditional medicines.
- A delegation from Taiwan was also welcomed by SRI. Their interests lay in a collaboration in drug development and medical nanotechnologies.
- SRI hosted the evaluation panel of the International Centre for Genetic Engineering and Biotechnology (ICGEB) that was assessing the UCT as a third component of ICGEB.
- SRI met with a PROTA (Plant Resources of Tropical Africa) delegation that was interested in establishing a presence in South Africa.
- European Parliamentarians, an Israeli delegation, as well as an Indonesian delegation were hosted by MRC.
- The EDCTP Review team was hosted by the SRI when discussing renewing an agreement between the MRC and EDCTP.

RESEARCH ADMINISTRATION AND MANAGEMENT

Research Administration and Management (RAM) is a sub-directorate of the Executive Research Directorate. The sub-directorate consists of two constituent divisions, namely Research Administration and Research Management.

MAJOR DEVELOPMENTS:

Self-initiated research (SIR) grants:

The SIR research support category is the main avenue through which the MRC provides open competitive support for individual health researchers. This support is accessed largely by researchers in the higher education system and, to a lesser extent, by researchers located in research institutions such as the National Health Laboratory Service. The focus of initiatives in the 2006/7 period was on the definition of new approaches, processes and systems for delivering support in this category. This included:

- Reducing the number of support cycles from 2 to 1.
- Establishing Conditions of Grant.
- Developing a guidelines and information document to assist prospective applicants and current grant holders.
- Itemising the SIR grant.
- Introducing a grant renewal requirement.
- Enforcing reporting requirements and the newly developed Grant Conditions.

It is envisaged that these changes will enrich the interaction between the MRC and researchers, whilst allowing the MRC to effectively discharge its reporting and other statutory obligations.

While these changes were being developed, a total of 154 researchers were supported within the category. This was a 9% increase from 141 during the 2005/6 financial year. The demographic breakdown of the grant holders within the SIR category is indicated in the table below. Although there is a slight improvement on 2005/6 figures with regard to representation of the different population groups in this category of support, there are still three times as many white researchers supported as the total number of researchers of colour.

Dr C Nxomani

Year	2005/6			2006/7		
Race	Female	Male	Total	Female	Male	Total
African	3	5	8	4	6	10
Coloured	2	1	3	3	2	5
Indian	7	14	21	7	13	20
White	52	57	109	53	66	119
Total	64	77	141	67	87	154

Support for research groups, units and centres:

Twenty six extramural and seventeen intramural research groups, units and centres were supported by the MRC in the 2006/7 financial year. The intramural entities received an average grant of R460 109 while the extramural entities received an average grant of R557 360, to support their general and research operational costs.

At a total of R14 491 357, the external entities received twice as much resources as the internal ones, at R7 821 858. The global

average grant increased by 6% from R489 912 to R518 912. This balance of resource allocation in favour of the extramural research entities is well in line with the MRC's strategic intention of maximising extramural research support. See below:

Extramural entities			Intramural entities		
Amount awarded (R)	No. of entities	Average grant (R)	Amount awarded (R)	No. of entities	Average grant (R)
14 491 357	26	557 360	7 821 256	17	460 109

The support for the groups, units and centres is provided on the basis of an annual submission of detailing their research and operational progress and budget requests. The format of these reports was amended in 2006 to ensure effective and efficient reporting that will assist the MRC to quantify the return on the investment of these entities.

The groups, units and centres are awarded to research leaders in prioritised health research areas for renewable cycles of 4 years for research groups and 5 years for research units and centres. They are reviewed at the end of each cycle with a view to determine whether support should be continued for further cycles. During the 2006/7 financial year, 12 of these research entities were reviewed by panels consisting of at least 1 international expert. All of the reviewed entities were recommended for further cycles of support. This reflected a vote of confidence in the quality, significance and relevance of the research work of these entities and indicated to the MRC good value for the investment it has been making. A further 8 entities will be reviewed in the 2007/8 financial year. A strategic review of all the entities will also be conducted with a view to determine optimal positioning of these entities in the context of the MRC's new Research Strategy (2005-2010).

Research support for pathology research:

The RAM also manages the peer review of research grant applications for the National Health Laboratory Service Research Trust (NHLSRT). The NHLSRT makes available research grants to staff members and postgraduate students at the Departments and Schools of Pathology across the higher education and health research system. In the course of 2006/7, One hundred and two grant applications were received and reviewed, with final awards being granted to 79 applicants, This totalled R4 154 626. Discussions are under way for the strategic repositioning of these grants which will change their typology as well as the management arrangement the NHLSRT has with the MRC. The most exciting development is that there will be introduction of a higher value longer-term grant for established pathology researchers in the 2008/9 period of support. This will be known as the Pathology Research Award and will have a maximum value of R500 000 for the duration of the project. The current small pathology research grants will be known as the Pathology Research Development Grant and its value will be increased to R90 000.

CORPORATE AND PUBLIC AFFAIRS DIRECTORATE

The directorate has refocused its work and operations in achieving the aims and objectives of the MRC's strategic and business plans 2005 – 2010. In doing this the directorate have been at the forefront of improving communication strategies, communicating MRC Management's plans and finally working towards a new corporate culture within the MRC. The directorate has also been leading the MRC in having proper and clear internal communication structures and avenues.

Mrs S Bok

MRC CONFERENCE CENTRE AND EVENT MANAGEMENT OFFICE

The management of the MRC Conference Centre remains a challenge for this directorate due to its very nature of being a business centre as opposed to other directorates that could be referred to as operational centres. However, guidance from a Steering Committee which has extensive expertise and experience in governance and business matters will soon place the MRC Conference Centre as the preferred venue for prospective clients. The MRC Conference Centre has had several interactions with various role players in making sure that the centre remains attractive, viable and able to meet stakeholders' needs. The office has recently secured an agreement with EDCTP.

MRC STUDIO

The MRC Studio is a research and corporate design, photography and production support centre. In 2006, the office conceptualised the new MRC Corporate Identity Policy and created a new corporate look to take us into the next 5 years and beyond. Our mandate as the custodians of the MRC's Corporate Identity is to ensure that the MRC's brand integrity is maintained by managing the production process and producing various MRC corporate publications, research publications, research posters, summary reports, policy briefs, presentations, research videos, internal communication videos, digital photography, exhibition stands and various other visual materials including web-based.

The studio also designs and produces the MRC Annual Report every year; and communicates MRC research in the form of technical reports, policy briefs, presentations, conference posters, unit brochures and exhibition stands in support of the MRC's research translation initiatives.

RESEARCH TRANSLATION OFFICE

This office has two staff members but it incorporates other staff members from the directorate to facilitate certain functions. Their mandate is taking MRC research to the public and to schools thus empowering them with some knowledge of science and technology. This office also targets communities, including learners, to see and experience the value of science in their lives. This is achieved through conducting health days at schools and in communities, e.g. World Cancer Day in Centane and Bizana where the MRC played a major role in collaboration with Provincial Department of Health and surrounding communities and schools. Science promotion in schools is taking place in a number of provinces.

MEDIA, PR AND SCIENCE WRITING

The office is the most vibrant, exciting and yet challenging of all offices within the ambit of the MRC. Activities include the

following: editing of letters, brochures, writing of press releases on various issues, crisis/issues management surrounding the microbicides trials, media liaison at parliament, conferences, dealing with the XDR-TB crisis, the telemedicine conference, networking and collaboration with Centre of the Cell in London.

OFFICE OF INTERNATIONAL AFFAIRS

The office engaged with the Department of Science & Technology on the European Union's Framework Programme 7, particularly the Summary of Intended Participation (SIP) process. This process was instituted by DST to assist South African researchers with applications for EU calls for proposals, and is the only means via which DST seed funding for proposal development can be accessed. The information on FP7 and SIPs was communicated to researchers. DST also held a bilateral agreement roadshow for the Western Cape at the MRC, providing information on bilateral agreements and related funding mechanisms managed by the NRF, as well as feedback from local institutions on their international collaborations.

The Office of International Affairs attended a DST promotion of South Africa-Australia science and technology information session. Information on DST's capacity development instruments and the South African Deputy President's ASCISA/JIPSA initiatives were passed on to staff and researchers. Foreign visits and follow-up are co-ordinated by the Office of International Affairs. Information from foreign visits and technical meetings is communicated to staff and the wider research community via regular bulletins (e-mail and web, and internal publications) and direct contact with relevant parties.

INFORMATICS AND KNOWLEDGE MANAGEMENT

The Informatics and Knowledge Management Directorate (IKMD) is both a research strategic and service sub-directorate within the MRC. The functions of the directorate are cross-cutting because of the wide range of activities undertaken. First and foremost, the directorate develops, implements, sources and maintains the Information Systems for the management and administration of the organisation. Secondly, the directorate is responsible for the management of information for the performance management purposes of the organisation.

Thirdly, the directorate manages the knowledge of the organisation to develop knowledge assets. Fourthly, the directorate deals with the dissemination of information and knowledge to policy-makers and the general public of South Africa. Over the past year, the latter activities in particular have been extended to cover other African countries individually or as part of the NEPAD Programme.

IKMD also interacts internationally to place the organisation within the global village and be updated all the time in the area of Informatics and Knowledge Management. The Directorate enjoys some international recognition in what it does as reflected by international activities assigned to the directorate by organisations such as the WHO and the Health on the Net organisation (HON) responsible for health website accreditation.

In 2006 MRC (IKMD) was assigned by HON to accredit all health information websites in the African Continent particularly in the English-speaking countries. The sub-directorate undertakes research projects in the area of health and biomedical informatics in collaboration with selected internal and external MRC units, groups and programmes.

BIOMEDICAL INFORMATICS RESEARCH DIVISION

Activities included: development and Implementation of an antiretroviral therapy (ART) Surveillance System for Free State Department of Health; an open Medical Record System; and Biomedical Informatics Training.

HEALTH INFORMATION RESEARCH AND DEVELOPMENT

Projects undertaken by this division included: An Integrated Electronic Patient Record Development Study in North West Province; and use of Smart Card as an Electronic Record Study.

The CDSS (community decision support system) is a computerised decision-support system which aims to support consumers in their decision making about seeking help for common but potentially serious ailments, such as TB.

Participation in health information standardisation processes in both the public and private health care sectors is ongoing.

The Informatics and Knowledge Management Sub-Directorate (IKMD) of the MRC held a workshop on Open Access (OA) and Knowledge Translation (KT).

WEB AND MEDIA TECHNOLOGIES DIVISION

IKMD uses the convergence of Information and Communication Technologies (ICTs) to develop appropriate knowledge transfer models through which it can communicate science and research knowledge to MRC stakeholders.

During the past year, the MRC's corporate website (www.mrc.ac.za) has been reengineered completely with the specific purpose of transforming it into a knowledge-transfer tool, based on a web to public knowledge transfer model.

The AfroAIDSinfo web portal (www.afroaidsinfo.org) has expanded its activities to communicate critical information on HIV and AIDS to its 5 audiences. The AfroAIDSInfo health information curriculum developed by IKMD is utilised as part of a NEPAD initiative across the African continent.

Audio interviews with scientists have been broadcast via community and campus radio stations or as web casts. Audio interviews totalled 53.

Dr N Mbananga

TECHNOLOGY AND INNOVATION

Prof. P Terblanche

The MRC Technology and Innovation directorate underwent some changes in 2006, creating the Diabetes Discovery Platform (DDP) as a spin-out of the former Diabetes Research Group.

NEW AND EXISTING PLATFORMS INCUBATION

The year 2006 was one of the most significant in the innovation history of the MRC. MRC and its partner, ARC (Agricultural Research Council) signed a major Licence and Joint Development Agreement with a Danish privately-owned Biotech Company to develop therapeutics and a diagnostic product for Type II Diabetes. This agreement included proteomic technology transfer to the MRC, a research and development contract of several million rand, as well as upfront licence fees and ultimately royalties. As a result, the DDP centre was created as a centre of competence with unique know-how and state of the art histology image analysis, immunocytochemistry, molecular biology, proteomics and tissue/cell culture facilities.

DDP ACHIEVEMENTS IN HEALTH RESEARCH:

- The reduction of beta-cell number and volume in neonatal offspring
- Monitoring of blood glycemic and lipid profiles of women consuming a high saturated fat diet during pregnancy.
- Treating and correcting FFA changes in foetal offspring by maternal dietary supplements and to ensure normal and healthy foetus at birth.
- Animal models of stages of T2D established and characterised for further research

STRATEGIC MANAGEMENT OF INTELLECTUAL PROPERTY (IP)

The MRC Innovation Centre (IC) continues to strategically manage its portfolio of around 18 patents. While 3 new patents were filed and 2 patents successfully defended, 3 patents were lapsed due to market failure.

The IC continues to play an active role in building capacity in IP management and technology transfer in South Africa and has formed a strategic alliance with the Cape Biotech Trust and Acorn Technologies to optimise the innovation pipeline in the Western Cape and facilitate the rapid realisation of value from applied research projects.

OTHER INITIATIVES

In 2006, the IC facilitated the establishment of a new venture with the Innovation Fund and the inventors that will complete the development and launch of a novel technology to be used during anaesthesia. This technology ensures proper fixation of the intubation tube during anaesthesia.

A further highlight is the launch of the first ever Public-Private-Partnership (PPP) at the MRC. This PPP sees the MRC and the University of Stellenbosch joining forces to develop telemedicine technology for delivering effective health care to rural areas. The PPP is in its pilot phase in KZN and the Western Cape and it is supported by DST, KZN DOH and the technology is supported by the Innovation Fund. This project evaluates the concept of a virtual hospital, offering patients accessible and equitable health care by bridging the digital divide.

RESEARCH CAPACITY DEVELOPMENT AND HUMAN RESOURCES MANAGEMENT

The year saw the MRC's research development funding opportunities being opened up to MRC researchers.

The MRC benefited from the second round of funding for the Department of Science & Technology Professional Development Programme, which provided funding for 18 Masters and PhD interns.

A policy was put in place for Honorary, Adjunct and Visiting appointments as a mechanism for allowing non-MRC employed researchers to contribute to or benefit from the MRC's research offerings.

A mentorship workshop was held in October 2006, attended by mentors, mentees and managers. The resulting policy document that resulted is undergoing consultation as part of the 2007 strategic initiatives of the MRC before being finalised.

Most of the initial group of Career Award fellows (4 out of 7) completed their period of research leadership training and took up prominent positions in research and academia. The vacancies were advertised and subsequently filled by new fellows. Only 2 of the original 4 will go on till the end of 2007. The programme's purpose is to develop the research leaders of the future.

HUMAN RESOURCES MANAGEMENT

The directorate was placed under the leadership of the Executive Manager of Research Capacity Development with the purpose of mainstreaming development opportunities and transformation. The directorate still maintains the 4 divisions responsible for operational HR activities, but has seen more co-operation on related activities between the divisions.

Executives and managers of support services have been put through training to enhance internal consultancy and partnering skills. These include executives and managers for Operations, Human Resource Management, Research Capacity Development, Finance, Research Administration and Management as well as Information Technology.

A new system for Human Resource management has been introduced and staff have been trained by the service provider, Business Connection, in the relevant areas of the system usage.

HEALTH IN THE WORKPLACE

Through the HIV workplace programme the uptake of voluntarily counselling and testing has increased. All employees who have tested positive have enrolled onto the expert treatment programme, receiving assistance and medication, supported by the highest levels of confidentiality and professional assistance by the external supplier, including clinical management and 24-hour toll-free assistance. In addition, the programme has assisted and encouraged employees to be open about their status, in an attempt to help and assist fellow colleagues. It is our aim to increase the VCT uptake to at least 60% during 2007.

INJURY ON DUTY

Nature of injury on duty	Number	% of total
Required basic medical attention only	5	71
Temporary total disablement	2	29
Permanent disablement	-	-
Fatal	-	-
Total	7	100

No major incidents have been reported. Due to the MRC's favourable accident experience, the Compensation Commissioner has announced that the reduction in the MRC's assessment rate will increase from 40 to 55%, confirming that effective accident preventive measures pay dividends. The value of the role of the Safety Manager is also visible in this.

Dr N Madela-Mntla

OPERATIONS

Mr Z Vokwana

The Operations Division, the largest function of the support services of the MRC with 52 staff, had a very busy year to handle the phenomenal growth in the size of the MRC units. Innovative re-allocation of floor space was needed to accommodate additional staff and laboratory requirements.

The division is also responsible for the maintenance of the MRC buildings and the smooth operations of utilities such as postal services, telephones, cleaning, painting, security, procurement, etc.

Some of the highlights of the division's activities are listed below:

EDCTP PROJECT

After many discussions, relocations and adjustments, commencing in 2001, the European Drug and Clinical Trial Partnership (EDCTP) Project started in August 2006. It entailed creating additional office space by renovating and adding to the existing office structure and increasing office space by 245%, as well as improving the entire EDCTP site. The total cost of this project was about R1.5m.

The official handover of the completed project took place in February 2007. This project became the motivator for EDCTP to commit to a long-term partnership with the MRC, basing their Africa operations at the MRC Campus, Cape Town.

PAINTING OF CAPE TOWN AND PRETORIA OFFICE BUILDINGS

As part of its planned maintenance plan, 2 of the MRC's sites were refurbished during this budget year.

The NIVS Building, based at Tygerberg Hospital, housing the Nutritional Intervention Research Unit, PROMEC and the Primate Unit was painted at a cost of R230 000.

Likewise, the Pretoria Office Building, housing various units, was also refurbished at a cost of R266 000.

SECURITY SERVICES

The security arrangements in Cape Town were upgraded to a full 24-hour service. Due to the expiry of the previous security contract, a new security company, Group 4 Securicor, was appointed in April 2007 after a successful tender process.

SAFETY HEALTH AND ENVIRONMENTAL MANAGEMENT (SHE)

In 2006, the SHE Unit was established and a SHE Manager employed to ensure compliance to legal requirements. The SHE unit, including the Pretoria and Kwazulu-Natal regions and SHE facilitators, report to the Operations Division.

The focus in 2006 was based on implementation of a SHE Management System through awareness, training and obtaining buy-in from all the levels within the organisation, and the development of implementation procedures and guidelines. A process of hazard identification and risk assessment was initiated with the aim of developing Health and Safety Policy objectives.

EMPLOYMENT EQUITY

Tables 1 and 2 illustrate the MRC's internal growth for 1997-2006/7 and also compare the MRC against the national average percentages from the current Employment Equity Report of the Department of Labour. The tables also clearly show that the MRC is exceeding national averages for both black and female profiles in all occupational categories.

Table 1

EMPLOYMENT EQUITY

		BLACK (%)			
		1997	2006/7	Current SA EE statistics	2007 projection
Executive management	Level 1	25.0	80	21	67
Senior management	Level 1	13.0	45	26	32
Middle management	Level 2	15.0	56	51	55
Junior management	Level 3	42.4	85	56	75
Semi-skilled	Level 4	55.5	90	85	85
Unskilled	Level 5	95.2	98	97	98

		FEMALE (%)			
		1997	2006/7	Current SA EE statistics	2007 projection
Executive management	Level 1	12.5	20	15	33
Senior management	Level 1	22.0	44	24	50
Middle management	Level 2	53.8	59	38	65
Junior management	Level 3	74.3	76	43	75
Semi-skilled	Level 4	79.4	62	35	75
Unskilled	Level 5	47.6	42	35	55

Table 2

REPORT ON CONSULTANT APPOINTMENTS USING APPROPRIATED FUNDS

Project title	Total number of consultants	Duration: work days	Contract value (in rands)
Biostatistics	1	173.36	109 865
Collaborative Research	1	173.36	360 105
Cochrane Centre	4	211	225 959
Legal Services	1	173.36	478 327
Nutrition Intervention	1	173.36	155 324
AfroAids	1	130	36 000
Telemedicine	1	29.67	15 065
Health promotion	2	183	61 057
Web & Media	2	142	48 000
Alcohol and Drug Abuse	1	43	40 000
PROMEC	1	9	2 385
IKMD	1	16	7 400
Health Information	1	65	56 000
Crime, Violence and Injury	1	22	2 640
Malaria	1	232	53 790

ACCELERATED DEVELOPMENT PROGRAMME

The Accelerated Development Programme of the MRC was implemented by the Human Resource Management Directorate as one of the strategic initiatives to support the MRC's strategic objective of transformation. Its primary aim is to develop scientific management and leadership competencies of managers and potential managers. Part of the transformation process is to create closer alignment between the support functions and research, the core business of the MRC.

To facilitate this process of creating strategic partners, the 2006/2007 Accelerated Development Programme focused mainly on management and leadership skills. Thirteen managers are currently participating in the Development Business Partnering and Internal Consulting Skills Programme presented by YSA-Lapin (PTY) Limited.

The race and gender profile of these managers are as follows:

Name & Surname	Race	Gender
Achmat Noor	C	M
Aragea Holland-Fredericks	C	F
Christine Burns	W	F
Clifford Nxomani	A	M
Elsie Venter	W	F
Edith Madela-Mntla	A	F
Natalie Bingham-Jonkers	C	F
Patrick Charls	W	M
Philip Du Plessis	C	M
Philip Swart	W	M
Sarah Bok	C	F
Thandi Mgwebi	A	F
Zukile Vokwana	A	M

This programme provides facilitation and coaching skills to facilitate strategic partnering and the provision of optimum service delivery by the managers of the support functions to the research units of the MRC.

Furthermore, the following managers attended Management programmes at the University of Stellenbosch Business School (USB) during the 2006 / 2007 budget year:

Name & Surname	Programme	Race	Gender
Mongezi Mdhluli	MBA 2nd Year	A	M
Christopher Rajah	Senior Management Programme	I	M
Marissa Damons	Senior Management Programme	C	F
Sarah Bok	Senior Management Programme	C	F
Mandy Williams	Management Development Programme	C	F
Marlon Cerf	Management Development Programme	C	M
Thandi Mgwebi	Management Development Programme	A	F

The Accelerated Development Programme has once again made a valuable contribution to the development of management and leadership qualities in the MRC. Although the enhancement of management competencies will continue, the focus of the Accelerated Development Programme will revert back to developing scientific leadership competencies in the coming year.

INFORMATION TECHNOLOGY SERVICES DIVISION

The main driving forces for this year have been to improve the level of service offered to the researchers and to standardise the IT systems throughout the organisation. The first project was to implement a single mail system throughout the organisation. After evaluating other systems it was decided to standardise using Microsoft Exchange. This was rolled out in the Gauteng region in August and a phased approach has been adopted for the Western Cape region.

The server infrastructure in Gauteng was upgraded to accommodate the new systems being installed. The Internet link was also increased to 256Kb from 128Kb.

In order to improve user support, a web-based helpdesk logging system has been introduced for all three regions. This enables the tracking of users' requests and also provides continuous feedback to users on the progress of their calls.

A wireless network was installed in the boardroom at 491 Ridge Road to provide Internet access for visitors. This network was not connected to the internal network for security reasons. The division is considering the same option for the boardroom in Cape Town.

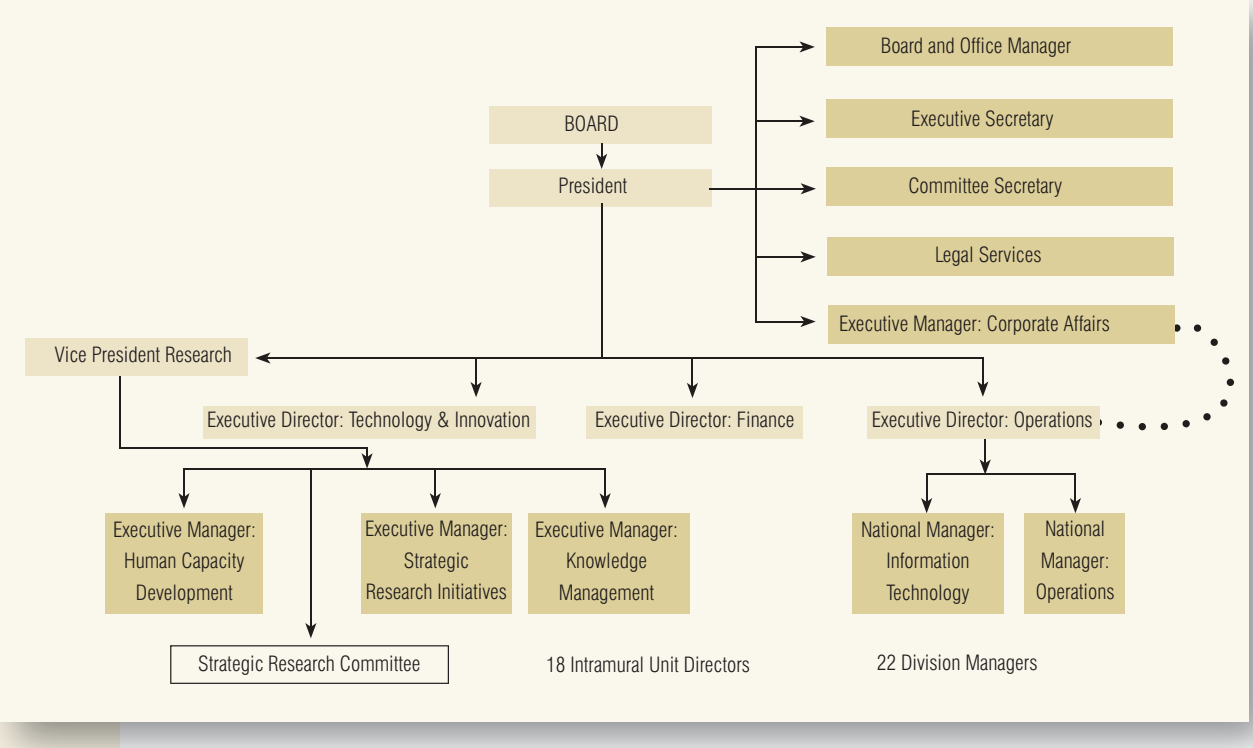
The division installed a Virtual Private Network (VPN) in Cape Town in order for users to download their mail rather than having to use web mail when not on site. This VPN option is also being used to link some of the smaller sites to the MRC network via Telkom DSL lines. This option is significantly cheaper than using a diginet line.

The rolling black-outs in the Western Cape Province caused by insufficient power supply have highlighted the need to upgrade the capacity of our existing generator at the Medicina Campus in Cape Town. Operations is currently investigating the option to upgrade the generators.

The installation of a new HR System (Dynamique Resource Link from BCX) started in August 2006 and is expected to continue into late 2007. The first phase is the payroll and leave system. The second phase will be the human resource information and the self-service modules.

Mr P Charls

EXECUTIVE TEAM

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1. Prof. AD MBewu
MRC President

2. Dr A Dhansay
Acting Executive Director: Research

3. Mr Z Vokwana
Executive Director: Operations

4. Prof. P Terblanche
Executive Director: Technology & Innovation

5. Mr B Mahlangu
Executive Director: Finance & Contracts

6. Dr N Madela-Mntla
Executive Manager: Research Capacity Development and Resources Management

7. Mr P Charls
National Manager: Information Technology Services Division

8. Dr M Mdhluli
Acting National Manager: Operations

9. Ms S Bok
Executive Manager: Corporate and Public Affairs Directorate

10. Dr N Bhagwandin
Executive Manager: Strategic Research Initiatives

11. Dr N Mbananga
Executive Manager: Informatic & Knowledge Management Directorate

12. Ms M Damons
Executive Manager: Legal Services

CAREER AWARDEES

1. DR HEIDI SEGAL

Dr Heidi Segal is currently focusing her research on an understanding of the processes involved in the development of antibiotic resistance critical for health care policy. Interventions to limit the emergence of antibiotic resistant bacteria can significantly reduce the economic burden of disease on the health care system. Dr Segal's work has contributed to the elucidation of resistance mechanisms in clinical pathogens with unique drug susceptibility profiles.

2. DR BHAVNA GORDHAN

As part of a collaborative effort with laboratories at the London School of Hygiene and Tropical Medicine and GlaxoSmithKline, Dr Gordhan has been instrumental in developing and applying genetic tools for the identification, validation and characterisation of drug and vaccine targets in mycobacterium tuberculosis under the Action TB Program since it was established in 1994.

3. DR AQIEL DALVIE

Dr Dalvie's research over the last few years included studies on health effects and an exposure assessment of agricultural pesticides, also the health effects of urban pollutants such as metals. The focus of his research is around the reproductive health effects of endocrine disruptive chemicals. This is also the topic of the study funded by the MRC Career Award, on which he will be working for the next few years.

4. DR JULIA GOEDECKE

Dr Goedecke's research focused on ethnic differences in obesity and the manifestation of the metabolic syndrome in South African women. She explored the mechanisms underlying this association, particularly examining the role of the adipose tissue depots. This was examined at a physiological and molecular level and also incorporated interactions with diet, physical activity and socio-cultural factors.

5. DR VIRNA LEANER

Dr Leaner's current research interest is to determine an understanding of the molecular events associated with the development and treatment of cervical cancer, one of the major cancers affecting women in South Africa. The project aims to identify transcriptional profiles and genes associated with cervical cancer in order to obtain a better understanding of disease progression and to identify markers for the detection of the disease and to identify genes which are functionally relevant to the disease.

6. DR KEERTAN DHEDA

Dr Dheda has established an international collaborative network (Africa, USA and Europe) to facilitate studies in mycobacterial immunity, specifically using cells from the human lung and TB- and HIV-related diagnostics. The utility of antigen-specific IFN-release assays for the diagnosis of TB infection is the study which forms the basis of the current MRC Award.

7. DR LESTER DAVIDS

Dr Davids's research focuses on vitiligo and burns, which lead to the depigmentation of the skin. This project plans to adopt a holistic approach to this problem. The basic science component involves understanding the molecular and cellular mechanisms underlying the activation, proliferation and migration of melanocytes in the skin. The psychological component will help to evaluate patients' perceptions of living with patches of depigmented skin.

8. DR SANDRINE LECOUR

Dr Lecour's research focuses on the recently identified crucial role of the immune system in cardioprotection, with the cytokine Tumor Necrosis Factor alpha and the nuclear regulatory peptide Signal Transducer and Activator of Transcription playing a critical role in ischaemic preconditioning. The research aims to delineate and characterise the role of both TNF and STAT-3 in ischaemic pre- and postconditioning.


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9. DR TRACY KOLBE-ALEXANDER

Dr Kolbe-Alexander's group will conduct formative research to characterize environmental, inter- and intrapersonal factors which may influence the development of a workplace-based physical activity intervention. The intervention includes the development of a corporate physical activity 'environmental audit'.

10. DR MERVIN MEYER

Tumour necrosis factor-related apoptosis inducing factor (TRAIL) is emerging as a very promising pro-apoptotic anti-cancer agent. What makes it an attractive option as a potential anti-cancer drug is the fact that it specifically targets transformed cells with little effect on normal cells. Part of Dr Meyer's postdoctoral research at the National Centre for Biomedical Engineering Science (National University of Ireland, Galway) was to explore the potential use of arsenic trioxide to sensitise leukaemia cells to TRAIL and to delineate the possible mechanism of this effect.

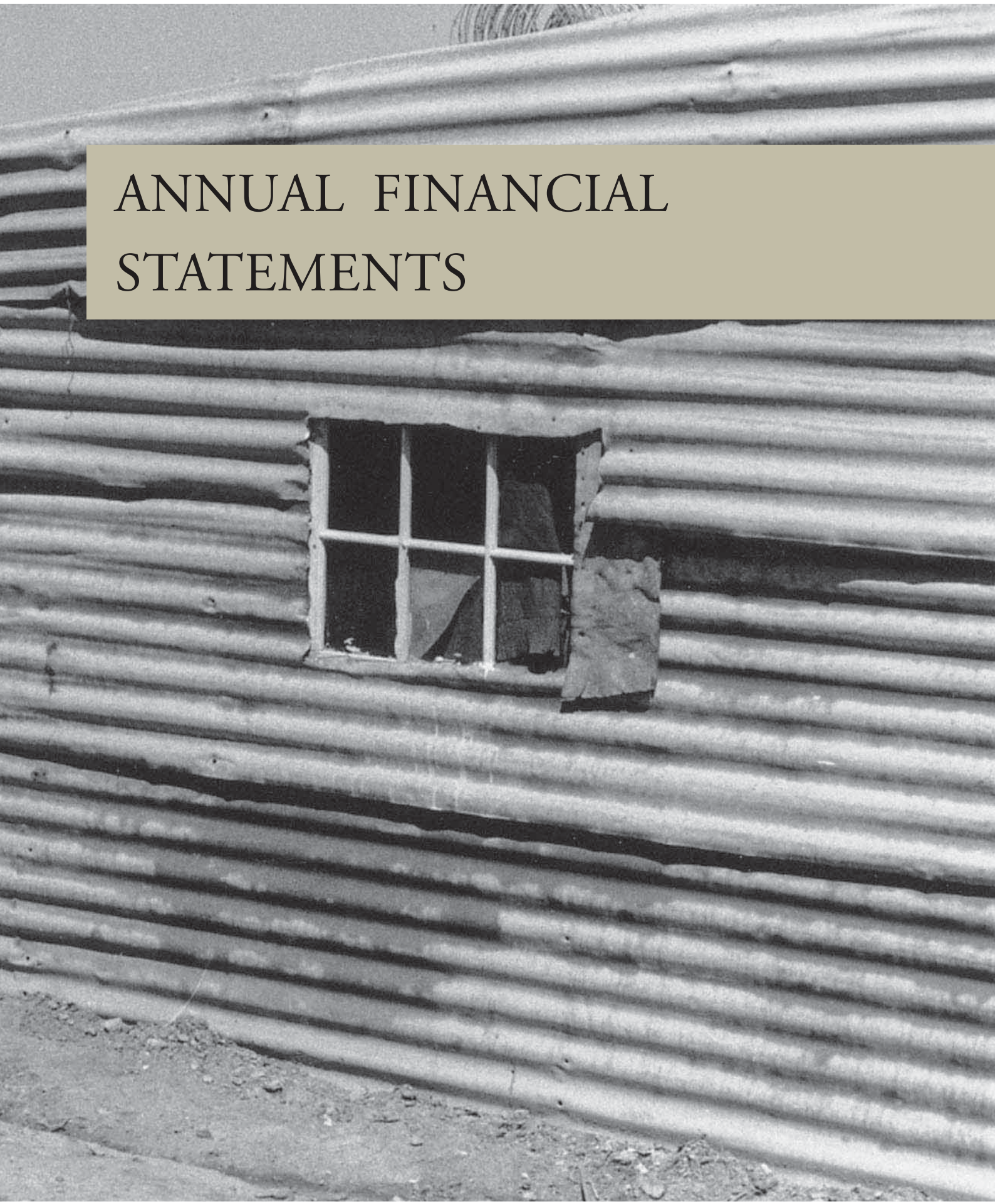
11. DR SANJAY LALA

Dr Lala is currently focusing his research on the immune systems of children, specifically on the biology of a particular kind of cell, namely the Paneth cell. When studying the biology of cells, Dr Lala looks at naturally occurring antibiotics and whether cells can produce antibiotics. In a bid to prevent diarrhoeal diseases in infants, he aims to find out whether antibiotics can be produced naturally.

12. DR JO-ANNE PASSMORE

Dr Passmore has been mentored via the MRC's Career Development Program (2002 – 2005) to initiate her research program at UCT on genital mucosal immune responses during sexually transmitted infections. She is now a principal investigator with SAAVI for her study of mucosal HIV-specific immune responses in the control of HIV and the application of these methodologies to studying mucosal responses to HIV in a vaccine setting.

ANNUAL FINANCIAL STATEMENTS



REPORT OF THE AUDITOR-GENERAL TO PARLIAMENT ON THE FINANCIAL STATEMENTS AND PERFORMANCE INFORMATION OF THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL FOR THE YEAR ENDED 31 MARCH 2007

REPORT ON THE FINANCIAL STATEMENTS

Introduction

1. I have audited the accompanying financial statements of the South African Medical Research Council which comprise the statement of financial position as at 31 March 2007, statement of financial performance, statement of changes in net assets and cash flow statement for the year then ended, and a summary of significant accounting policies and other explanatory notes, as set out on pages 80 to 103.

Responsibility of the accounting authority for the financial statements

2. The accounting authority is responsible for the preparation and fair presentation of these financial statements in accordance with South African Statements of Generally Accepted Accounting Practice with Generally Recognised Accounting Practice Standards 1, 2 and 3, as described in note 1 to the financial statements and in the manner required by the Public Finance Management Act, 1999 (Act No. 1 of 1999). This responsibility includes:
    - designing, implementing and maintaining internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error
    - selecting and applying appropriate accounting policies
    - making accounting estimates that are reasonable in the circumstances.

Responsibility of the Auditor-General

3. As required by section 188 of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996), read with sections 4 of the Public Audit Act, 2004 (Act No. 25 of 2004) and section 14(2) of the Medical Research Council Act, 1991 (Act No. 58 of 1991), my responsibility is to express an opinion on these financial statements based on my audit.
4. I conducted my audit in accordance with International Standards on Auditing, read with General Notice 647 of 2007, issued in *Government Gazette* no. 29919 of 25 May 2007. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.
5. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements 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 entity's internal control.
6. An audit also includes evaluating the:
    - appropriateness of accounting policies used
    - reasonableness of accounting estimates made by management
    - overall presentation of the financial statements.
7. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Basis of accounting

8. The public entity's policy is to prepare financial statements on the basis of accounting determined by the National Treasury, as set out in accounting policy note 1 of the financial statements.

Opinion

9. In my opinion, these financial statements present fairly, in all material respects, the financial position of the South African Medical Research Council as at 31 March 2007 and of its financial performance and cash flows for the year then ended in accordance with the basis of accounting determined by the National Treasury of South Africa, as described in note 1 to the financial statements and in the manner required by the Public Finance Management Act, 1999 (Act No. 1 of 1999).

OTHER MATTERS

I draw attention to the following matters which are ancillary to my responsibilities on the audit of the financial statements.

10. Difference between the general ledger and the fixed assets register:

    Differences between the fixed assets register and the general ledger was caused due to incorrect depreciation rates being processed on the fixed assets register. The difference does not affect the accuracy of the financial statements or the effective, efficient management of the entity's fixed assets.

OTHER REPORTING RESPONSIBILITIES

Reporting on performance information

11. I have audited the performance information as set out on pages 106 to 118.

Responsibilities of the accounting authority

12. The accounting authority has additional responsibilities as required by section 55(2)(a) of the PFMA to ensure that the annual report and audited financial statements fairly present the performance against predetermined objectives of the public entity.

Responsibility of the Auditor-General

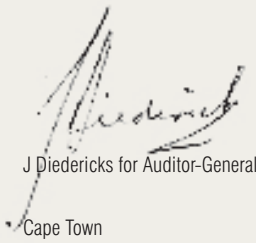
13. I conducted my engagement in accordance with section 13 of the Public Audit Act, 2004 (Act No. 25 of 2004) read with General Notice 646 of 2007 issued in *Government Gazette* No. 29919 of 25 May 2007.
14. In terms of the foregoing my engagement included performing procedures of an audit nature to obtain sufficient appropriate evidence about the performance information and related systems, processes and procedures. The procedures selected depend on the auditor's judgement.
15. I believe that the evidence I have obtained is sufficient and appropriate to provide a basis for the audit findings reported below.

Audit findings

16. No audit findings.

APPRECIATION

17. The assistance rendered by the staff of the South African Medical Research Council during the audit is sincerely appreciated.



J Diedericks for Auditor-General

Cape Town

31 July 2007

AUDITOR-GENERAL

MEDICAL RESEARCH COUNCIL SOUTH AFRICA
STATEMENT OF FINANCIAL POSITION
AT 31 MARCH 2007

	NOTES	2007 R	2006 R
ASSETS			
Non-current assets			
Property, Plant and Equipment	3	90,692,234	85,173,367
Intangible assets	4	1,324,285	-
Biological assets	5	710,850	645,350
Investments	6	100,001	30,062,854
		92,827,370	115,881,571
Current Assets			
Investments	6	2,540,903	1,962,582
Inventory	7	389,861	396,978
Trade and other receivables	8	49,530,880	37,729,894
Cash and Cash Equivalents	9	301,747,422	272,413,869
		354,209,066	312,503,323
Total assets		447,036,436	428,384,894
EQUITY AND LIABILITIES			
Capital and reserves			
Accumulated Surplus		62,347,304	32,296,326
Mark to Market Reserves		1,449,169	9,770,467
		63,796,473	42,066,793
Non-current liabilities			
Deferred income contracts and grants	10	90,692,234	86,189,768
Trust Funds	9	877,830	1,404,563
Long-term Loans	11	-	11,141
Post-retirement Benefits	12	22,346,580	45,229,000
Provisions	13	12,180,529	9,872,787
		126,097,173	142,707,259
Current liabilities			
Provisions	13	-	-
Deferred income	10	204,119,713	190,022,776
Trade and other payables	14	53,067,418	53,578,978
Current portion of long-term loans	11	11,141	9,088
		257,142,790	243,610,842
Total equity and liabilities		447,036,436	428,384,894

MEDICAL RESEARCH COUNCIL SOUTH AFRICA
STATEMENT OF FINANCIAL PERFORMANCE
FOR THE YEAR ENDED 31 MARCH 2007

	NOTES	2007 R	2006 R
Revenue		454,765,355	345,672,103
Operating Expenditure		(422,990,136)	(355,660,605)
Operating (Deficit)/Surplus for the year		31,775,225	(9,988,502)
Finance costs		(1,724,247)	(611,929)
(Deficit)/Surplus for the year	16	30,050,978	(10,600,431)

MEDICAL RESEARCH COUNCIL SOUTH AFRICA
STATEMENT OF CHANGES IN NET ASSETS
FOR THE YEAR ENDED 31 MARCH 2007

	ACCUMULATED SURPLUS	MARK TO MARKET RESERVES	TOTAL
Balance at 1 April 2005	42,896,757	4,830,993	47,727,750
(Deficit)/Surplus for the year	(10,600,431)	-	(10,600,431)
Movement on fair value of investments	-	5,073,604	5,073,604
Realisation of mark to market reserve	-	(134,130)	-134130
Balance at 31 March 2006	32,296,326	9,770,467	42,066,793
Balance at 1 April 2006	32,296,326	9,770,467	42,066,793
(Deficit)/Surplus for the year	30,050,978	-	30,050,978
Fair value movement of investment recognised		7,485,355	7,485,355
Movement on fair value of investments	-	539,199	539,199
Realisation of mark to market reserve	-	-16,345,852	-16,345,852
Balance at 31 March 2007	62,347,304	1,449,169	63,796,473

MEDICAL RESEARCH COUNCIL SOUTH AFRICA
CASH FLOW STATEMENT
FOR THE YEAR ENDED 31 MARCH 2007

	NOTES	2007 R	2006 R
Cash flows from operating activities			
Cash receipts from grants and contracts		406,651,272	326,306,880
Cash paid to suppliers and employees		(392,972,713)	(299,413,721)
Cash generated from operations	20	13,678,559	26,893,159
Interest received		19,930,975	14,464,164
Finance costs		(1,724,247)	(611,929)
Dividend received		36,270	52,442
Net cash inflow from operating activities		31,921,557	40,797,836
Cash flows from investing activities			
Property, plant and equipment acquired		(15,146,047)	(19,908,755)
Proceeds on disposal of plant and equipment		67,545	9,992
Intangible assets acquired		(1,500,346)	-
Proceeds on disposal of investments		37,509,085	923,608
Investments acquired		(100,000)	-
Net cash outflow from investing activities		20,830,237	(18,975,155)
Cash flows from financing activities			
Increase/(Decrease) in Post-retirement Benefit Obligation		(22,882,420)	3,975,000
(Decrease)/Increase in Trust Funds		(526,733)	35,087
Loans repaid		(9,088)	(6,990)
Net cash inflow from financing activities		(23,418,241)	4,003,097
Net increase in cash and cash equivalents		29,333,553	25,825,778
Cash and cash equivalents at beginning of year		272,413,869	246,588,091
Cash and cash equivalents at end of year		301,747,422	272,413,869

MEDICAL RESEARCH COUNCIL SOUTH AFRICA
NOTES TO THE FINANCIAL STATEMENTS
FOR THE PERIOD ENDED 31 MARCH 2007

1 BASIS OF PREPARATION

The financial statements have been prepared in accordance with the South African Statements of Generally Accepted Accounting Practices (GAAP) including any interpretations of such Statements issued by the Accounting Practices Board, with the prescribed Standards of Generally Recognised Accounting Practices (GRAP) issued by the Accounting Standards Board replacing the equivalent GAAP Statement as follows:

Standard of GRAP	Replaced Statement of GAAP
GRAP 1: Presentation of financial statements	AC101: Presentation of financial statements
GRAP 2: Cash flow statements	AC118: Cash flow statements
GRAP 3: Accounting policies, changes in accounting estimates and errors	AC103: Accounting policies, changes in accounting estimates and errors

The recognition and measurement principles in the above GRAP and GAAP Statements do not differ or result in material differences in items presented and disclosed in the financial statements. The implementation of GRAP 1, 2 & 3 has resulted in the following significant changes in the presentation of the financial statements:

1.1 Terminology differences:

Standard of GRAP	Replacement Statement of GAAP
Statement of financial performance	Income statement
Statement of financial position	Balance Sheet
Statement of changes in net assets	Statement of changes in equity
Net assets	Equity
Surplus/deficit for the period	Profit/loss for the period
Accumulated surplus/deficit	Retained earnings
Contributions from owners	Share capital
Distributions to owners	Dividends
Reporting date	Balance sheet date

1.2 The cash flow statement can only be prepared in accordance with the direct method.

1.3 Specific information such as:

(a) receivables from non-exchange transactions, including taxes and transfers;

(b) taxes and transfers payable;

(c) trade and other payables from non-exchange transactions; must be presented separately on the statement of financial position

1.4 The amount and nature of any restrictions on cash balances is required to be disclosed.

Paragraph 11 – 15 of GRAP 1 has not been implemented as the budget reporting standard is in the process of being developed by the international and local standard setters. Although the inclusion of budget information would enhance the usefulness of the financial statements, non-disclosure will not affect fair presentation.

MEDICAL RESEARCH COUNCIL SOUTH AFRICA
NOTES TO THE FINANCIAL STATEMENTS
FOR THE PERIOD ENDED 31 MARCH 2007

2.1 Revenue Recognition

Revenue is recognised on the accrual basis.

2.2 Government Grants Received

The baseline government grant is recognised in the period to which it relates. Grants which were used to obtain long-term assets are recognised as deferred income and recognised as revenue over the estimated useful lives of the related assets.

2.3 Property, Plant and Equipment

Property, plant and equipment are stated at cost less accumulated depreciation, unless stated otherwise. Property, plant and equipment is written off on the straight-line basis to residual value, over the useful life of the assets.

The depreciation rates applicable to each category of property, plant and equipment are as follows:

Buildings	2%
Usufruct Buildings	over life of usufruct
Prefabricated Buildings	5%
Laboratory Equipment	5%
Vehicles and containers	15%
Furniture and office equipment	10%
Computer Equipment	20%
Computer software	50%

The depreciation charge is based on the componentisation approach where appropriate. Items of property, plant and equipment are not componentised when the replacement policy of the Medical Research Council is to replace the item as a whole rather than its component parts. The effect is that every component in the item of property, plant and equipment has the same assessment of useful life, and the effect of componentising of no effect.

The useful lives and residual values of items of property, plant and equipment are reviewed on a annual basis. If there are changes in expectations, the difference is accounted for as a change in accounting estimate on a prospective basis.

2.4 Operating leases

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

The Council as lessor

Amounts due from lessees under finance leases are recorded as receivables at the amount of the Council's net investment in the leases. Finance lease income is allocated to accounting periods so as to reflect a constant periodic rate of return on the Council's net investment outstanding in respect of the leases.

Rental income from operating leases is recognised on a straight-line basis over the term of the relevant lease. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognised on a straight-line basis over the lease term.

The Council as lessee

Assets held under finance leases are initially recognised as assets of the Council at their fair value at the inception of the lease or, if lower, at the present value of the minimum lease payments. The corresponding liability to the lessor is included in the balance sheet as a finance lease obligation.

Lease payments are apportioned between finance charges and reduction of the lease obligation so as to achieve a constant rate of interest on the remaining balance of the liability. Finance charges are charged directly to profit or loss, unless they are directly attributable to qualifying assets, in which case they are capitalised in accordance with the Council's general policy on borrowing costs. Contingent rentals are recognised as expenses in the periods in which they are incurred.

Operating lease payments are recognised as an expense on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed. Contingent rentals arising under operating leases are recognised as an expense in the period in which they are incurred. In the event that lease incentives are received to enter into operating leases, such incentives are recognised as a liability. The aggregate benefit of incentives is recognised as a reduction of rental expense on a straight-line basis, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

2.5 Intangible assets

Intangible assets acquired separately

Intangible assets acquired separately are reported at cost less accumulated amortisation and accumulated impairment losses. Amortisation is charged on a straight-line basis over their estimated useful lives. The estimated useful life and amortisation method are reviewed at the end of each annual reporting period, with the effect of any changes in estimate being accounted for on a prospective basis.

Internally-generated intangible assets – research and development expenditure

Expenditure on research activities is recognised as an expense in the period in which it is incurred.

An internally-generated intangible asset arising from development (or from the development phase of an internal project) is recognised if, and only if, all of the following have been demonstrated:

- the technical feasibility of completing the intangible asset so that it will be available for use or sale;
- the intention to complete the intangible asset and use or sell it;
- the ability to use or sell the intangible asset;
- how the intangible asset will generate probable future economic benefits;
- the availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset; and
- the ability to measure reliably the expenditure attributable to the intangible asset during its development.

The amount initially recognised for internally-generated intangible assets is the sum of the expenditure incurred from the date when the intangible asset first meets the recognition criteria listed above. Where no internally-generated intangible asset can be recognised, development expenditure is charged to profit or loss in the period in which it is incurred. Subsequent to initial recognition, internally-generated intangible assets are reported at cost less accumulated amortisation and accumulated impairment losses, on the same basis as intangible assets acquired separately.

MEDICAL RESEARCH COUNCIL SOUTH AFRICA
NOTES TO THE FINANCIAL STATEMENTS
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2.6. Provisions

Provisions are recognised when the Council has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

The amount recognised as a provision is the best estimate of the consideration required to settle the present obligation at the balance sheet date, taking into account the risks and uncertainties surrounding the obligation.

Where a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows.

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, the receivable is recognised as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

Onerous contracts

Present obligations arising under onerous contracts are recognised and measured as a provision. An onerous contract is considered to exist where the Group has a contract under which the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it.

2.7 Biological assets

The Council recognises biological assets when:
(a) the entity controls the asset as a result of past events;
(b) it is probable that future economic benefits associated with the asset will flow to the entity; and
(c) the fair value or cost of the asset can be measured reliably.

A biological asset is measured on initial recognition and at each balance sheet date at its fair value less estimated point-of-sale costs, except where the fair value cannot be measured reliably.

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

2.8 Borrowing costs

All borrowing costs are recognised in profit or loss in the period in which they are incurred.

2.9 Inventory

Inventory is stated at the lower of cost and net-realisable value. Cost is calculated on the weighted average basis.
Cost includes transport and handling costs.

2.10 Post Retirement Obligations

Contributions relating to defined contribution plans are expensed as they occur.

The amount recognised in profit or loss for the period under defined benefit plans represents the movement in the present value of the defined benefit obligation and the fair value of plan assets, after adjusting for contributions paid to the fund, as well as any unrecognised actuarial gains and losses and unrecognised past service costs.

Actuarial gains and losses are recognised in income in the period in which they arise.
The recognition of a net asset for defined benefit plans is limited to the lesser of the amount of the asset, or any unrecognised actuarial gains and losses and any unrecognised past service costs.

2.11 Financial Instruments

Financial Assets Held for Trading are stated at fair value. Changes in the fair value are recognised in the income statement.

Investments accounted for as available for sale financial assets are stated fair value. Changes in the fair value of investments are recognised directly in equity in the mark to market reserve. When the investments are disposed of, the related realised profit is released from equity to the income statement.

The Medical Research Council is exposed to the following risks as a result of financial instruments:

Fair Value Interest Rate Risk

The risk that the value of financial instruments will fluctuate due to changes in market interest rates.

Credit Risk

The risk that one party to a financial instrument will fail to discharge an obligation and cause the other party to incur a financial loss.

Liquidity Risk

The risk that an entity will encounter difficulty in raising funds to meet commitments associated with financial instruments.

Cash flow Interest Rate Risk

The risk that future cash flows of a financial instrument will fluctuate because of changes in market interest rates.

2.12 Foreign currencies

Transactions in foreign currencies are accounted for at the rates of exchange on the date of the transactions.
Gains and losses arising from the settlement of such transactions are recognised in the income statement.

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3. PROPERTY, PLANT AND EQUIPMENT

2007	Land and Buildings R	Laboratory Equipment R	Vehicles & Containers R	Furniture & Office Equipment R	Total R
Carrying value at beginning of year	46,243,650	24,230,891	9,748,959	4,949,867	85,173,367
Cost	59,787,607	65,633,396	15,133,043	16,822,822	157,376,868
Accumulated Depreciation	(13,543,957)	(41,402,505)	(5,384,084)	(11,872,955)	(72,203,501)
Additions	3,494,121	6,675,694	3,607,961	1,368,271	15,146,047
Disposals	-	(101,350)	270,537)	-	-371,887
Depreciation on disposals	-	81,002	171,705	-	252,707
Depreciation	(1,339,273)	(5,243,295)	(1,933,316)	(992,116)	-9,508,000
Carrying value at end of the year	48,398,498	25,642,942	11,324,772	5,326,022	90,692,234
Cost	63,281,728	72,207,740	18,470,467	18,191,093	172,151,028
Accumulated Depreciation	(14,883,230	(46,564,793)	(7,145,695)	(12,865,071)	(81,458,794)

2006	Land and Buildings R	Laboratory Equipment R	Vehicles & Containers R	Furniture & Office Equipment R	Total R
Carrying value at beginning of year	40,080,821	20,549,272	9,604,524	4,476,863	74,711,480
Cost	52,380,403	58,014,467	12,832,553	14,298,155	137,525,578
Accumulated Depreciation	(12,299,582)	(37,465,195)	(3,228,029)	(9,821,292)	(62,814,098)
Additions	7,407,204	7,650,896	2,300,490	2,550,165	19,908,755
Disposals	-	(31,967)	-	(25,498)	(57,465)
Depreciation on disposals	-	27,006	-	25,493	52,499
Depreciation	(1,244,375)	(3,964,316)	(2,156,055)	(2,077,156)	(9,441,902)
Carrying value at end of the year	46,243,650	24,230,891	9,748,959	4,949,867	85,173,367
Cost	59,787,607	65,633,396	15,133,043	16,822,822	157,376,868
Accumulated Depreciation	(13,543,957)	(41,402,505)	(5,384,084)	(11,872,955)	(72,203,501)

Furniture and office equipment having a book value of R 11702 is pledged as security against instalment sale agreements (note 7 refers)

4. INTANGIBLE ASSETS

2007	COMPUTER SOFTWARE R	TOTAL R
Carrying value at beginning of year	-	-
Cost	-	-
Accumulated Amortisation	-	-
Additions	1,500,346	1,500,346
Amortisation	(176,061)	(176,061)
Carrying value at end of year	1,324,285	1,324,285
Cost	1,500,346	1,500,346
Accumulated Depreciation	(176,061)	(176,061)

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	NOTES	2007	2006
5. BIOLOGICAL ASSETS		R	R
Bearer mature agricultural assets at beginning of year		645,350	530,200
Gains and losses from changes in fair value less estimated point of sale costs		65,500	115,150
Increases due to purchases		-	-
Decreases attributable to sales		-	-
Bearer mature agricultural assets at end of year		710,850	645,350
The MRC holds certain monkeys, baboons and horses for research purposes. All research activities are monitored and controlled to ensure humane treatment of animals.			
6. INVESTMENTS			
6.1 Short-term investments			
Listed investments		2,540,903	1,962,582
Sanlam demutualisation shares (No. of shares 14128) (2006 - No of shares: 14 128)		282,560	233,112
Sanlam Unit Trust		2,160,039	1,639,081
Old Mutual demutualisation shares (No of shares: 4210) (2006 - No of shares: 4 210)		98,304	90,389
6.2 Long-term invested			
Non-listed investment			
• Investment in subsidiary Investment in Medres (Pty) Ltd is stated at cost less amounts written off. Medres Investment (Pty) Ltd is a wholly owned subsidiary of the MRC. The financial statements of Medres is not consolidated with that of the MRC, because the company was dormant and has no assets and liabilities.		1	1
• Investment in Jirehsa Medical		100,000	-
Investments in various portfolios –to fund post-retirement benefits			
• Advanced Balanced portfolio		-	6,301,513
• Investments in various instruments – to fund post-retirement benefits		-	23,761,340
		100,001	30,062,854

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	NOTES	2007	2006
7. INVENTORY		R	R
Consumable stores		389,861	396,978
8. TRADE AND OTHER RECEIVABLES			
Trade Receivables		50,099,364	33,143,920
Provisions		(2,408,466)	(1,120,331)
Staff Advances		57,057	121,055
Prepaid Expenses		1,175,658	1,116,237
Travel & Subsistence		471,633	697,243
Other Receivables		145,210	3,771,770
		49,530,880	37,729,894
9. CASH AND CASH EQUIVALENTS			
Bank balances			
ABSA and Standard Bank		2,293,253	11,469,081
ABSA – a funder account		83,846,571	80,836,318
Petty cash		14,055	18,944
Cash at the Reserve Bank		215,593,543	180,089,526
Post-retirement Medical Aid Benefit		41,271,387	28,000,000
Research Funds received in advance		151,849,932	122,410,949
Reserves and other accounts		275,907	7,269,445
WHO Steps Workshops - Agency Funds		-	569,535
Botha Trust		261,636	261,636
Rationalisation reserve		7,637,218	7,728,064
Personnel provision reserve		12,180,529	12,050,093
Motor vehicle self-insurance reserve		1,500,740	1,226,412
Public Investment Commissioner - Bruhns Trust		616,194	573,392
Total Cash and Cash Equivalents		301,747,422	272,413,869
Additional disclosure on cash and cash equivalents			
Rationalisation fund			
The fund was instituted in terms of the regulations regarding the framework autonomy and provides for the expenditure associated with institutional restructuring or rationalisation.			
Balance at beginning of year		7,728,064	8,094,899
Interest Capitalised		-	556,120
Rationalisation payments		(90,846)	(922,955)
Balance at end of the year		7,637,218	7,728,064

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	NOTES	2007 R	2006 R
9. CASH AND CASH EQUIVALENTS (Continued)			
Motor vehicle self-insurance reserve			
This reserve was established to provide for the self-insurance of motor vehicles with a low market value.			
Balance at beginning of year		1,226,412	996,779
Allocation for the year		285,042	271,692
Expenditure		(10,714)	(42,059)
Balance at end of the year		1,500,740	1,226,412
Trust Funds			
WHO Steps Workshops – Agency Funds		-	569,535
Botha Trust		261,636	261,636
Bruhns Trust		616,194	573,392
		877,830	1,404,563
10.DEFERRED INCOME			
Deferred Income monies received upfront in respect of research grants awarded to the MRC for specific research projects.		204,119,713	190,022,776
Deferred Income contracts and grants		90,692,234	85,173,368
Deferred Income – Building Fund		-	1,016,400
		90,692,234	86,189,768
Deferred Income contracts and grants refers to the portion of government grants and contract income which was applied to acquire property, plant and equipment and which has not yet been released to the statement of financial performance.			
Deferred Income for research grants is recognised as revenue as the related research expenditures are incurred.			
Deferred Income contracts and grants is recognised as revenue as the related items of property, plant and equipment are depreciated			
11.LONG-TERM LOANS			
Long-term loans		11,141	20,229
Less: Current portion included in long-term loan		(11,141)	(9,088)
		-	11,141

	NOTES	2007 R	2006 R
12.POST-RETIREMENT OBLIGATIONS			
12.1 Pension funds			
MRC personnel are members of the following pension funds:			
Pension Fund of Associated Institutions (Act No. 51 of 1963)			
Pension Fund for Temporary Employees (Act No. 75 of 1979)			
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 fund was actuarially valued as at 1 April 2006 and it was found that the fund is fully funded and financially sound.			
(c) The first two funds offer defined benefits to staff. With regard to the MRC Pension Fund, however, some members are on a defined benefit scheme, while the remainder are on a defined contribution scheme.			
Details of the funded defined benefit plans are as follows:			
Defined benefit obligation – Wholly funded			
Present value of obligation		55,204,000	44,912,000
Fair value of plan assets		55,979,000	45,856,000
		(775,000)	(944,000)
Unrecognised actuarial gains and losses		-	-
Unrecognised past service cost		-	-
Net asset prior to limitation		(775,000)	(944,000)
Limitation of asset		775,000	944,000
Net asset recognised on the Balance Sheet		-	-
Reconciliation of defined benefit obligation			
Opening defined benefit obligation		44,912,000	35,364,000
Charges recognised in the income statement		15,140,000	16,609,000
Benefits paid		(4,848,000)	(7,061,000)
Closed defined benefit obligation		55,204,000	44,912,000
Reconciliation of Plan assets			
Opening fair value of plan assets after limitation		44,912,000	35,364,000
Charges recognised in the income statement		7,876,000	11,934,000
Contributions		7,264,000	4,675,000
Benefits paid		(4,848,000)	(7,061,000)
Closing fair value of plan assets		55,204,000	44,912,000

	NOTES	2007	2006
12.POST-RETIREMENT OBLIGATIONS (Continued)		R	R
Staff costs includes the following in respect of the defined benefit pension plan:			
Current service cost		4,380,000	3,551,000
Interest cost		3,307,000	2,658,000
Expected return on plan assets		(3,928,000)	(2,771,000)
Net actuarial losses (gains) recognised in current year		3,674,000	2,560,000
Asset limitation		(169,000)	(1,323,000)
		7,264,000	4,675,000
The basis used to determine the overall expected rate of return on plan assets was the R186 Government bond without adjustment for the effect of tax			
The actual return on plan assets amounted to:		7,707,000	10,611,000
The principal actuarial assumptions used in determining the pension plan were:			
General inflation rate		5.0% p.a	4.6% p.a
Discount rate		7.7% p.a	7.4% p.a
Expected investment return		9.0% p.a	8.4% p.a
Salary inflation		6.0% p.a plus merit bonuses	5.6% p.a plus merit bonuses
12.2 Medical funds			
Certain assets have been allocated specifically for the purpose of covering post retirement medical aid defined benefit liability. The defined benefit liability has been recognised and accounted for under the requirements of AC 116 - 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 AC 116 because the plan is not registered. The relevant assets are included in investments and cash balances.			
Details of the unfunded defined benefit plans are as follows:			
Defined benefit obligation – Unfunded			
Present value of obligation		22,346,580	45,229,000
Fair value of plan assets		-	-
Net liability		22,346,580	45,229,000
Reconciliation of defined benefit obligation			
Opening defined benefit obligation		45,229,000	41,254,000
Charges recognised in the income statement		1,273,000	4,930,000
Benefits paid		(24,155,420)	(955,000)
Closed defined benefit obligation		22,346,580	45,229,000

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NOTES	2007 R	2006 R
Staff costs includes the following in respect of the defined benefit medical plan		
Current service cost	2,932,000	3,332,000
Interest cost	3,573,000	3,529,000
Net settlement and actuarial gains recognised in current year	(5,231,579)	(1,931,000)
	1,273,000	4,930,000
The main principal actuarial assumptions used in determining the medical plan were:	*assumptions*	*assumptions*
Discount rate	8.00%	7.5% p.a
General increases to medical aid subsidy	7.00%	6.5% p.a
Retirement age for staff who joined prior to 1 May 1998	65	65
Retirement age for staff who joined after 1 May 1998	60	60
Proportion continuing membership at retirement	100%	100%
Proportion of retiring members who are married	80%	80%
Sensitivity analysis	*Impact on liability RM*	*% Increase/ Decrease*
The effects of an increase or decrease of one percentage point on principal actuarial assumptions is as follows on the liability at 31 March 2007:		
Assumptions as above	22,347	
Discount rate – increases by 1% p.a	19,894	-11%
Discount rate – decreases by 1% p.a	25,350	13%
Medical inflation – increases by 1% p.a	25,153	13%
Medical inflation – decreases by 1% p.a	20,029	-10%
Retirement age – 60 for all ages	25,922	16%
Sensitivity analysis	*Impact on liability RM*	*% Increase/ Decrease*
The effects of an increase or decrease of one percentage point on principal actuarial assumptions is as follows on the liability at 31 March 2006:		
Assumptions as above	45,229	
Discount rate – increases by 1% p.a	38,514	-15%
Discount rate – decreases by 1% p.a	53,834	19%
Medical inflation – increases by 1% p.a	53,537	18%
Medical inflation – decreases by 1% p.a	38,676	-14%
Retirement age – 60 for all ages	55,975	24%

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	NOTES	2007	2006
13.PROVISIONS		R	R
Long Term			
Personnel Provision Fund			
This fund was instituted to provide for the payments of personnel benefits, mainly leave gratuities, death and disability benefits, on the retirement or death of personnel.			
Balance at beginning of year		9,872,787	9,471,863
Leave payouts		(728,116)	(671,255)
Movement through income statement		3,035,858	1,072,179
Balance at end of the year		12,180,529	9,872,787
14.TRADE AND OTHER PAYABLES			
Accounts payable include outstanding cheques amounting to:			
Trade creditors		18,328,694	14,071,131
Accruals		19,571,385	16,660,760
VAT		7,481,474	8,643,213
Outstanding cheques		0	125,058
Interest due to funders		7,685,865	14,078,816
		53,067,418	53,578,978
15.COMMITMENTS			
15.1 Capital commitment			
At year-end, a capital commitment of R100 000 existed in respect of the new building and building improvements. This will be funded from existing cash resources			
15.2 Operating lease commitments			
MRC leases certain of its property, plant and equipment in terms of operating leases. The MRC does not have an option to acquire the assets at the termination of the lease. There are no restrictions imposed by leases.			
Future minimum lease payments for (non-cancellable) operating leases			
Payable within one year			
Premises		3,480,462	1,896,493
Furniture and office equipment		-	-
Vehicles		380,879	204,089
		3,861,341	2,100,582

	NOTES	2007	2006
Payable 1 to 5 years		R	R
Premises		8,837,681	638,793
Furniture and office equipment		-	-
Vehicles		444,676	200,858
		9,282,357	839,651

15.3 Finance lease commitments

An instalment sale agreement is payable monthly instalments of R1088 (2006: R940) increased by 15% (2005: 15%) per year. The agreement matures on 10 July 2007. The effective interest rate changes from prime to 0,5% above prime per annum. The instalment sale liabilities are secured by office equipment (note 7 refers).

Future minimum lease payments for finance leases:			
Present value of lease payments		11,141	20,229
Finance charges		-	-
Total minimum lease payments		11,141	20,229
The present value of the lease payments is payable as follows:			
Payable not later than 1 year		11,141	9,088
Payable later than 1 year and not later than 5 years		-	11,141
		11,141	20,229

16.NET (DEFICIT)/SURPLUS FOR THE YEAR

The net (deficit)/ surplus for the year, includes, amongst others, the following:

INCOME			
(Loss)/Profit on disposal of plant and equipment		-51,636	5,026
Realisation of mark to market reserve		16,345,852	134,130
Rent received		2,285,401	2,335,844
Interest received		19,930,975	14,464,164
EXPENDITURE			
Auditor's remuneration		433,081	51,798
- Audit fees		433,081	-
- Underprovision in previous year		-	51,798
Depreciation of assets		9,508,000	9,441,902
- Buildings		1,339,273	1,244,375
- Laboratory equipment		5,243,295	3,964,316
- Vehicles and containers		1,933,316	2,156,055
- Furniture and fittings		992,116	2,077,156

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	NOTES	2007 R	2006 R
Amortisation		176,061	-
Board members emoluments	22	244,384	519,635
Executive directors' and managers' remuneration	23	6,869,418	5,262,279
Finance cost		1,724,247	611,929
Operating lease payments		2,545,851	2,366,719
Collaborative research		91,452,308	77,168,634
Staff costs	19	205,301,821	174,732,599
17.INTEREST RECEIVED			
Bank accounts		2,484,332	595,894
Sanlam Unit Trusts / Bruhns		42,802	42,660
Corporation for Public Deposits		14,508,440	13,254,684
Interest earned / (reversed) on Debtors accounts		(20,748)	5,486
Interest payable to funders / consortium partners		-	(48,903)
Interest due to discounting receivables		2,916,149	614,343
		19,930,975	14,464,164
18.COLLABORATIVE RESEARCH			
Consulting costs and honorarium payments		52,886,246	30,208,730
Payments made to external institutions		39,304,793	47,161,636
Reduction due to discounting payables		(738,731)	(201,732)
		91,452,308	77,168,634
19.STAFF COSTS			
Wages and salaries		180,856,100	153,236,503
Basic salaries		157,691,108	113,836,077
Performance awards		11,527,931	9,414,462
Periodic payments		-	-
Other non-pensionable allowance		304,487	2,747,713
Temporary staff		9,861,982	26,190,848
Leave payments		996,255	635,914
Overtime pay		474,337	411,489
Defined Pension contribution plan expense		8,008,287	6,176,223

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	NOTES	2007 R	2006 R
Social contributions (Employer's contributions)		9,021,011	6,715,762
Medical		4,953,185	4,861,824
UIF		960,693	781,759
Other salary related costs		3,107,133	1,072,179
Defined Pension benefit plan expense		6,143,423	3,674,110
- current service cost		2,876,764	2,800,247
- past service cost		3,266,659	873,863
Other long-term employee benefits including long-service leave, deferred compensation		-	-
Adjustments from the application of AC 116		1,273,000	4,930,001
		205,301,821	174,732,599

20.NOTES TO THE CASH FLOW STATEMENT

Cash generated from operations			
Surplus/(Deficit) for the period		30,050,978	(10,600,431)
Adjustment for non-cash items:		(6,610,155)	9,302,746
Realisation of mark to market reserve		(16,345,852)	(134,130)
Depreciation of property, plant and equipment		9,508,000	9,441,902
Authorisation of intangibles		176,061	-
Loss on disposal of property, plant and equipment		51,636	(5,026)
Adjustments for items disclosed separately:		(18,242,998)	(13,904,677)
Interest received		(19,930,975)	(14,464,164)
Dividend received		(36,270)	(52,442)
Finance costs		1,724,247	611,929
Adjustment for changes in working capital		3,978,268	35,702,926
(Increase) in inventory and agricultural assets		(58,383)	(344,220)
(Increase) in receivables		(11,800,986)	(22,315,719)
Increase in payables and current deferred income		13,529,895	58,241,941
Increase in provisions		2,307,742	120,924
Adjustment for increase in non-current deferred income		4,502,466	6,392,595
Cash generated from operations		13,678,559	26,893,159

21. TOTAL GOVERNMENT GRANTS

Allocation for the year		180,222,000	164,304,000
Additional allocation		-	15,000,000
Less: Vat		-	(22,019,789)
		180,222,000	157,284,211

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22. BOARD MEMBERS' EMOLUMENTS

Fees for the board and board sub-committee meetings for the period 1 April 2006 to 31 March 2007 were as follows:

	Honorariam	Vehicle and parking	Reimbursive	Total 2007	Total 2006
Prof. AA Azad	-	-	-	-	15,400
Mr MP Canca	-	-	-	-	58,080
Mr A Dlamini	13,597	655	-	14,252	-
Dr JK Hartzell	25,276	709	200	26,185	12,823
Prof. LJ King	7,504	83	-	7,587	15,013
Ms JN Makhanya	12,018	357	-	12,375	5,628
Prof. DL Mkize	18,100	1,000	-	19,100	33,040
Prof. MS Mokgokong	27,143	2,094	12,016	41,253	38,494
Prof. JM Pettifor	19,936	1,856		21,792	25,372
Colonel DC Qolohle	9,380	976	-	10,356	17,261
Prof. MF Ramashala	47,729	-	-	47,729	214,782
Prof. H Schneider	12,987	524	-	13,511	28,820
Prof. K Voyi	15,368	-	-	15,368	30,492
Dr C Walsh	14,876	-	-	14,876	24,430
	223,914	8,254	12,216	244,384	519,635

Reimbursive column represents payments in lieu of travel costs.

MEDICAL RESEARCH COUNCIL SOUTH AFRICA
NOTES TO THE FINANCIAL STATEMENTS
FOR THE PERIOD ENDED 31 MARCH 2007

Reimbursive column represents payments in lieu of travel costs.

23. EXECUTIVE DIRECTORS'/MANAGERS' EMOLUMENTS

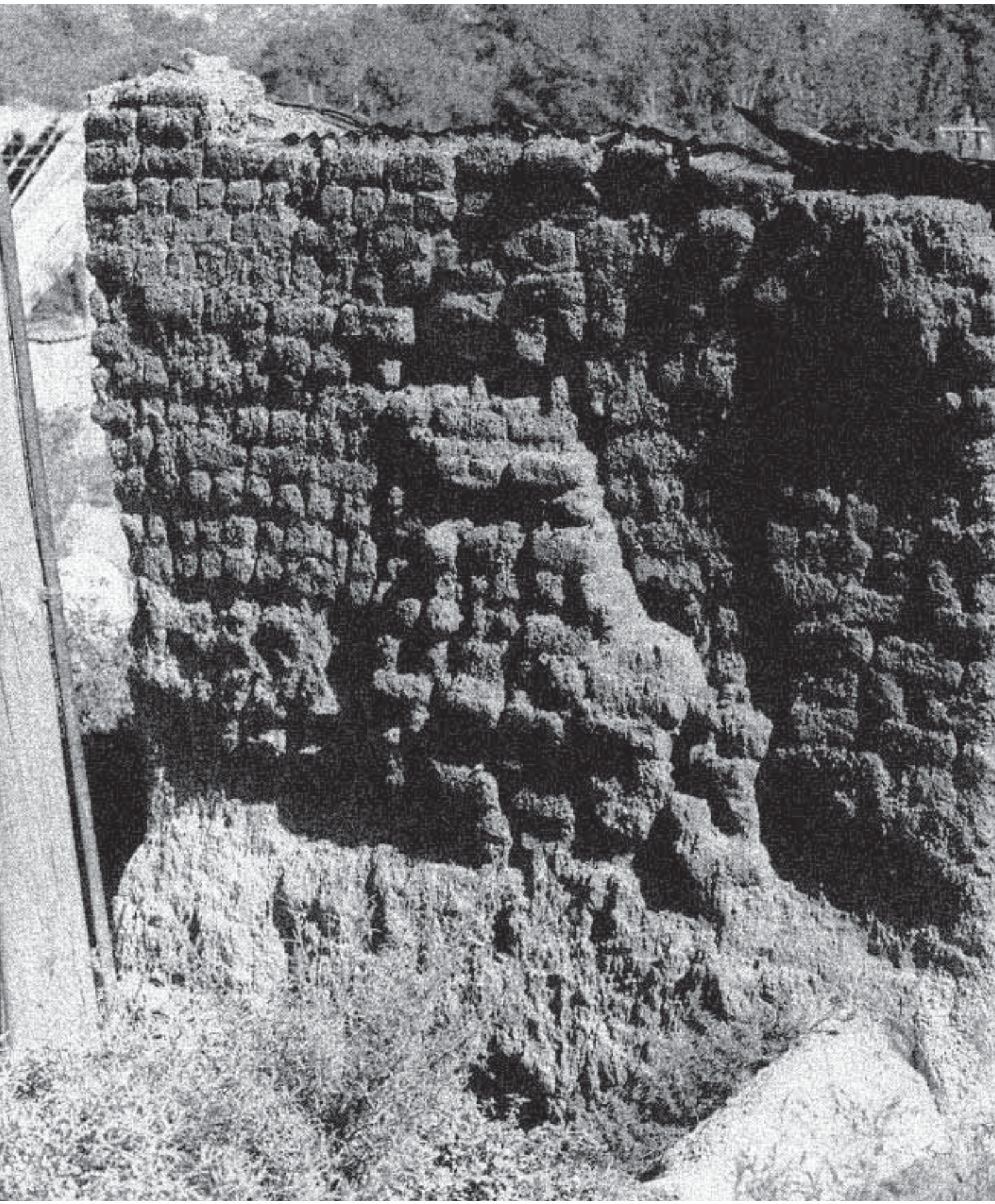
	Salary	Travel Allowances	Leave Payouts	Package Total	Bonus	S&T	Company Contributions	Total 2007	Total 2006
*S Bok	521,939	-	-	521,939	56,877	1,677	61,102	641,595	-
*E Madela-Mntla	528,045	46,572	-	574,617	62,881	7,258	54,200	698,956	293,798
BJ Mahlangu	763,735	-	-	763,735	42,288	7,116	87,778	900,917	856,534
* ND Mbananga	610,027	-	13,064	623,091	59,989	4,214	58,184	745,478	718,598
**AD MBewu	1,403,732	4,331	-	1,408,063	82,404	7,815	103,236	1,601,518	1,275,465
*K Mtunzi-Hairwadzi	-	-	-	-	-	-		-	202,420
*C Nxomani	588,453	-	-	588,453	55,021	10,389	42,881	696,744	268,383
GN Padayachee	-	-	-	-	-	-	-	-	420,356
AP Terblanche	737,348	50,124	-	787,472	188,496	37,192	72,005	1,085,165	949,866
Z Vokwana	465,504	-	-	465,504	-	-	33,541	499,045	-
BK Williams	-	-	-	-	-	-	-	-	276,859
	5,618,783	101,027	13,064	5,732,874	547,956	75,661	512,927	6,869,418	5,262,279

Executive Directors'/Managers' resignation; contract end dates and appointment dates

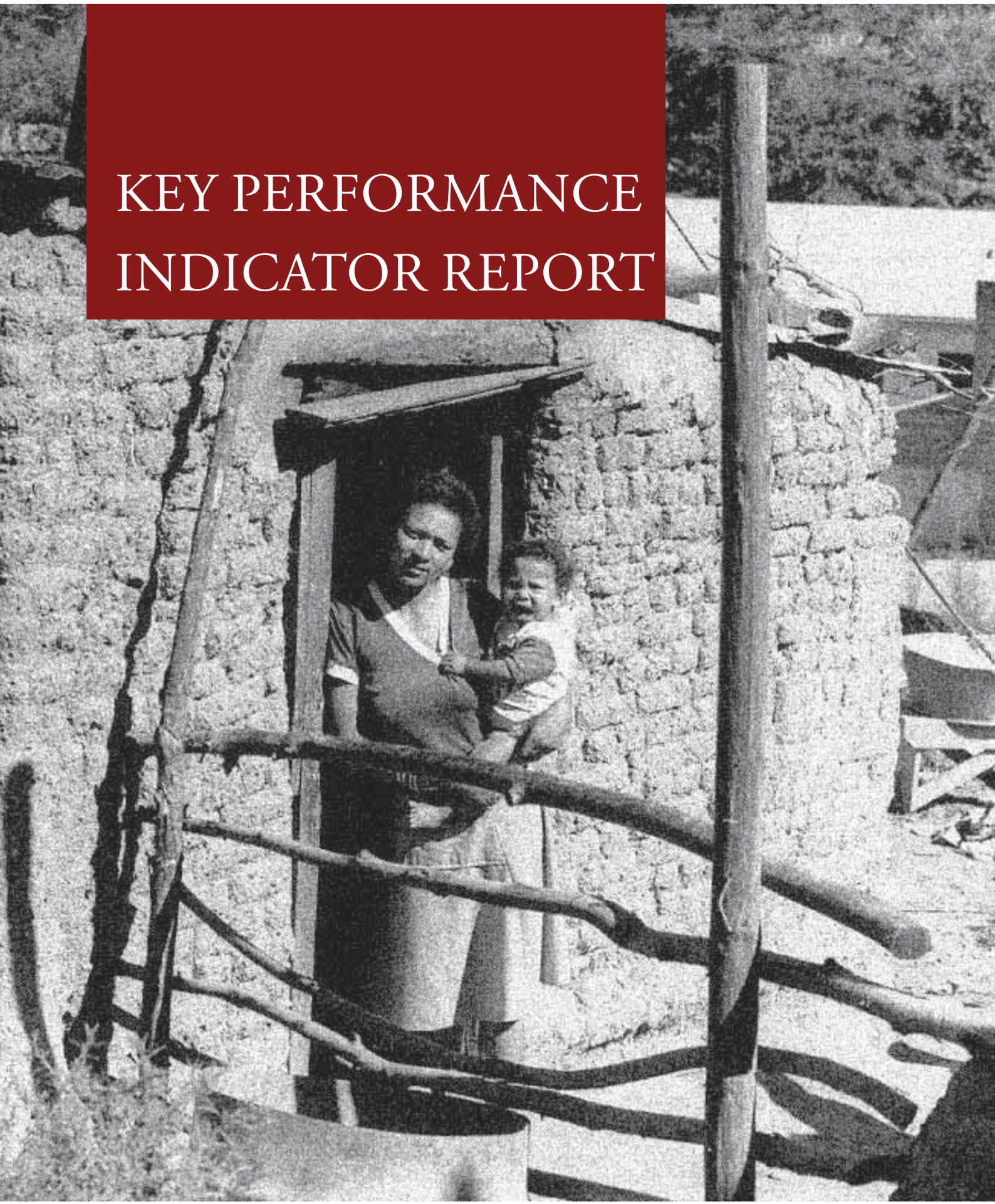
S Bok	Appointed	01/05/06
Z Vokwana	Appointed	01/09/06

* Executive Manager

** Includes backdated portion.



KEY PERFORMANCE INDICATOR REPORT



KEY PERFORMANCE INDICATOR REPORT

The Key Performance Indicator Report (KPI) of the MRC is organised according to the 5 perspectives of a modified balanced scorecard:

1.	Internal processes	- research strategy and business plan
		- opportunity and risk management
2.	Financial and investment	- financial strategy
3.	Innovation, learning and growth	- capacity development
4.	Stakeholder and customer focus	- innovation and technology
		- informatics and knowledge management
		- research translation
		- stakeholder management
5.	Transformation	- transformation and development

1. INTERNAL PROCESSES PERSPECTIVE

RESEARCH STRATEGY AND BUSINESS PLAN

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
Produce new knowledge through promoting and conducting research	Peer-reviewed publications	650	676 publications – an increase of 58 (9.4%) over the 618 publications of 2005/06 This is the largest research output of any health research institution in South Africa.
	Percentage of publications in international peer-reviewed journals	75%	87%
Productivity ratio	Peer-reviewed publications per senior scientist In the 45 units there are 302 senior scientists: • 126 in intramural units • 175 in extramural units	1.85	2.2 an increase of 21% (1.82 in 2005/06). (Productivity ratios at sister institutions: CSIR 0.46; HSRC 0.95; British MRC 3; Independent Council on Medical Research (ICMR) 0.5) MRC total from 45 Units, 676 publications from 302 senior scientists; ratio 2.2 (1.82 in 2005) Intramural: 16 Units, 198 publications from 126 senior scientists; ratio 1.6 (1.20 in 2005) Extramural: 29 Units, 420 publications from 175 senior scientists; ratio 2.40
	In self-initiated research projects there are 120 senior scientists		Self initiated: 120 projects, …… publications from 120 senior scientists

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
Research Projects	Number in 45 Units	450 (10 per unit)	2007 : 417 projects in 45 Units
	Number of Self-initiated Projects	150	2007 : 154 (9% increase on the 141 of the 2005/06 period)
Improve quality of research	Number of A-rated scientists	4	4 (All the A-rated health research scientists in South Africa are MRC researchers)
	Number of B-rated scientists	4	11 (3 in 2005/06)
	Number of C-rated scientists	2	2 (2 in 2005/06)
	Number of P-rated scientists	2	2 (2 in 2005/06)
	Number of Y-rated scientists	3	5 (3 in 2005/06)
	Wellcome Trust Fellows	3	3 (3 in 2005/06)
	Number of NIH 'RO1' projects	4	5 (5 in 2005/06. Reddy: 2, Klugman: 1, Vaughan: 1, Weyer: 1)
Executive Research Directorate	Restructure Directorate	Jan 2007	Complete January 2007
Restructure Executive Management Committee (EMC)	Members reduced from 8 to 5	April 2006	Completed in April 2006
	Recruit Exec Director Operations	Oct 2006	Exec Director Operations began work Oct 2006
	Recruit Vice-President for Research	Jan 2007	Interviews for VP on 5 July 2007
Disseminate and implement MRC Strategic Plan 2005-2010	Dissemination meetings	8	8 in 2006/07
	Implementation workshops	8	8 in 2006/07
Disseminate and implement MRC Research Strategy 2005–2010	Dissemination meetings	6	6 in 2006/07
	Implementation workshops:		
	- NCRP for CVD and DM	2	1 in Oct 2006; 1 in Jan 2007
	- CARISA	1	1 in Nov 2006
	- IKS and ATM	1	1 scheduled for July 2007
	- TB	1	1 DST workshop in Sep 2006
	- Malaria	New Director	Search begun in Jan 2007
	- HIV and AIDS		NIH Clinical Trial Unit award
	- Brain and Behaviour		Support for BRAIN Initiative
	- Proteomics and genomics Research Initiative		Support and provision of MSc level post

RESEARCH STRATEGY AND BUSINESS PLAN contd.

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
MRC Business Plan	Complete business plan Implement business plan and Six Key Strategic Initiatives	March 2007 March 2007	Completed in March 2007 and delivered to NDOH Six Strategic Initiatives identified and intensive implementation begun in March 2007
KPI report	Complete KPI Report 2006/2007	June 2007	Completed 14 June 2007
Implement new 5-yearly review process for MRC units Review all 45 MRC Units and align with Research Strategy 2005 - 2010	Implement revamped 5-yearly review process Review complete Recommendations implemented	Close 2 units in 2007 June 2007 Sept 2007	Close 2 units bringing the number of units down from 47 in 2005/06 to 45 in 2006/07 Review Committee of Board R&D Committee began work in March 2007
National and international collaborative research	Number of major new collaborations: Microbicide clinical trial collaboration for HIV Prevention Research Unit (HIV PRU)) HIV vaccine research collaborations Public Health Research Collaboration with CDC of USA	2	4 achieved : One of 72 global NIH Clinical Trial Units granted to HIV PRU – one of only 3 in South Africa Phase III microbicide clinical trial : MTN 1. 20 million euro Italian Vaccine Project with NDOH and Biovac 2. First Phase IIb 'test of concept' HVTN503 HIV vaccine trial in South Africa begun in Feb 2007 in SAAVI clinical trial sites 3. HIV PRU chosen by HVTN for PAVE 100 Phase IIb HIV vaccine clinical trial R60 million rand collaboration in TB, HIV, Health Systems, Health Promotion about to be signed in Sept 2007
International recognition of MRC scientists and support staff	• WHO technical advisor positions • PEPFAR and IOM committees • TB Alliance • IAMP Co-Chair • External Reference Group of WHO DG • GFHR Council • Expert Group of Global Alliance for Vaccines (GAVI)		Weyers, Parry, MBewu etc Reddy MBewu, Terblanche MBewu MBewu (developing global for Research Strategy for WHO) MBewu MBewu (US$1.5 billion programme for pneumococcal vaccine to save 5 million lives by 2020)

OPPORTUNITY AND RISK MANAGEMENT

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
Project office	Electronic management system for Project Office	By mid 2007	Working, electronic project office management system in April 2007
Fraud prevention plan	Implementation	Aug 2006	Began Aug 2006
Whistle blowing	Implementation	Nov 2006	Launched Nov 2006 – 2 cases reported
Shared values:			
• sexual harassment	Number of workshops Number of cases	2 in 2006 Zero	2 workshops held in 2006 3 cases in 2005/06; none in 2006/07
• communications	Number of imbizos	3 in 2006 6 in 2007	3 in 2006 6 in 2007 - 3 in Feb/Mar; 3 in June/July
• transparency	Salary adjustments and promotions	2006/07	Implementation began in January 2006 Criteria for job levels identified
• organizational culture	Programmes started	March 2007	Programme begun in March 2007 organisation-wide
Risk management	Establish Risk Working Group	Q1 2007	Establish Risk Working Group
	Continue with implementation of Risk Management Plan	2007	Inculcate culture of risk management in the organisation
	Introduce electronic travel system, and HR payroll system	Q2 2007	Payroll system online April 2007 Travel system still work in progress
Staff numbers	Number.	100	151 new staff appointed in 2006/07. Total staff 854
Compliance with audit processes and PFMA	Annual report Annual Financial Statement Functioning Audit Committee	Aug 2006 Apr 2007	Annual Report by Aug 2006 Annual Financial Statements supplied by Apr 2007 Audit Committee met 3 times during 2006
Travel costs	Reduce the travel budget	From R28 million to R25 million	Not achieved. Travel = R33m
Review of Professional Support Services	5 yearly review, beginning with a baseline review of all 11 in 2007	By end 2007	Business reengineering report complete in Aug 2006. Review of all professional support directorates in terms of quality and cost begun in March 2007 Implementation to begin in July 2007

2. FINANCIAL AND INVESTMENT PERSPECTIVE

FINANCIAL MODEL STRATEGY AND PLAN

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
Complete MRC Budget 2007/08	MRC budget completed in line with PFMA requirements	By Aug 06	Completed by Aug 2006 Presented to MRC Board in March 2007 Presented to NDOH in March 2007
Reallocate MRC Budget so that more goes to research	Overhead ratio • on baseline • on global budget Percentage changes in operating budgets : a. support budget b. research budgets	 25% in 2007 20% in 2007 10% by 2010 - 8% + 10%	 27% in 2006; 25% in 2007 19% in 2006; 17% in 2007 Support services -8% Research +14% Shifted R7 825 895 extra into research and capacity development: • R1 050 000 extra for self-initiated research • R1.9 million for capital equipment in 45 Units • R750 000 seed funding for 3 new NCRPs • R3 455 895 extra for Unit operating budgets • R670 000 extra for capacity development Operating funds for research units: R27.5m (R9.5 m intramural, R18m extramural)
Grow global MRC budget	Increase (%)	10%	2006/2007 : R352 064 000 – a R17 710 (5%) increase on 2005/06 2007/2008 : R457 023 000 – a R104 959 (30%) increase on 2006/07

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
Grow MRC funding from government	Increase inline with MTEF (5)	5%	Core baseline grew R2 896 000 (2%) in 2006/2007 R22 938 000 (15%) in 2007/2008
Grow external income			
- total external income	Increase (%)	10%	Grew R14 814 000 (8%) in 2006/07 Grew R82 021 000 (42%) in 2007/08
- government contracts and grants		10%	(excluding SAAVI) in 2006/07 : R23 192 296 (increase of R754 216 (5%)) (excluding SAAVI) in 2007/08 : R 35 923 784 (increase of R12 731 488 (55%))
- international contracts and grants		10%	Grew R81 331 448 (20%) in 2006/07 to R220 000 000 Grew R6 059 318 (2.8%) in 2007/08 to R226 059 318
Leveraging of baseline funding	Ratio of external income to baseline income	Varies according to disease category	HIV : R140 million : R20 million (7 : 1) Malaria : R50 million : R8 million (6 : 1) Tuberculosis : R15 million : R6 million (2.5 : 1) Behavioural Science : R8 million : R4 million (2 : 1)
Commercialisation	Commercialisation income	R2 million p.a.	R2.8 million in 2006/07 R2 000 050 in 2007/08
Salary expenditure	Gap with market	Less than 10%	2004/05 reduced from 30% to 15% 2005/06 reduced from 15% to less than 10% 2006/07 less than 5%

3. INNOVATION, LEARNING AND GROWTH

CAPACITY DEVELOPMENT

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
PhD training	Number graduated Number enrolled	50 200	19 MRC PhD interns 238 in MRC Research Units/Groups
Black African PhDs	Number trained	30 during 2005–2010	Enrolled 7 Graduated 2
Career Awards	Number enrolled	15 by 2010	Six new career awardees
Post docs	Number enrolled	30 by 2010	16 post docs
Research leaders	Number under mentorship plan Identify research leaders	10	Nineteen potential future Unit Directors identified One succeeded in obtaining career awardee post and two about to complete
Interns	Number enrolled	40 in 2007	42 in 2007 (18 DST, 24 MRC – 95% black, 61% female)
Job creation	Number of contract positions created	10% increase year on year	759 staff March 2006 (+80)(425 perm, 334 contract) 854 staff March 2007 (50% contract) (increase of 91 or 12%)

4. STAKEHOLDER AND CUSTOMER PERSPECTIVE

INNOVATION AND TECHNOLOGY

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
New patents and disclosures	Number	2 3	2 new patents in 2006, 4 in 2007 3 new disclosures in 2006, 1 in 2007
Licence Agreements	Number	2	2 (Zadec and Genecare)
Novel drug development	Lead compounds	9	9 lead compounds
Companies	Number of start-up companies created	1	Jerihsa Medical
Biotechnology audit	Audits completed	Mid 2006	20 patents and families of patents
Novel Drug Development Platform	Secure funding for extension of project	R12 million	Secured Dec 2006 from Innovation Fund
	Commercialise lead compounds	3	9 lead compounds in March 2007 – partners sought
Diagnostics development	MOU and funded project in MDR TB	Oct 2006	R5.6 million FIND Diagnostics demonstration project in TB diagnostics for MDR TB begun in April 2007
	FIND Office in MRC Pretoria established	2007	Office identified in March 2007
Virax Biotech	Facilitate Phase II clinical trial of Virax therapeutic HIV vaccine trial	Trial start 2007	Trial started
South African National Blood Service	Facilitate collaboration MOU	Nov 2006	Protocol completed March 2007 in behavioural science MOU signed Jan 2007
Patent Fund	Provide for a Patent Fund	R300 000	Budgeted in 2007/2008 budget
Platform Development		1	Diabetes Discovery Platform created – R14m investment. Animal Experimental Facility – upgraded and expanded.
Strategic Relationships		1	Kopano Life Sciences created between MRC, CBT and Acorn Technologies – 3 products prepared for market release.

INFORMATICS AND KNOWLEDGE MANAGEMENT

MRC Radio	Hours of programming produced		39 hours
MRC Website	Web-based programmes		SA HealthInfo

RESEARCH TRANSLATION

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
Technical reports	Number of technical reports	20	2006 : 5 2007 : 38
Policy briefs	Number of policy briefs	5	2
Fact sheets	Number of fact sheets	5	3
Posters presented at conferences	Number of posters	20	21
Malaria control : • residual spraying • diagnostic kits • combination ACT	New cases of malaria	> 15 000	Reduction in new cases in LSDI region
	Prevalence of malaria	Below 10%	Reduction in prevalence in LSDI from 90% to 10%
Regional and global policy	WHO AFRO and WHO policy	Policy endorsed	New policy on residual spraying and ACT adopted by WHO AFRO and WHO
HIV prevention	New HIV infections averted as a result of behavioural change	Reduce incidence by 100 000 p.a.	Incidence fell from 630 000 new HIV infections p.a. in 1999 to 530 000 p.a. in 2005 - 100 000 lives p.a. 'saved' Prevalence in pregnant women reduced from 30.2% to 29.1% reflecting a reduction of 150 000 in the 5.5 million living with HIV
MRC led HIV and AIDS Comprehensive Plan Task team in 2003	Number screened in VCT centres	1 million p.a	Over 3 million screened in 2 years
	Number on treatment	130 000 new patients p.a.	March 2006 : 130 000 on treatment in public sector March 2007 : 282 000 on treatment in public sector
	Mortality reduced	50%	Mortality possibly reduced from 30% to 15% (33 750 deaths p.a. averted)
Research in the Comprehensive Plan	MRC Co-Chairs Reference Committee and peer reviews	R10 million p.a.	R10 million allocated in second round in 2006
Prevention of Mother to Child HIV Transmission	Dissemination of 'Goodstart' results	National and Provincial Government	80% PMTCT coverage prevents 50% of HIV transmission in the 30% of 300 000 pregnant women who would otherwise transmit : i.e. 50 000 lives p.a. saved, or R50 billion
	Policy advice on 'dual' therapy		Potentially reduce HIV transmission from 15% with mono to 3% with dual
Lead exposure	Lead free petrol Lead free paint	No lead poisoning	Lead free petrol compulsory from 1 Jan 2006 Infringements detected by MRC scientists Awareness campaign launched with (NDOH)

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
Tobacco control	Tobacco control legislation 2007	Promulgated	Tightening of tobacco control legislation 2007 : Fines increased from R500 to R20 000 for clubs Snus declared a tobacco product No smoking in car with child <12 years MRC evidence to Portfolio Committee in Feb 2007 was critical in these changes
Cardiovascular disease	Tobacco consumption	Less than 10% smoke by 2020	25% reduction in tobacco consumption since 1994 6 000 lives p.a. saved as a result (i.e. R6 billion p.a.)
	Health promotion campaigns	Campaign in field	Vuka! South Africa campaign launched Youth Fitness Charter National Health Promotion Strategy
Gender violence	Policy development	Policy	MRC input into NDOH policy document
Media	free column space/ airtime		2007 : dramatic increase in MRC media profile

STAKEHOLDER MANAGEMENT

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
National Department of Health	Quarterly meetings	4	2 quarterly meetings held
	Tasks commissioned	2	1. MRC chosen to provide technical input in NDOH collaboration with Italy for HIV Vaccine Project 2. Biovac collaboration in HIV vaccine manufacture
Portfolio Committees	Number of presentations	2	4 to Health (tobacco, microbicides, strategic plan, annual report)
		1	1 to Science and Technology
	Number of meetings with Chairpersons	5	Met with 7 Portfolio Committee Chairpersons
Provincial Government	Number of meetings	2	Department of Health Department of Education
Municipalities	City of Cape Town	2	(City Health and Corporate Services)
Traditional Leaders	MOU, Research proposals	1 1	1 with Eastern Cape House 1
Department of Science and Technology	Number of meetings	3	Workshop for CARISA in 2006, TB in 2006, NCRP in CVD Jan 2007

STAKEHOLDER MANAGEMENT contd.

Science Councils	Meetings Collaborations	2 2	2 COHORT meetings Mintek, CSIR
Conferences and events	Number of events: • internal • external Number of Conferences: • Internal • external		 27 MRC 47 7 MRC 5 includes International

5. TRANSFORMATION PERSPECTIVE

TRANSFORMATION AND DEVELOPMENT

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
Black scientists	Proportion of black scientists	55%	108/208 scientists black (52%)
	Proportion African scientists	40%	83/208 African black (40%)
Black senior scientists	Proportion senior scientists black	50%	67/126 senior scientists black (53%)
	Proportion senior scientists African	20%	24/126 senior scientists African black (19%)
Black managers	Number (percent) black managers	60%	67/108 managers black (62%)
	Number (percent) African manager	20%	21/108 managers African black (19%)
Female scientists	Female scientists	55%	116/208 scientists female (56%)
Female senior scientists	Female senior scientists	55%	85/126 senior scientists female (67%)
Female managers	Number (percent) female managers	50%	57/108 managers female (53%)
Disabled researchers and managers	Proportion of disabled researchers and managers	1%	0.3% in March 2006 0.3% in March 2007
Black African Division Managers	Proportion of Black African Division Managers	25%	2006: 5 of 25 (20%) Division Managers African 2007: 8 of 24 (33%) Division Managers African
Black African Unit Directors	Number and proportion of 45 total	2 (4%)	2
	Number and proportion of 16 intramural	2 (15%)	2
Managers and Researchers	Number and proportion of total staff	320 (40%)	316 (38%)
	Number and proportion black	165 (50%)	178 (55%)
	Number and proportion African black	100 (30%)	104 (33%)
	Number and proportion female	165 (50%)	173 (55%)

TRANSFORMATION AND DEVELOPMENT contd.

ACTIVITY	KEY PERFORMANCE INDICATOR	TARGET 2006/07	PERFORMANCE 2006/07
South African AIDS Vaccine Initiative (SAAVI)	Number of principal investigators	Number	Increased from 19 to 25
	Gender	% female	Increased from 5% to 60%
	Race	% black	Increased from 5% to 40%
	Historically disadvantaged institutions (HDIs)	Number	Increased from zero to 3 HDIs
	Clinical trial sites: number	Number	Increased from 3 to 6
Business transformation	Culture of transparency, performance evaluation, nonracism, nonsexism	Programmes	A continuous process – measures are being developed
Skills development	Percentage of baseline salary spent on skills development	5%	3.1% in 2006 3% in 2007
Accelerated development	Amount spent on development of future research / support leaders		R300 000 p.a. expenditure in 2006 R 300 000 in 2007
	Professional support senior managers	Formal training	Courses in Nov 2006 to Feb 2007
Organisational Development	Staff with PhD	25% by 2010	81 of 838 (10%)
	Scientists with PhD	75% by 2010	81 of 208 (39%)
	Staff with MBBS	10% by 2010	28 (3.3%) – 2.7% in 2005
	Scientists with MBBS	20% by 2010	28 (13%) – 11% in 2005
Peer reviewed publications by black African scientists as primary author	Number	50	71 out of 676
	Percentage of total	5%	11%

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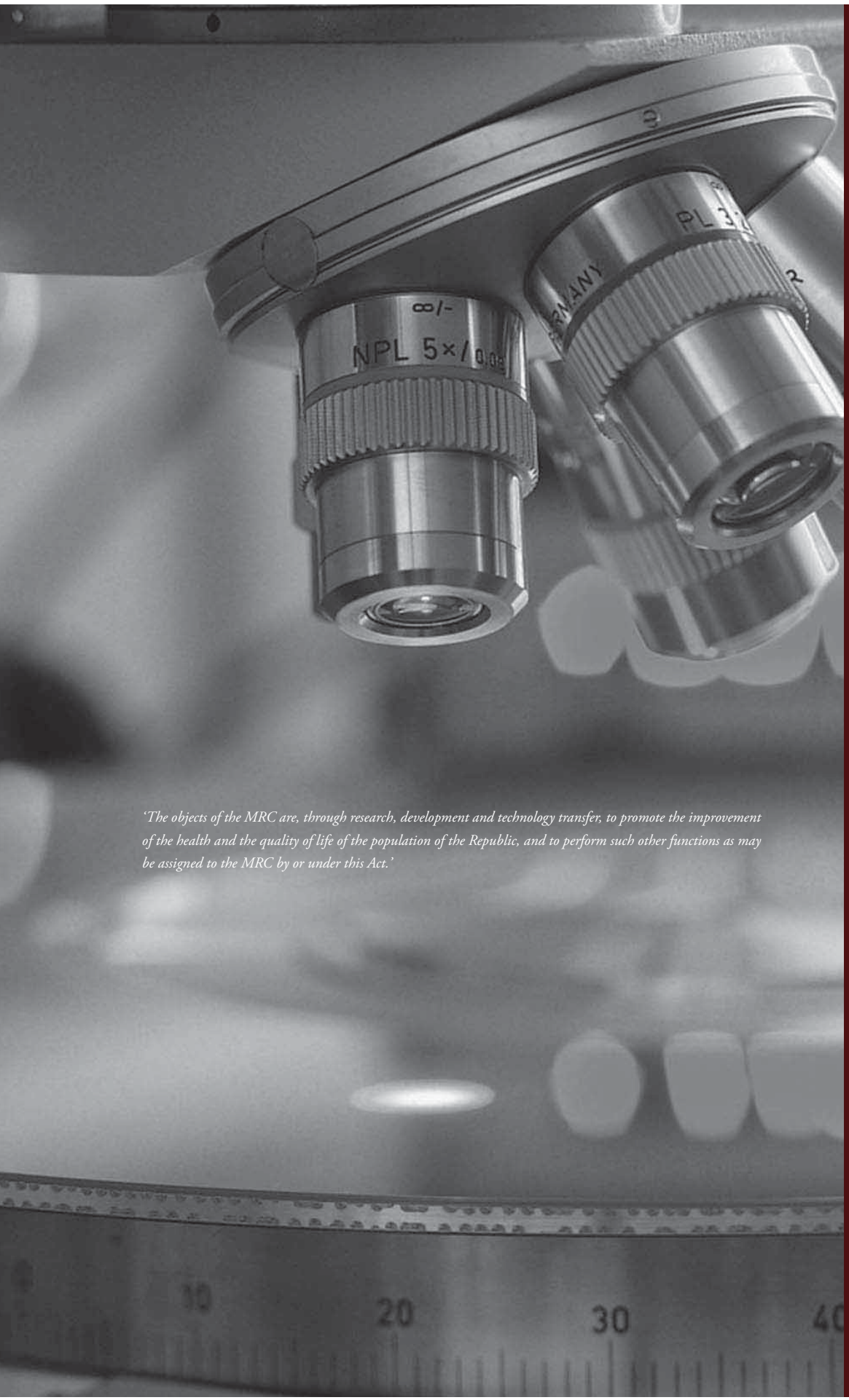

'The objects of the MRC are, through research, development and technology transfer, to promote the improvement of the health and the quality of life of the population of the Republic, and to perform such other functions as may be assigned to the MRC by or under this Act.'

South African Medical Research Council

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Building a healthy nation through research