



# INSTITUTE OF INFECTIOUS DISEASE AND MOLECULAR MEDICINE (IDM)

**Director: Professor Valerie Mizrahi**

## Institute Profile

The IDM is a trans-faculty postgraduate research institute with research focusing on infectious diseases, particularly HIV/AIDS and tuberculosis; non-communicable diseases including prevalent cancers; genetic medicine; and molecular medicine. The Institute is distinguished by research that is carried out at the laboratory-clinic-community interface, and across a wide range of scientific and clinical disciplines.

The IDM's Ten-Year Anniversary Symposium was held in November under the theme "Driving Research for Human Health in Africa". The symposium opened with the 3rd annual Wolfson Memorial Lecture, presented by Prof Mark Davis from Stanford University and the HHMI. The symposium coincided with the biannual meeting of the IDM's International Scientific Advisory Committee and the URC's quinquennial review of the IDM, both of which were very successful.

Journal publications co-authored by Full or Associate Members of the IDM totalled 292 and included papers in the New England Journal of Medicine, Nature, PLoS Medicine and Lancet Infectious Diseases. Significant scientific advances with implications for health policy and practice were made in the areas of HIV vaccine development (Prof Carolyn Williamson & colleagues), treatment regimens for cryptococcal meningitis (A/Prof Graeme Meintjes, CIDRI, with colleagues from the USA and Uganda), and TB prevention in HIV-infected individuals (involving Prof Robert Wilkinson, CIDRI).

Research income totalled R337.8 million from funders including the US NIH, Bill & Melinda Gates Foundation, Wellcome Trust, Aeras Global TB Vaccine Foundation, and South African Medical Research Council (SAMRC). Personal awards included an A1 NRF rating to Prof Robert Wilkinson (CIDRI); the Weber-Parkes Medal 2014, Royal College of Physicians of London, and A2 NRF rating to Prof Robin Wood (DTHC); the SAMRC Platinum Medals for Lifetime outstanding scientific achievements to Profs Gregory Hussey & Robin Wood; and the SAMRC Silver Medal for substantial contributions to science or capacity building in medical research in South Africa to A/Prof Tom Scriba (SATVI).

Capacity building remained a priority, with the IDM's Mid-Career Fellowship Programme funded by the Hasso Plattner Foundation supporting 5 emerging researchers; and the UCT Carnegie Corporation-funded Developing the Next Generation of Academics programme supporting 9 PhD students and 6 postdoctoral fellows. Two Master Classes in advanced areas of research technology, presented by international experts, contributed to staff and student development. New equipment acquisitions included a TSQ Vantage triple quadrupole mass spectrometer, and an automated liquid handler for use in TB drug screening (totaling R8 million).

Collaborations continued with researchers based at 16 South African institutions, 36 institutions in 21 other African countries, and 110 institutions in 21 countries further afield. Researchers participated in 52 research consortia, and in co-operative research initiatives with 20 international and 9 national industrial partners. Member groups continued to lead major outreach programmes to local communities, training health care workers across multiple organisations; and facilitating the establishment of a new public/private clinic in George. A Wellcome Trust International Engagement Award was won by 3 IDM laboratory-based PhD students for their programme using innovative methods to empower youth with knowledge about TB. The IDM hosted 53 international visitors, and the DTHF Youth Centre at Masiphumelele hosted the EU Commissioner for Research, Science & Innovation together with the Minister of Science & Technology, Dr Naledi Pandor.

## Institute Statistics

### Staff

All IDM Members and academic staff in Member groups are appointed in academic departments.

Professors	22
Associate Professors	11
Senior Researchers	8
Research officers & lab, clinical and field site assistants	205

Finance and procurement staff	26
Technical, operational and administrative staff	25
<b>Total</b>	<b>297</b>

### Students and Postdoctoral Fellows

These figures reflect only those based in the IDM Complex and Falmouth building where the majority of IDM Members' research groups are based:

Postdoctoral fellows	61
Doctoral	104
Masters	60
Honours	30
<b>Total</b>	<b>255</b>

## Areas of Interest/Expertise

### Full Members

#### PROFESSOR VALERIE MIZRAHI

IDM Director  
MRC/NHLS/UCT Molecular Mycobacteriology Research Unit & DST/NRF Centre of Excellence for Biomedical TB Research  
Department of Clinical Laboratory Sciences  
Mycobacterial physiology & metabolism relevant to TB drug resistance and drug discovery

#### PROFESSOR LINDA-GAIL BEKKER

Desmond Tutu HIV Centre (DTHC)  
Department of Medicine  
Pathogenesis of tuberculosis and HIV infection

#### PROFESSOR JONATHAN BLACKBURN

SARChI Chair in Applied Proteomics & Chemical Biology  
Department of Clinical Laboratory Sciences

#### PROFESSOR FRANK BROMBACHER

SARChI Chair in Immunology of Infectious Diseases in Africa  
MRC/UCT Immunology of Infectious Diseases Unit  
Department of Clinical Laboratory Sciences

#### PROFESSOR KELLY CHIBALE

SARChI Chair in Drug Discovery  
H3-D Centre for Drug Discovery & Development  
Department of Chemistry

#### PROFESSOR CLIVE GRAY

Department of Clinical Laboratory Sciences  
Immunopathogenesis of HIV, CD4 and CD8 T cells, vaccine-induced immunity

#### PROFESSOR JANET HAPGOOD

Department of Molecular and Cell Biology  
Steroid receptors, glucocorticoid receptor, immune function and HIV-1 pathogenesis

#### ASSOC PROFESSOR MARK HATHERILL

SA Tuberculosis Research Initiative (SATVI)  
Department of Paediatrics & Child Health  
Childhood TB

#### PROFESSOR GREGORY HUSSEY

Vaccines for Africa  
Department of Clinical Laboratory Sciences  
Vaccinology, clinical trials, tuberculosis, paediatric infectious diseases

#### ASSOC PROFESSOR MUAZZAM JACOBS

Department of Clinical Laboratory Sciences  
Experimental tuberculosis and immunology

#### PROFESSOR ARIEH KATZ

MRC/UCT Receptor Biology Research Unit  
Department of Clinical Laboratory Sciences  
G protein-coupled receptors, kisspeptin, cervical cancer, Kaposi sarcoma

#### PROFESSOR SUSAN KIDSON

Department of Human Biology  
Cell and developmental biology, embryonic and skin stem cells

#### ASSOC PROFESSOR DARREN MARTIN

Computational Biology  
Department of Clinical Laboratory Sciences  
Bioinformatics, virus evolution, genetic recombination

#### ASSOC PROFESSOR GRAEME MEINTJES

Clinical Infectious Diseases Research Initiative (CIDRI)  
Department of Medicine  
HIV-associated TB, TB-associated immune reconstitution inflammatory syndrome (TB-IRIS), cryptococcal meningitis

#### PROFESSOR PETER MEISSNER

Department of Clinical Laboratory Sciences  
Porphyrins, porphyrias, liver disease

#### PROFESSOR ROBERT MILLAR

MRC/UCT Receptor Biology Research Unit  
Department of Clinical Laboratory Sciences  
Peptide regulators of reproductive hormones

#### PROFESSOR NICOLA MULDER

Computational Biology  
Department of Clinical Laboratory Sciences  
Bioinformatics of infectious diseases

#### PROFESSOR MARK NICOL

Department of Clinical Laboratory Sciences  
Novel diagnostics for tuberculosis, strain biology of tuberculosis

#### ASSOC PROFESSOR JO-ANN PASSMORE

Department of Clinical Laboratory Sciences  
HIV/HPV mucosal immunology

#### PROFESSOR RAJKUMAR RAMESAR

MRC/UCT Human Genetics Research Unit  
Department of Clinical Laboratory Sciences  
Genetic predisposition to cancer; eye or neuropsychiatric diseases

#### **PROFESSOR ED RYBICKI**

Department of Molecular and Cell Biology  
Vaccine, viral and plant biotechnology, molecular virology and viromics

#### **PROFESSOR TREVOR SEWELL**

Director: Electron Microscope Unit  
Department of Clinical Laboratory Sciences  
Large biological structures, inter-molecular interactions, chaperoning nitrilases and chromatin

#### **PROFESSOR ED STURROCK**

Department of Clinical Laboratory Sciences  
Protein biochemistry, protease inhibitor design, ectodomain shedding of angiotensin-converting enzyme

#### **HON. PROFESSOR ROBERT WILKINSON**

Clinical Infectious Diseases Research Initiative (CIDRI)  
Department of Medicine  
Tuberculosis and the effect of HIV infection

#### **PROFESSOR ANNA-LISE WILLIAMSON**

SARChI Chair in Vaccinology  
Department of Clinical Laboratory Sciences

#### **PROFESSOR CAROLYN WILLIAMSON**

Department of Clinical Laboratory Sciences  
HIV diversity and pathogenesis, HIV-1 vaccine development, microbicides

#### **EMER. PROFESSOR ROBIN WOOD**

Desmond Tutu HIV Centre (DTHC)  
Department of Medicine  
Pathogenesis of tuberculosis and HIV infection

#### **Associate Members**

##### **DR WENDY BURGERS**

Department of Clinical Laboratory Sciences  
HIV pathogenesis & vaccine immunology, HIV-TB co-infection

##### **DR HELEN COX**

Department of Clinical Laboratory Sciences  
Epidemiology of TB & drug-resistant TB, TB diagnostics & treatment

##### **ASSOC PROFESSOR COLLET DANDARA**

Department of Clinical Laboratory Sciences  
Pharmacogenomics, drug metabolism, human genetic variation, genetic susceptibility

##### **DR WILLIAM HORSNELL**

Department of Clinical Laboratory Sciences  
Immunology of infectious diseases, helminth infections, acetylcholine signalling

##### **DR HEATHER JASPAN**

Department of Clinical Laboratory Sciences  
HIV/AIDS, paediatrics, vaccines, adolescent and neonatal HIV prevention

#### **ASSOC PROFESSOR VIRNA LEANER**

Department of Clinical Laboratory Sciences  
Transcriptional regulation and cancer biology

#### **DR SUZAAN MARAIS**

Clinical Infectious Diseases Research Initiative (CIDRI)  
Department of Medicine  
Tuberculous meningitis; neurological TB-associated immune reconstitution inflammatory syndrome; HIV-associated neurological disorders

#### **ASSOC PROFESSOR CATHERINE ORRELL**

Desmond Tutu HIV Centre (DTHC)  
Department of Medicine  
HIV: adherence, retention and resistance

#### **DR CATHERINE RIOU**

Department of Clinical Laboratory Sciences  
T cell immunology, HIV/TB co-infection

#### **DR GEORGIA SCHÄFER**

Department of Clinical Laboratory Sciences  
Oncogenic viruses, host-pathogen interactions, cancer biology, transcriptional regulation

#### **ASSOC PROFESSOR THOMAS SCRIBA**

SA Tuberculosis Research Initiative (SATVI)  
Department of Paediatrics & Child Health  
Clinical immunology, tuberculosis and mycobacterial infection, novel TB vaccines

#### **ASSOC PROFESSOR DIGBY WARNER**

MRC/NHLS/UCT Molecular Mycobacteriology Research Unit & DST/NRF Centre of Excellence for Biomedical TB Research  
Department of Clinical Laboratory Sciences  
Mycobacterial physiology, DNA repair and replication in *Mycobacterium tuberculosis*, drug resistance, role of vitamin B<sub>12</sub> in mycobacterial pathogenesis

#### **ASSOC PROFESSOR KATALIN WILKINSON**

Clinical Infectious Diseases Research Initiative (CIDRI)  
Department of Medicine  
Immunology of HIV associated tuberculosis

### **Contact details**

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