Nomination Statement – Clive Gray

I have been involved with the IUIS since 2013, when I became a member of the Clinical Immunology Committee and then later the vice chair in 2015. I also became a member of the IUIS Education Committee (EC) in 2014 and assumed the Chair in 2023. It is an honour to lead the EC and implement training and educational strategies – both in person and on-line to low-to-middle-income countries. I am also a member of FOCIS and direct a FOCIS Center of Excellence in South Africa. Additionally, as the current President of the Federation of African Immunology Societies (FAIS), I would bring an African spirit and voice to Council. As a member of Council, I would ensure that the different voices of immunology are brought to the table to facilitate collaborations across IUIS committees and synchronized educational approaches.

My immunology research focuses on the inflammatory mechanisms involved in precipitating pre-term birth and adverse birth outcomes by investigating cellular and molecular events in placentae collected from mothers infected with HIV and CMV. I lead a research group to identify how immunological tolerance at the maternal-fetal interface is broken due to maternal HIV and how this affects the ontogeny of infant immunity in HIV exposed uninfected children. I also lead a newly funded consortium: NexT generatIon traininG in HIV Research: Immunity in the First 1000 days in mother-infant dyadS (TIGRIS), consisting of investigators and educators in Africa, North America and Europe around reproductive immunology.

Clive Maurice Gray

- *Professor of Immunology in Division of Immunology, Biomedical Research Institute, Stellenbosch University, Cape Town, South Africa*
- *Emeritus Professor, Division of Immunology, Department of Pathology University of Cape Town*

PERSONAL DETAILS

Surname:	Gray
First Names:	Clive Maurice
Title:	Professor
Nationality:	South Africa/UK

CONTACT DETAILS

Cell Phone: +27 82 347 4963
Email address: cgray@sun.ac.za/clive.gray@uct.ac.za/clivegray2011@gmail.com

EDUCATION AND TRAINING

1996-1998	Stanford University, Center for AIDS Research Post-doctoral Fellow, HIV Immunology
1994	University of the Witwatersrand PhD, Immunology
1987	University of the Witwatersrand MSc, Immunology
1984	University of Western England (formerly Bristol Polytechnic) BSc (Hons), Applied Biological Sciences

AWARDS AND HONOURS

2025	South African Medical Research Council, Gold Award (https://www.youtube.com/watch?v=_wktTCOUcq4&list=PPSV&t=2s)
2024	Elected as President of the Federation of African Immunology Societies (FAIS)
2023	Harry Oppenheimer Fellowship, Oppenheimer Memorial Trust (https://www.omt.org.za/hfo-award)
2023	Finalist, National Science and Technology Forum
2023	Elected as Chair of the IUIS Education Committee
2022	Appointed as visiting Professor of University of Milan, Italy
2021	Elected as Vice-President of the Federation of Immunology Societies (FAIS)
2016	Elected as President of the International Union of Immunology Societies (IUIS) Immunology Congress in 2023
2013	Elected member of the Academy of South African Sciences
2010	Science Prize for Online Resources in Education (SPORE), American Association for the Advancement of Science.

2004-2007	International Leadership Award, Elizabeth Glaser Pediatric AIDS Foundation.
2005	Appointed as adjunct Professor of Immunology, Duke University, USA
2003-2005	Appointed as visiting Professor of Immunology, Duke University, USA
1999	Awarded Fogarty Fellowship, Fogarty AIDS International Training and Research Program (AITRP), Columbia University
1995-1997	Awarded James Gear Fellowship by the Poliomyelitis Research Foundation, South Africa, for research at Stanford University, USA
1993	Sandimmun (Sandoz) Award for the most outstanding scientific paper presented at 15th Congress of the South African Transplantation Society and the 2nd Interim Congress of the South African Immunology Society.
1989	David Hepburn Award, Natal Kidney Association. A Fellowship awarded to perform research in the Nuffield Department of Surgery, University of Oxford.

PROFESSIONAL POSITIONS

2023-	**Professor of Immunology**, Division of Immunology, Biomedical Research Institute, Stellenbosch University, Cape Town
2021-	**Group Leader,** Reproductive Research Consortium in Africa (RIRCA), Biomedical Research Institute, Stellenbosch University, Cape Town, South Africa
2021-23	**Professor of Immunology in Molecular Biology and Human Genetics**, Department of Biomedical Sciences, Stellenbosch University, Cape Town, South Africa
2021-	**Emeritus Professor of Immunology**, Department of Pathology, University of Cape Town, South Africa.
2016-	**Member** of the Academy of Science of South Africa (ASSAf)
2011-2021	**Chair, Professor and Head of Immunology**, University of Cape Town, Cape Town, South Africa.
2011-2021	**Director**, Laboratory for Tissue Immunology, National Health Laboratory services/Groote Schuur Hospital, Cape Town, South Africa
2021-	**Adjunct Member**, Institute of Infectious Disease and Molecular Medicine, University of Cape Town, South Africa.
2011-2021	**Full Member**, Institute of Infectious Disease and Molecular Medicine, University of Cape Town, South Africa.
2003-	**Adjunct Professor**, Department of Immunology, Duke University, North Carolina, USA.
2003-2010	**Chief Specialist Scientist**, Head of Department, HIV Immunology, National Institute for Communicable Diseases, Johannesburg, South Africa.
2005-2010	**Adjunct member**, of the Institute of Infectious Disease and Molecular Medicine, University of Cape Town, South Africa.
2004-2007	**Visiting Professor**, South African National Bioinformatics Institute, University of the Western Cape, South Africa.

2002-2003	**Principal Specialist Scientist**, AIDS Research Unit, National Institute for Communicable Diseases, Johannesburg, South Africa.
2000-2001	**Senior Specialist Scientist**, AIDS Research Unit, National Institute for Communicable Diseases, Johannesburg, South Africa.
1998-2000	**Assistant Director**, Medical Natural Scientist, AIDS Research Unit, National Institute for Communicable Diseases (formerly National Institute for Virology), Johannesburg, South Africa.
1996-1998	**Post-doctoral Fellow**, Center for AIDS Research, Stanford University Medical Center, California, USA.
1993-1995	**Lecturer**, Department of Experimental and Clinical Pharmacology, Medical School, University of the Witwatersrand, South Africa.
1990-1993	**Research Officer**, Transplantation Research Unit, Department of Surgery, Medical School, University of Witwatersrand, Johannesburg, South Africa.
1989-1990	**Visiting junior scientist**, Nuffield Department of Surgery, Tissue typing Laboratory, John Radcliffe Hospital, Headington, UK.
1985-1990	**Junior Research Officer**, Transplantation Research Unit, Department of Surgery, Medical School, University of Witwatersrand, Johannesburg, South Africa.
1982-1983	**Research Student**, Equine Research Station, Animal Health Trust, Newmarket, Suffolk, UK.

PROFESSIONAL ROLES

2024-2026	**President** of the Federation of African Immunology Societies (FAIS)
2024-current	**Director** of the Federation of Clinical Immunology Societies Center of Excellence at Stellenbosch University
2019-current	**Executive Director,** Immunopaedia Foundation. Non-Profit Company (NPC and PBO).
2016-2023	**President** of the 18th IUIS International Conference on Immunology 2023, Cape Town
2021-2024	**Vice-President**, FAIS
2018-2021	**Secretary-General**, FAIS
2016-current	**South African National Chair** of the International Council of Scientific Union committee of the IUIS
2016-current	**Scientific Advisory Board**. Sub-Saharan African Network for TB/HIV Research Excellence (SANTHE).
2014-2017	**President, South African Immunology Society (SAIS).**
2013-2018	**Carnegie Foundation Stakeholder coordinator**, IDM, Faculty of Health Sciences, UCT.
2011-2013	**Data Safety Monitoring Board**, Aurum Institute, Johannesburg, South Africa, Statens Serum Institut, Copenhagen, Denmark.
2006-2011	**Scientific Advisory Board**, Biomarkers for Protective Immunity of TB in Africa, Grand Challenges in Global Health, GC6 (PI: Stefan Kaufman).
2002-2010	**Principal Investigator**, HIV Vaccine Trials Network (HVTN) Regional Immunology Laboratory, measuring vaccine-induced

immunogenicity in clinical trials and operating under GCLP conditions.

2004-2007 **Convener of Community talks,** (Lay Person lectures) at the HVTN full group meetings, Seattle and Washington DC, USA.

2007 **Invited panel member** by WHO, UNAIDS and ANRS to a consultation meeting on Potential Endpoints of HIV Vaccine Efficacy, Paris, France.

2005-2007 **Invited panel member** by the Academy of Science of South Africa to develop a Consensus Study on Nutrition, HIV/AIDS and TB, Pretoria, South Africa.

2003-2007 **Co-chair,** Laboratory Sciences Committee of the HVTN.

1997 **Lecturer**, Advanced Immunology, Stanford University, California, USA

1991-1993 **Director, Flow Cytometry Laboratory**, Claude Harris Leon Foundation Flow Cytometry Unit, Medical School, University of Witwatersrand, Johannesburg, South Africa.

1989-1990 **Research Fellow**, Nuffield Department of Surgery, University of Oxford, UK.

Website Links: https://www.immunopaedia.org.za/
https://rirca.science/

MANAGEMENT AND COMMITTEES

Institutional

2021-current Teaching and Learning Task Team, Stellenbosch University

2020-2021 Chair. Department of Pathology Research Committee, UCT

2011-2021 Executive Committee, IDM, Education Portfolio, UCT

2011-2021 Chair, Education Committee of the IDM, UCT

2011-2021 Chair, Executive Committee of the Division of Immunology, UCT

2016-2021 Readmissions Committee, UCT

2011-2021 Executive member of the Department of Pathology (formerly known as Clinical Laboratory Sciences), UCT

2011-2021 Pathology Management Committee, UCT and NHLS

2015-2018 Chair, Transformation Equity Committee, Department of Pathology, UCT

2016-2018 Transformation Equity Committee, Faculty of Health Sciences, UCT

1998-2010 Management Committee, National Institute for Communicable Diseases, South Africa.

National

2021-2023 Member, National Immunisation Safety Expert Committee (NISEC)

2021-2023 Member, vaccine Ministerial Advisory Committee (vMAC) on COVID-19 vaccines

2020-current Expert Committee on COVID-19 rapid testing, South African Health Products Regulatory Authority (SAHPRA).

2015-2016 Chair, Pathology Expert Chairs Committee, National Health Laboratory Services (NHLS).

2015 Chair, Medical Scientist Committee, NHLS.

2015-2016	Executive Committee, NHLS
2014-2017	Chair, Executive Committee of the South African Immunology Society (SAIS)
2014-2015	Research sub-committee of the NAPC, NHLS
2013-2016	National Academic Pathology Committee (NAPC), NHLS
2011-2015	Chair, NHLS Immunology Expert Committee
2009-2014	South African Immunology Society (SAIS), Education portfolio.
2002-2011	Executive Committee, Centre for the AIDS Programme of Research in South Africa (CAPRISA), South Africa.
2002-2012	Chair: Scientific Research Sub-Committee, CAPRISA, South Africa.
2002-2007	Vaccine Development Team, South African AIDS Vaccine Initiative (SAAVI).

International

2023-current	Chair, Education Committee of the IUIS
2020-2021	Chair, Scientific Programme Committee, 11th Federation of African Immunology Societies Congress, Malawi.
2018-2023	Vice-Chair, Education Committee of the IUIS
2016-2020	International Scientific Advisory Committee (ISAC) of STARBIOS2 (Supporting structural change in research organisations to promote Responsible Research and Innovation) project
2015-current	Executive Committee of the Federation of African Immunology Societies (FAIS).
2014-2017	Vice-chair of the Clinical Immunology Committee of the International Union of Immunology Societies (IUIS).
2011-2014	Clinical Immunology Committee (member), International Union of Immunology Societies (IUIS).
2010-2012	Technical Advisory Committee, OPTIMALVAC, European Vaccine Initiative.
2009-2012	Vaccine Trial Steering Committee, EDCTP/UK MRC funded paediatric vaccine trial.
2007-2014	Operations and Training Committee, Canadian African Prevention Trials Network (CAPT).
2007-2014	Steering Committee (CAPT).
2001-2006	Phase III Vaccine Trials Committee, HIV Vaccine Trials Network, USA.

EDUCATION COMMITMENTS

Undergraduate

1. Oversight and curriculum development of undergraduate medical student immunology in semesters 3, 4 and 5 (First and second year of a 6-year course). 2011-2021
2. Introduction of Basic Immunology in 1st year undergraduate medical students (in semester 2). 2013-2021
3. Lectures the basics of immunology in Language of Medicine; five lectures at the start of year 2 undergraduate medical students. 2011-current
4. Lectures on malaria and HIV immunopathogenesis, prevention and treatment at the end of year 2 medical students. 2011-2021

5. Curriculum development and teaching infant immune ontogeny to the undergraduate molecular medicine students (third year intercalated medical students). 2011-current
6. Curriculum development for 3rd year physiology students. 2013-2021

Postgraduate

7. Lectures to basis and advanced immunology Honours course, Stellenbosch University, 2021-current
8. Oversight and curriculum development for the two semester Advanced Immunology Course (PTY6001W). This is a course given to MSc, PhD, post-doctoral fellows and clinician scientists to highlight the basics and new developments in immunology. 2011-2021
9. Lectures on anatomical arrangement of the immune system, T cell memory, inflammation and tolerance, paradigms in immunology on course PTY6001W. 2011-2021
10. Curriculum development of the Infectious Disease and Immunology (IDI, PTY4001W) honours module on immunology. 2011-2021
11. Lectures on HIV and Ebola vaccines in the IDI Honours vaccinology module. 2015-2022

NON-INSTITUTIONAL IMMUNOLOGY EDUCATION COMMITMENTS

I have been co-organiser of the following immunology courses throughout Africa, Latin America and India. I have participated in each course, given lectures and been involved in workshopping grant writing throughout the courses. Additionally, Immunopaedia (https://www.immunopaedia.org.za/) has been used to post course content either prior to the course (as with all IUIS-sponsored) and post course material in the case of KENBOP and MALBOP and now known as AFRIBOP. This is indefinite free access to the material for all scholars and Faculty of the course. I have trained over 1200 young students on these courses over the past 10 years, some of who have become high profile academics in their own right.

1. Upcoming: IUIS-FAIS Immuno-Madagascar
2. Upcoming: IUIS-ALACI Immuno-Peru
3. Upcoming: IUIS-FIMSA Immuno-Cambodia
4. IUIS-FAIS-SAIS Immuno-South Africa. Theme: One Health, Pretoria, 30 Sept – 4 Oct 2024, South Africa
5. IUIS-ALACI short course on abstract/poster preparation, 4th November 2024, Buenos Aries, Argentina
6. IUIS-ALACI ImmunoMexico. Theme: Mechanism for Immunotherapies, Oaxaca, Mexico, 8-12th April 2024
7. IUIS-ALACI ImmunoChile. Theme: *Mucosal Immunology*, Santiago, Chile, 16-21st Oct 2023
8. IUIS-FAIS ImmunoMorocco. Theme: *Cancer Immunotherapy*, Marrakech, Morocco, 5-10th June 2023
9. IUIS-FAIS Immuno-Zambia, *Theme: The big four: HIV, TB, malaria and COVID. Lusaka, Zambia,* 5-10th December 2022.
10. AfriBop, Immunobiology of Parasites, Pathogens and Pathogenesis, Blantyre, Malawi, November, 2022
11. IUIS-FAIS Immuno-Tunisia, On-line only (due to COVID-19). 6-10th December 2021. *Theme: Immune Dysregulation and Infection.*

12. AfriBop, Immunobiology of Parasites, Pathogens and Pathogenesis, Online only (due to COVID-19), October, 2021
13. IUIS-FAIS Immuno-Colombia, On-line only (due to COVID-19). 5-16th April 2021. *Theme: Mechanisms and Approaches to Immunotherapy for Cancer and Chronic Inflammatory Diseases.*
14. IUIS-FAIS Immuno-Algeria, On-line only (due to COVID-19). 1-12th June 2020. *Theme: Allergy in Africa.*
15. IUIS-FAIS Immuno-Ethiopia, Bahir Dar, Ethiopia 24-29 February 2020. *Theme: Neglected Tropical Diseases and Malaria Challenges in Sub-Saran Africa*
16. IUIS-FAIS Immuno-Benin, Ouidah, Benin 3-10 November 2019. *Theme: Impact of tropical infections on mother and child immunity*
17. AfriBop, Immunobiology of Parasites, Pathogens and Pathogenesis, Online only (due to COVID-19), August, 2020
18. IUIS-FIMSA Immuno India. Jaipur, India, 12-16 October 2019. *Theme: Advanced Translational Immunology.*
19. AfriBop, Immunobiology of Parasites, Pathogens and Pathogenesis, Kenya, Kilifi, August, 2019
20. 14th Annual African Vaccinology Course, Cape Town, November 2018
21. KENBOP-3, Immunobiology of Parasites, Pathogens and Pathogenesis, Kenya, Kilifi, September, 2018
22. IUIS-FAIS Immuno Kenya, Nairobi, September, 2018. *Theme: Viruses hijacking host immune responses.*
23. IUIS-FAIS Immuno Morroco, Fez, March, 2018. *Theme: mechanisms underlying immune responses in cancer, inflammation, the recent advances in immunotherapy and emerging research in these fields.*
24. IUIS-FAIS Immuno Gambia, Banjul, Gambia, November 2017. *Theme: Malaria, HIV, tuberculosis, helminth and viral infections*
25. 13th Annual African Vaccinology Course, Cape Town, November 2017
26. MALBOP-3, Immunobiology of Parasites, Pathogens and Pathogenesis, Malawi, Blantyre, September, 2017
27. IUIS-IDA Immuno South Africa, Cape Town, September 2017. *Theme: Immune Escape Strategies by HIV, TB and malaria.*
28. IUIS-FAIS Immuno Ethiopia, Gondar. Ethiopia, March 2017. *Theme: developments in the immunology, diagnosis and treatment of Cutaneous and Visceral Leishmaniasis, Schistosomiasis and Helminth infections.*
29. KENBOP-3, Immunobiology of Parasites, Pathogens and Pathogenesis, Kilifi, Kenya, September 2016.
30. IUIS-Federation of Immunology Societies (FAIS) Immuno Tunisia, Hammamet, Tunisia, March 2016. *Theme: Immune regulation and cancers.*
31. IUIS-Infectious Disease in Africa (IDA) Immuno-South Africa, Cape Town. October 2015. Theme: *Biomarkers and Correlates of Immune Control in HIV, TB and Malaria.*
32. IUIS-Association of Latin American Immunology Immuno-Colombia, Medellin, October 2015. *Theme: Immune Regulation in Health and Disease.*
33. 1st Immuno-Kenya International Union of Immunology Societies (IUIS) course. Nairobi, December 2014

ON-LINE EDUCATION

In 2004, I was awarded the International Leadership Award from the Elizabeth Glaser Pediatric AIDS Foundation. This enabled me to establish Immunopaedia

(https://www.immunopaedia.org.za/), an open-source immunology learning and teaching website. This was initially focused on the immunology of paediatric, but since 2014 has broadened to encompass both communicable and non-communicable diseases. Using clinical case studies, the underlying immunology aetiology is highlighted and by so doing imparting immunology knowledge to clinicians. After partnering with the International Union of Immunology Societies (IUIS) in 2015, the content of the immunopaedia has substantially expanded and part of the focus is now to support IUIS courses (see above) by offering pre-course training. In 2025, we will be celebrating 20 years of active on-line learning through Immunopaedia.

WORKSHOPS AND MEETINGS ORGANIZED

Over the past twenty-five years, I have organized several workshops, seminars and meetings designed to educate and improve academic and technical skills in South Africa:

2025	FAIS Immunology Primer and 12th Symposium on Infectious Diseases in Africa: *HIV, malaria and TB Vaccine Research*; Stellenbosch University, Cape Town, South Africa. 3-7th February 2025
2023	FAIS Immunology Primer and 11th Symposium on Infectious Diseases in Africa: *HIV, malaria and TB Vaccine Research in the time of the COVID-19 pandemic*; Stellenbosch University, Cape Town, South Africa. 3-7th September 2022
2021	IUIS-FAIS Immunology Primer and 10th Symposium on Infectious Diseases in Africa: *HIV, malaria and TB Vaccine Research in the time of the COVID-19 pandemic*; Stellenbosch University, Cape Town, South Africa. 11-14th October 2021
2019	IUIS-FAIS Immunology Primer and 9th Symposium on Infectious Diseases in Africa: *Innate Immunity and vaccines to malaria, TB and HIV*; UCT, Cape Town, South Africa. 7-11th October 2019
2019	4th Stakeholder led Research Prioritization Event around pre-term birth, Cape Town, 1-2nd April 2019
2019	3rd Stakeholder led Research Prioritization Event around pre-term birth, Cape Town, 30th January 2019
2019	Chair, 1st meeting on Pre-Term Birth Dialogues, Cape Town, 27-29th January 2019
2018	IUIS-FAIS Immunology Primer and 8th Symposium on Infectious Diseases in Africa: INTERPLAY BETWEEN INNATE, ADAPTIVE & MUCOSAL IMMUNE RESPONSES TO VACCINES; UCT, Cape Town, South Africa. 11-17th November
2017	Chair of the 7th SAIS Conference, Immune Tolerance, 3-6th September, Gordons Bay, Cape Town, South Africa
2017	IUIS-FAIS Immunology Primer and 7th Symposium on Infectious Diseases in Africa: Immune escape from HIV, TB and malaria, Gordons Bay, Cape Town, South Africa. 1-9th September
2015	IUIS-FAIS Immunology Primer and 6th Symposium on Infectious Diseases in Africa: Biomarkers of Immune Control in

	HIV, TB and malaria, UCT, Cape Town, South Africa. 20-24th October
2014	Immunology Primer and 5th Symposium on Infectious Diseases in Africa: Immune regulation and dysfunction in malaria, TB and HIV, UCT, Cape Town, South Africa. 21-26th October
2014	Carnegie-K-RITH MSc/PhD/Post-Doc Retreat, 6-7th October, Devon Valley Hotel, Stellenbosch.
2013	4th Symposium on Infectious Diseases in Africa: "Measurement of Immune Responses", UCT, Cape Town, South Africa
2011	3rd Symposium on Infectious Diseases in Africa: "Measurement of Immune Responses", UCT, Cape Town, South Africa followed by the 4th African Workshop on Flow Cytometry: "Detection of Antigen-Specific T Cells by Intracellular Cytokine Staining (ICS)" .
2009	2nd Symposium on Infectious Diseases in Africa: "Measurement of Immune Responses", Johannesburg, South Africa followed by the 3rd African Workshop on Flow Cytometry: "Detection of Antigen-Specific T Cells by Intracellular Cytokine Staining (ICS)" .
2008	2nd Immunopaedia Workshop: a novel immunology teaching tool, 12th March 2008, Stellenbosch University Medical School, Cape Town, South Africa.
2007	2nd African CHAVI meeting, November.
2007	Trojan Horses, Immunology and the Clinic: introducing Immunopaedia, Stellenbosch University Medical School, Cape Town, South Africa.
2007	1st Symposium on Infectious Diseases in Africa: "Measurement of Immune Responses", Johannesburg, South Africa followed by the 2nd African Workshop on Flow Cytometry: "Detection of Antigen-Specific T Cells by Intracellular Cytokine Staining (ICS)".
2006	NICD academic day.
2006	1st African CHAVI meeting, November.
2006	HIV and the Gastrointestinal Tract, Academy of Science of South Africa, Department of Science and Technology, Pretoria.
2005	1st African Workshop on Flow Cytometry: "Detection of Antigen-Specific T Cells by Intracellular Cytokine Staining (ICS)", NICD.
2005	Chair: Scientific Progress Towards Developing HIV Vaccines for South Africa, Durban AIDS Conference.
2005	Satellite Meeting on**:** Treatment and research options for paediatric HIV infection in South Africa: Towards Improving the Care of HIV-infected Children. Durban AIDS Conference.
2001-2004	WHO-TDR Bioinformatics workshop, SANBI, University of the Western Cape.
2000-2005	Continental-wide African workshops on the IFNg ELISPOT assay (two in South Africa in 2000 and 2002 and one in Nairobi in 2005).
2000	Chair of Scientific Sessions, AIDS 2000, Durban and the South African AIDS Conference 2003.
1997	Initiation of HIV vaccine development in South Africa – immunological correlates. Cape Town, South Africa.

1989 Flow Cytometry workshop, Department of Surgery, Wits Medical School.

SUPERVISION OF POST GRADUATE STUDENTS & FELLOWS

Name	Degree	Institution	Year
Valmy Calfert*	BSc (Hons)	UCT	2012

T-cell responsiveness to Cγ-cytokines in HIV infection

Rachel Esra* BSc (Hons) UCT 2015**
Characterising immune activation and in the foreskin of young men undergoing medical male circumcision (MMC) in South Africa

Sandiswe Zelda BSc (Hons) UCT 2016**
The effect of Medical Male Circumcision on penile microbiome and inflammation.

Michelle Barboure BSc (Hons) UCT 2018*
Characterisation of CD4^{+} CD25^{bright} CD127^{low} FoxP3^{+} Regulatory T Cells in Placenta and Cord Blood in HIV-infected Pregnant Women

Christen de Costa BSc (Hons) UCT 2018
HIV Target Cells In The Foreskin: Characterising And Phenotyping Of Migrating HIV Target Cells From Ex-Vivo Foreskin Tissue Taken From Men And Infants Undergoing Voluntary Medical Male Circumcision

Nzumbululelo Mudau BSc (Hons) UCT 2020
Role of CCL17 in the Migration of T Regulatory Cells between HIV-exposed Infants and HIV-unexposed Infants

Kwakho Lihle Mtiki BSc (Hons) SU 2024
Ex vivo modelling of Cytomegalovirus infection in placental decidua parietalis and villous tissue.

Tamika Pillay BSc (Hons) SU 2024
Ex vivo modelling of Epstein Bar Virus infection in placental decidua parietalis and villous tissue.

Tumelo Mashishi MSc Wits 1999-2003
Dissertation: *Characterization of Nef from HIV-1 subtype C infected individuals*

Stephina Nyoka MSc Wits 2006-2008
Dissertation*: The Characteristics and Functional Nature of T Cells Upon HIV-1 Infection and Exposure*

Elvis Kidzeru* MSc UCT 2011-2013
Dissertation*: The Effect of HIV-exposure on Immune Responses to Expanded Programme on Immunization Vaccines and Antigens.*

Christoph Tchakoute* MSc UCT 2012-2014
Dissertation: *Effects of delayed BCG vaccination on cellular immune responses in HIV-exposed infants*

Trishana Nundallal* MSc UCT 2014-17**
Dissertation: *CD4 and CD8 T-Cell Responses to Acellular Pertussis and Rotavirus Vaccination in Breast-fed HIV exposed, uninfected infants.*

Rushil Harryparsad* MSc UCT 2014-2016
Dissertation: *Characterisation of Mucosal Tissue in the Foreskin after Voluntary Medical Male Circumcision.*

Sophie Beer MSc FSU, Berlin 2015-2016
Dissertation: *The effect of maternal HIV exposure on T cell responses to Bacillus Calmette-Guérin, tetanus and pertussis vaccine in infants.*

Stephanus Rautenbach MSc UCT 2015-2018
Dissertation*: Peripheral Inflammatory and Regulatory Immune Changes in HIV positive to HIV positive Renal Transplant Recipients.*

Nobomi Dontsa* MSc UCT 2016-2020
Dissertation*: Immunoregulatory and antiviral factors in Breast milk and Saliva associated with Anti HIV activity.*

Yamkela Qumbelo* MSc UCT 2017-2021
Dissertation*: Immune regulation of Langerhan's cells*

Shorouk Sebba* MSc UCT 2018 (ongoing)
Dissertation: *Identifying aspects of HIV target cells in foreskin tissue from males undergoing medical male circumcision.*

Christen de Costa* MSc UCT 2019 (ongoing)
Dissertation*: Characterizing HIV Target Cells In The Foreskin*

Hiba Nacef MSc SU (from Tunisia) 2023
Dissertation*: Measuring immunity in placenta tissue (DP, VT) for HIV(+) and HIV(-) pregnant woman*

Mikhail Smith* MSc UCT 2019 (withdrawn)
Dissertation: *Association between Human Leukocyte Antigen (HLA) genotypes and the cellular immune responses of infants to early childhood vaccinations in Cape Town, South Africa and Jos, Nigeria.*

Melinda Suchard* MMed Wits 2008
Dissertation*: Regulatory T cells in HIV and TB*

Mandla Mlotshwa PhD Wits 2009-2013
Thesis: *Characterization of HIV-1 specific T cell responses during acute and early HIV-1 Subtype C infection.*

Pholo Maenetje PhD Wits 2009-2013

***Thesis**: Activation and Memory Differentiation of Total and HIV-Specific T Cells that Associate with Viral Control during Subtype C HIV-1 Infection*

Jerome Wendoh* PhD UCT 2014-2018
***Thesis:** The Influence of HIV Exposure and Feeding on the Gut Microbiota and Adaptive Immunity in South African Infants.*

Michael Zulu PhD UCT 2015-2019
***Thesis:** Characteristics of decidual macrophages and Hofbauer Cells in placentas of HIV positive women on antiretroviral therapy.*

Agano Kiravu* PhD UCT 2015-2020
***Thesis:** Cellular Immune Ontogeny and Birth Transcriptomic Profiles in Hiv-Exposed Uninfected Infants*

Thandeka Moyo* PhD UCT 2016-2017
***Thesis:** Role of envelope compactness and glycosylation in HIV-1 resistance to Neutralizing antibody responses.*

Lerato Rametse* PhD UCT 2019-2024
***Thesis:** The location and phenotype of HIV-1 target cells in human foreskin tissue.*

Ramadhani Chambuso* PhD UCT 2017-2020
***Thesis:** HIV/HPV co-infection and host immunogenetics of cervical cancer.*

Brandon Paarwater PhD Stellenbosch 2022 (ongoing)
***Thesis:** Mechanisms by which trophoblasts recruit T cells to the placental villi during maternal HIV and CMV co-infection.*

Lesedi Dikhoba PhD UCT 2021 (ongoing)
***Proposal:** Inflammation and T cell immunity in placentae from HIV-infected and HIV-uninfected South African women.*

Agatha Masemola Post-Doc Wits 2001-2003
***Role**: Identify novel epitope recognition and synthesize MHC tetramers*

Vivan Morafo Post-Doc Wits 2002-2007
***Role**: Identify the proliferative capacity of CD4+ T cells from HIV infected participants*

Debra de Assis Rosa Post-Doc Wits 2002-2007
***Role:** To HLA type HIV infected and HIV uninfected participants*

Catherine Riou Post-Doc Wits 2007-2011
***Role:** To employ polychromatic flow cytometry to understand HIV-specific T cell memory development.*

Lycias Zembe Post-doc UCT 2011-2013
***Role:** To identify cross-clade T cell reactivity*

Selena Ferrian Post-doc UCT 2013-2016
Role*: To use polychromatic flow cytometry to identify Treg cells in MDR-TB patients*

Abraham Olivier Post-doc UCT 2012-2016
Role: *To characterize foreskin tissue from males undergoing medical male circumcision.*

Ngiambudulu Francisco Post-doc UCT 2014-2015
Role*: To characterize Treg cells in HIV infected kidney transplant recipients. (Harry Crossley awardee)*

Nadia Ikumi Post-Doc UCT 2016-2021
Role: *To identify Treg cells in the placenta from HIV infected women (AXA Foundation awardee)*

Sonwabile Dzanibe Post-Doc UCT 2017-2021
Role*: To use CYTOF to associate NK and T cell populations in HIV exposed infants with gut micobiome (Claude Leon Foundation awardee)*

Kyle O'Hagan Post-Doc UCT 2017-2019
Role: *To characterise HIV target cells in the epithelial tissue of the foreskin (Harry Crossley and Claude Leon Foundation awardee).*

Doty Ojwach Post-Doc Stellenbosch 2022-ongoing
Role: To identify macrophage and T cell interactions in the placenta and associate with adverse birth outcomes.

Carine Kunsevi Post-Doc Stellenbosch 2023-ongoing
Role: The role of complement in the placenta from HIV and malaria infected pregnant women.

Nyari Chigorimbo Early Career UCT 2015-2020
Role: *To use proteomics to investigate the impact of sexually transmitted infections on foreskin immune cell pathways.*

Sonwabile Dzanibe Early Career UCT 2021-ongoing
Role*: Effects of intra-uterine HIV exposure on antibody functionality and B cell development (Wellcome Trust Training Award)*

* co-supervision
**with distinction

GRANT FUNDED PROJECTS AND RESPONSIBILITIES

Institutional PI or Grant PI:

National Institutes of Health

Currently Active

2024-2028 D43TW012758. Next generation training in HIV research: Immunity in the First 1000 days in mother-infant dyads (TIGRIS). (PI's Gray/Chakraborty). *Role: to introduce a post-graduate diploma and training programme in reproductive immunology.*

2024-2026 R13AI184067. Infectious Diseases in Africa (IDA) Training Symposium for Next Gen Scientists (PI's Gray/Ferrari/Andersen-Nissen). Role: to hold courses in Africa for training on infectious diseases.

2022-2024 (NCE) D71TW012265. Next generation training in HIV research: Immunity in the First 1000 days in mother-infant dyads (TIGRIS). (PI's Gray/Chakraborty). *Role: to introduce a post-graduate diploma and training programme in reproductive immunology.*

2021-2025 (NCE) 1R01HD106821-01. Influence of HIV infection on vaginal virome and risk of preterm birth in pregnant South African women. (PI. Jaspan)

2020-2024 (NCE) 1R21 HD103498-01. Mechanisms by which trophoblasts recruit T cells to the placental villi during maternal HIV and CMV co-infection (PI: Gray/Chakraborty).
Role: To investigate the role of trophoblasts in attracting CD8+ T cells to the villous tissue in placentas collected from HIV infected mothers.

2020-2025 (NCE) Mechanisms Leading To Adverse Birth Outcomes In South African HIV-Infected Women. R01 HD102050 (PI:Gray/Jaspan):
Role: to investigate the immune status of the placenta and interaction with the vaginal microbiome and perinatal vaccine responses.

2019-2024 (NCE) Immune correlates of tuberculosis and non-tuberculosis infectious morbidity in Southern African HIV-exposed, uninfected infants (R01 AI142670 co-investigator (PI: Powis)
Role: Co-investigator. Using cohorts of infants in Botswana and South Africa, this study will explore correlates of immune protection against TB and non-TB infectious morbidity in HIV-exposed infants

Pending

BLOOM: Biological Links to Offspring Outcomes and Mechanisms in HIV-exposed children
Major Goals: To identify a biomarker and immune changes in the placenta associated with poor growth and neurodevelopment in children who are HIV-exposed but uninfected.
Status of Support: Pending
Project Number: 1U19HD118623
Role: Multi-Principal Investigator

Mechanistic intersection between placental vascular and newborn neuronal development
Major Goals: To identify vascular changes in the placenta associated with brain neuronal development.
Status of Support: Pending
Project Number: 1R01HD116609
Role: Multi-Principal Investigator

Previous

2017-2024 Breast Milk Microbiota Influence on Infant Immunity and Growth (BEAMING); 1 U01 HG009783-01 Institutional PI (PI: Abamiku). NIH, National Human Genome Research Institute, H3 Africa
Role: Institutional PI. Measure HLA class I and II differences between mother and child and relate to antibody titers at week 36 to Pertussis.

2017-2023 Impact of HIV exposure, feeding status, and microbiome on immune ontogeny and vaccine responses in infants. $755 450 1U01AI131302-01, co-PI: (other PIs: Jaspan/Blish)
Role: co-PI. To measure NK and T cell immune ontogeny in the first year of life in HIV exposed infants using CYTOF.

2017-2023 Barrier Integrity, microbiome and HIV target cell interactions in the human male genital tract pre and post circumcision. R01 DK108434-01A,1 $2,500,000; Institutional PI (PI Thomas Hope)
Role: Institutional PI. To measure in vivo barrier integrity pre and post medical male circumcision and relate to HIV target cells in the removed foreskin.

2015-2020 Risk assessment of HIV infected to HIV infected transplantation in SA 1U01AI116061-0. Co-investigator (PI: Muller E)
Role: co-investigator. Isolate and store cells from deceased donors and transplant recipients.

2015-2020 ART and risk of preterm delivery in a rural high HIV prevalence area. 1R01HD080385-01, co-investigator (PI Marie Louise Newell).
Role: co-investigator. Isolate and store cells from mothers during gestation and collect placentas for interrogating fetal-maternal immune imbalance.

2015-2018 Mechanisms of altered immune responses in HIV-exposed infants 1R21HD083344-01; PI: Gray (co-PI with Jaspan). $225,000
Role: co-PI. To relate altered vaccine responses in the first year of life in HIV-exposed infants with T regulatory cell function.

2009-2014 Emerging XDR-TB: Host and pathogen contributions, NIH: RO1 AI080737 co-investigator (PI: G Kaplan): $120,000/year

Role: co-investigator. To identify a cellular and plasma biomarker predicting sputum clearance in MDR-TB patients.

2011-2012 Immunopaedia e-learning methods, Office of AIDS Research, NIH. $96,000
Role: PI. To create on-line immunology learning/teaching materials.

2009-2010 Immunopaedia e-learning methods, Office of AIDS Research, NIH. $86,000
Role: PI. To create on-line immunology learning/teaching materials.

2007-2010 HIV Vaccine Trials Network Central Immunology Laboratory, NIH; 1U01 AI068618: $1,897,000
Role: Institutional PI: cellular immunogenicity end-point laboratory

2007-2009 HIV-1 vaccine based on chimp serotype of Adenovirus, NIH; 5U19 AI074078: $107,378
Role: co-investigator. Measure T cell responses to Ad5, Ad35 and ChAd3 antigens from HIV negative adults.

2005-2012 Regional T cell Immunology Core, Center for HIV AIDS Vaccine Immunology (CHAVI); U01 A1067854-03: approx $136,000 (final year).
Role: Institutional PI. To measure the ontogeny of CD8+ T cell responses to HIV during adult acute infection.

2002-2007 Cellular Core, CAPRISA; U19-AI51794-01: $1,685,048
Role: co-investigator. To measure the dynamics and epitope identity of CD8 and CD4+ T cell responses during acute HIV-1 infection.

2001-2006 HIV Vaccine Trials Network Central Immunology Laboratory, NIH; 1U01 AI068618: $1,200,000
Role: Institutional PI: cellular immunogenicity end-point laboratory

2003-2004 HLA typing and Epitope Mapping to Guide HIV Vaccine Design, Harvard University; N01-AI-15442: $175,000
Role: co-investigator. To epitope map chronically HIV infected adults.

1999-2001 HIVNET 028 study: Virological and Immunological Studies Of HIV-1 Infection in Newly Infected Individuals in Southern Africa, National Institutes of Health (NIH), N01-AI-45202: $540,500
Role. Institutional PI: To identify T cell and humoral responses to primary subtype C HIV-1 infection in South Africa, Zimbabwe, Zambia and Malawi.

Canadian Institutes of Health Research

2022-2028 HIV Antiretroviral and Placenta dysfunction – identifying the mechanisms leading to poor fetal growth. CIHR-University Health Network, Ontario
Role: Co-investigator

2016-2021 Building the Foundation for Healthy Life Trajectories. CIHR-SAMRC.
Role. Co-investigator.

2015-2016 The Canada-Africa Prevention Trials (CAPT) Network PhD and post-doctoral training, International Development Research Center (IDRC), Canada. (PI: Gray, $216,000).
Role. Co-PI. To build up laboratory training around HIV research between South Africa and Uganda.

2014-2015 Canadian Institutes of Health Research application: Intestinal microbiota, immune activation and vaccine responsiveness of the HIV-exposed infant. (PI: Cameron, Jaspan)
Role. Co-investigator. To measure T cell immune activation and to associate with gut microbiome in the newborn infant.

2013-2014 Canadian Institutes of Health Research: "Making Immunology Accessible: AFRIcan-CANadian (AFRI-CAN) Dissemination Network."
Role: PI. Develop on-line immunology materials around HIV infection and hold workshops.

2011-2016 Innate, Adaptive and Mucosal Immune Responses in HIV-1 Exposed Uninfected Infants: A Human Model to Understand Correlates of Immune Protection. PI's: Rosenthal, Gray, Amagu, Cameron. Canadian Institutes of Health Research, 01044-000; $3,331,384
Role: co-PI. To develop a mother-baby cohort and determine the impact of maternal HIV exposure on EPI vaccine responses in children recruited in Cape Town and Jos, Nigeria.

2010-2014 Canada Africa Prevention Trials Network Training and Research Grant: $70,000/year
Role: *Role. Institutional PI. To build up laboratory training around HIV research between South Africa and Uganda.*

2007-2009 Canada Africa Prevention Trials Network Training and Research Grant: $70,000
Role. Institutional PI. To build up laboratory training around HIV research between South Africa and Uganda.

National Institutes of Health Research, UK

2018-2021 PReterm bIrth prevention and manageMEnt (PRIME). NIHR Global Health Research Group. 17/63/26. $3,916,000 (Anumba (PI).
Role: Institutional and South African PI. To recruit cohorts of women spontaneously giving pre-term birth (PTB) and investigate in the placenta for infections and gene expression signatures of PTB.

Academy of Medical Sciences, UK

2018-2019 Preterm Birth Dialogues. Gray and Anumba (co-PI). Academy of Medical Sciences, UK. $33,000
Role: co-PI. To develop a network of global investigators around pre-term birth.

South African Medical Research Council

2025-2027 The impact of antiretroviral drugs on placental vascular development and macrophage function. £646,221 (SAMRC-UKRI-MRC)
Role: PI. To measure the impact of different antiretroviral drugs on placental angiogenesis and the role pf placental macrophages.

2006-2009 Understanding Correlates of Protection through Analysis of HIV-specific T cell Immune Functions: Development of Novel Immunogenicity Markers, South African AIDS Vaccine Initiative: $1,194,316
Role: PI. To measure T cell immunity on adult HIV-1 infection and identify markers of immune control.

2003-2006 Cellular Immunology Core, South African AIDS Vaccine Initiative: $1,100,020
Role: PI. To establish an immune monitoring laboratory to measure HIV vaccine immunogenicity.

South African National Research Foundation (competitive grants for rated researchers)

2018-2020 Immunological and Metabolic Risk Factors Associated with Adverse Birth Outcomes**.** $40,000
Role: PI. To measure gene transcriptomic profiles in the placenta from HIV exposed infants.

2014-2016 The Impact of Maternal HIV Exposure on Infant Immunity and Responses to Vaccination. Grant #: 92770. $90,000
Role. PI. To identify immune activation and inflammation in the HIV exposed neonate immediately after birth.

European Union

2021-2025 MoBility for Research and African Integration through Health Sciences (BRAINS): ε218 255
Role: To facilitate training of MSc and PhD students from across Africa over 5 years.

2018-2021 EDCTP 2: Combined HIV African PrEP and Prevention Study: On demand Truvada and F/TAF Pre-exposure prophylaxis to provide protection From HIV in adolescent boys and men (CHAPPS). Co-investigator. $1,800,000
Role: Institutional PI: To conduct a clinical trial of Truvada and F/TAF and identify drug and safety profile in foreskin tissue.

2013-2015 EDCTP Strategic Primer: "Factors affecting HIV susceptibility in the adolescent genital tract." PI, Passmore; $1,200,000
Role: co-investigator. To measure the impact of an asymptomatic sexually transmitted infection on foreskin epithelial HIV immune target cells.

Industry

2012-2016 Renal Transplantation in South Africa: Using HIV positive deceased donors for HIV positive recipients. PI: E. Muller, UCT. Roche Organ Transplantation Research Foundation (ROTRF). $450,000
Role: To measure plasma cytokines and T cell reactivity in renal transplant recipients.

2009-2010 Virax, Therapeutic Vaccine Trial: VIR201-04-06. $145,800
Role: Institutional PI, to measure T cell immunogenicity in HIV infected individuals receiving a vaccine candidate.

2007-2009 FIT Biotech, Therapeutic Vaccine Trial: $61,000
Role: Insitutional PI, to measure T cell immunogenicity in HIV infected individuals receiving a therapeutic vaccine candidate.

Elizabeth Glaser Pediatric AIDS Foundation

2004-2007 Program for the Enrichment of Pediatric HIV Immunology in South Africa, International Leadership Award, Elizabeth Glaser AIDS Pediatric Foundation: $472,000
Role: PI, to develop an on-line platform for immunology education (precursor to Immunoapedia).

Melinda Gates Foundation

2007-2010 Comprehensive T cell Vaccine Immune Monitoring Consortium. Bill and Melinda Gates Foundation; GRAY06VIMC0: $135,472
Role: To measure T cell CMV responses in HIV positive and negative volunteers for leukopheresis.

International AIDS Vaccine Initiative

2002-2004 International AIDS Vaccine Initiative, Cross-Clade Reactivity in subtype C HIV infected individuals: $30,000
Role: To measure levels of homology and divergence between subtype B, C, D and PTE epitopes.

South African Department of Science and Technology

2012-2016 Department of Science and Technology top-up funding for "Innate, Adaptive and Mucosal Immune Responses in HIV-1 Exposed Uninfected Infants: A Human Model to Understand Correlates of Immune Protection." DST/CON 0144/2012: $178,500
Role: SA PI.

2011-2013 HIV Vaccine Immunogen Design: Identification of T-cell epitopes associated with control of viral replication in Indian and South African HIV-1 infected individuals. Technology Innovation Iniative, DST, $72,000
Role: SA PI.

Patents

HIV-1 Subtype C Isolate Regulatory Genes, and Modifications and Derivatives Thereof. Inventors: Carolyn Williamson, Joanne Heidi Van Harmelen, Clive Maurice Gray, William Bourn, Salim Abdool Karim. Publication date 2009/1/20; Patent number 7479547

CONTRIBUTIONS TO SCIENCE

My early publications focused on early and acute adult HIV infection and the polyfunctional nature of CD8+ T cells associated with low viral set-point. Due to the longitudinal nature of follow-up in our cohorts, we began to associate CD8+ T cell functional responses with viral load set point and disease progression. We showed that recognition of HIV-1, as measured by the IFNg ELISPOT assay, had no association with viral set point made at 12 months. However, polyfunctional CD8+ T cells and central memory cells could differentiate HIV-1 infected individuals with low set point, indicating that the quality and level of memory maturation is an important determinant of viral control. Additionally, I investigated targeting conserved HIV-1 epitopes by T cells. Using the IFNg ELISPOT assay, we could identify conserved and dominant CTL epitopes and how these are associated with plasma viral load. This body of work contributes more directly to vaccine design, by identifying commonly targeted epitopes and identifying which ones are present across different clades and which are preferentially recognized. I am exploring different facets of infant and adolescent immunity that predispose individuals to HIV susceptibility at the cellular immune level. I am currently leading studies to investigate how maternal HIV exposure has an impact on different aspects of HIV exposed infant immunity. One of the key areas of focus is investigating the placenta and how events in the pregnant mother impacts on placental pathology and immunity. One area of focus has been the impact of antiretroviral therapy on placenta vasculature, of which I was awarded the 2023 Harry Oppenheimer Fellowship Award. Here, we are investigating the mechanisms of how different antiretroviral drugs retard angiogenesis in the placenta and can result in placental insufficiency in some pregnant women.

PUBLICATIONS
H-index: 39
https://www.ncbi.nlm.nih.gov/myncbi/clive.gray.1/bibliography/public/

1. Solarin I, Lakhoo DP, Mc Alpine K et al. Study protocol for the Bio-HEAT study: Investigating the Biological pathways from HEAT exposure to preterm birth and other adverse maternal and child health outcomes in South Africa [version 1; peer review: awaiting peer review]. Wellcome Open Res 2025, 10:121 (https://doi.org/10.12688/wellcomeopenres.23616.1)

2. Armistead B, Peters MQ, Houck J, Carlson M, Balle C, Mulugeta N, **Gray CM**, Jaspan HB, Harrington WE. Exposure to Human Immunodeficiency Virus Is Associated With Altered Composition of Maternal Microchimeric T Cells in Infants. J Infect Dis. 2025 Feb 20;231(2):435-439. doi: 10.1093/infdis/jiae521. PMID: 39435850.

3. Byrne A, Diener C, Brown BP, Maust BS, Feng C, Alinde BL, Gibbons SM, Koch M, **Gray CM**, Jaspan HB, Nyangahu DD. Neonates exposed to HIV but uninfected exhibit an altered gut microbiota and inflammation associated with impaired breast milk antibody function. Microbiome. 2024 Dec 20;12(1):261. doi: 10.1186/s40168-024-01973-z. PMID: 39707483; PMCID: PMC11662858.

4. Webb EL, Petkov S, Yun H, Else L, Lebina L, Serwanga J, Pillay AAP, Seiphetlo TB, Mugaba S, Namubiru P, Odoch G, Opoka D, Ssemata AS, Kaleebu P, Khoo S, Martinson N, Fox J, **Gray CM**, Herrera C, Chiodi F. Gene expression of tight junctions in foreskin is not affected by HIV pre-exposure prophylaxis. Front Immunol. 2024 Nov 6;15:1415475. doi: 10.3389/fimmu.2024.1415475. PMID: 39569196; PMCID: PMC11576434.

5. Gachogo R, Happel AU, Alinde B, **Gray CM**, Jaspan H, Dzanibe S. Reduced anti-viral IgG repertoire in HIV-exposed but uninfected infants compared to HIV-unexposed infants. iScience. 2024 Jul 19;27(7):110282. doi: 10.1016/j.isci.2024.110282. eCollection 2024 Jul 19. PubMed PMID: 39040054; PubMed Central PMCID: PMC11261148.

6. Madlala HP, Myer L, Geffen H, Rusch J, Shey MS, Meyer D, Goedecke JH, Malaba TR, **Gray CM**, Newell ML, Jao J. Inflammatory markers in pregnancy are associated with postpartum weight in South African women living with HIV on antiretroviral therapy. J Acquir Immune Defic Syndr. 2024 Mar 4. doi: 10.1097/QAI.0000000000003406. Epub ahead of print. PMID: 38465914.

7. Dzanibe S, Wilk AJ, Canny S, Ranganath T, Alinde B, Rubelt F, Huang H, Davis MM, Holmes SP, Jaspan HB, Blish CA, **Gray CM**. Premature skewing of T cell receptor clonality and delayed memory expansion in HIV-exposed infants. Nat Commun. 2024 May 14;15(1):4080. doi: 10.1038/s41467-024-47955-5. PubMed PMID: 38744812; PubMed Central PMCID: PMC11093981.

8. Lunjani N, Ambikan AT, Hlela C, Levin M, Mankahla A, Heldstab-Kast JI, Boonpiyathad T, Tan G, Altunbulakli C, **Gray C**, Nadeau KC, Neogi U, Akdis CA, O'Mahony L. Rural and urban exposures shape early life immune development in South African children with atopic dermatitis and nonallergic children. Allergy. 2024

Jan;79(1):65-79. doi: 10.1111/all.15832. Epub 2023 Aug 3. PubMed PMID: 37534631; PubMed Central PMCID: PMC10952395.

9. Armistead B, Peters MQ, Houck J, Carlson M, Balle C, Mulugeta N, **Gray CM,** Jaspan HB, Harrington WE. Exposure to HIV alters the composition of maternal microchimeric T cells in infants. bioRxiv [Preprint]. 2024 Mar 4:2024.03.01.583002. doi: 10.1101/2024.03.01.583002. PMID: 38496450; PMCID: PMC10942331.

10. Nyangahu DD, Happel AU, Wendoh J, Kiravu A, Wang Y, Feng C, Plumlee C, Cohen S, Brown BP, Djukovic D, Ganief T, Gasper M, Raftery D, Blackburn JM, Allbritton NL, **Gray CM**, Paik J, Urdahl KB, Jaspan HB. Bifidobacterium infantis associates with T cell immunity in human infants and is sufficient to enhance antigen-specific T cells in mice. Sci Adv. 2023 Dec 8;9(49):eade1370. doi: 10.1126/sciadv.ade1370. Epub 2023 Dec 8. PubMed PMID: 38064556; PubMed Central PMCID: PMC10708209.

11. Maust BS, Petkov S, Herrera C, Feng C, Brown BP, Lebina L, Opoka D, Ssemata A, Pillay N, Serwanga J, Seatlholo P, Namubiru P, Odoch G, Mugaba S, Seiphetlo T, **Gray CM**, Kaleebu P, Webb EL, Martinson N, Chiodi F, Fox J, Jaspan HB. Bacterial microbiome and host inflammatory gene expression in foreskin tissue. Heliyon. 2023 Nov;9(11):e22145. doi: 10.1016/j.heliyon.2023.e22145. eCollection 2023 Nov. PubMed PMID: 38053902; PubMed Central PMCID: PMC10694185.

12. Iwase SC, Edlefsen PT, Bhebhe L, Motsumi K, Moyo S, Happel AU, Shao D, Mmasa N, Schenkel S, Gasper MA, Dubois M, Files MA, Seshadri C, Duffy F, Aitchison J, Netea MG, Jao J, Cameron DW, **Gray CM**, Jaspan HB, Powis KM. T-SPOT.TB Reactivity in Southern African Children With and Without in Utero Human Immunodeficiency Virus Exposure. Clin Infect Dis. 2023 Oct 13;77(8):1133-1136. doi: 10.1093/cid/ciad356. PubMed PMID: 37293702; PubMed Central PMCID: PMC10573724.

13. Rametse CL, Webb EL, Herrera C, Alinde B, Besethi A, Motaung B, Mbangiwa T, Leach L, Sebaa S, Pillay AAP, Seiphetlo TB, Malhangu B, Petkov S, Else L, Mugaba S, Namubiru P, Odoch G, Opoka D, Serwanga J, Ssemata AS, Kaleebu P, Khoo S, Lebina L, Martinson N, Chiodi F, Fox J, **Gray CM**. A randomized clinical trial of on-demand oral pre-exposure prophylaxis does not modulate lymphoid/myeloid HIV target cell density in the foreskin. AIDS. 2023 Sep 1;37(11):1651-1659. doi: 10.1097/QAD.0000000000003619. Epub 2023 Jun 6. PubMed PMID: 37289572.

14. Hartmann S, Botha SM, **Gray CM**, Valdes DS, Tong S, Kaitu'u-Lino TJ, Herse F, Bergman L, Cluver CA, Dechend R, Nonn O. Can single-cell and spatial omics unravel the pathophysiology of pre-eclampsia?. J Reprod Immunol. 2023 Sep;159:104136. doi: 10.1016/j.jri.2023.104136. Epub 2023 Aug 17. Review. PubMed PMID: 37634318.

15. **Gray CM**, Borger JG. The immunology ecosystem in South Africa: striking an equitable balance between fostering discovery, promoting translation and capacity building. Immunol Cell Biol. 2023 Jul 31;. doi: 10.1111/imcb.12672. [Epub ahead of print] PubMed PMID: 37524375.

16. Iwase SC, Jaspan HB, Happel AU, Holmes SP, Abimiku A, Osawe S, **Gray CM,** Blackburn JM. Longitudinal gut microbiota composition of South African and Nigerian infants in relation to tetanus vaccine responses. Res Sq. 2023 Jul 3;. doi: 10.21203/rs.3.rs-3112263/v1. PubMed PMID: 37461449; PubMed Central PMCID: PMC10350179.

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19. Cardenas MC, Farnan S, Hamel BL, Mejia Plazas MC, Sintim-Aboagye E, Littlefield DR, Behl S, Punia S, Enninga EAL, Johnson E, Temesgen Z, Theiler R, **Gray CM**, Chakraborty R. Prevention of the Vertical Transmission of HIV; A Recap of the Journey so Far. Viruses. 2023 Mar 26;15(4). doi: 10.3390/v15040849. Review. PubMed PMID: 37112830; PubMed Central PMCID: PMC10142818.

20. Petkov S, Herrera C, Else L, Mugaba S, Namubiru P, Odoch G, Opoka D, Pillay AAP, Seiphetlo TB, Serwanga J, Ssemata AS, Kaleebu P, Webb EL, Khoo S, Lebina L, **Gray CM,** Martinson N, Fox J, Chiodi F. Mobilization of systemic CCL4 following HIV pre-exposure prophylaxis in young men in Africa. Front Immunol. 2022;13:965214. doi: 10.3389/fimmu.2022.965214. eCollection 2022. PubMed PMID: 35967369; PubMed Central PMCID: PMC9363563.

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24. Ikumi NM, Matjila M, **Gray CM**, Anumba D, Pillay K. Placental pathology in women with HIV. Placenta. 2021 Sep 11;115:27-36. doi: 10.1016/j.placenta.2021.09.006. Online ahead of print. PMID: 34537469

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CONCENSUS DOCUMENT

HIV/AIDS, TB and Nutrition. Scientific Enquiry into the Nutritional Differences on Human Immunity with Special Reference to HIV Infection and Active TB in South Africa

INVITED KEYNOTE/PLENARY/SYMPOSIUM CONFERENCE PRESENTATIONS

Joining the Dots: maternal HIV, CMV, the placenta and infant health outcomes. Global Immunology Summit-2025, **Translational Health Science and Technology Institute, 13-15 Feb 2025, Faridabad, Delhi, India (KEYNOTE)**

How HIV impacts on placental and neonatal immunity. **Latin American and Caribbean Association of Immunology (ALACI) 2024, 4-8 November Buenos Aries, Argentina (PLENARY)**

Joining the dots: maternal HIV, CMV, and the placenta. **The Royal Society: The indirect effects of cytomegalovirus infection: mechanisms and consequences. London 14-15 October 2024 (PLENARY)**
(https://www.youtube.com/watch?v=Y-XCe9D0nm0&list=PPSV)

How HIV impacts on placental and neonatal immunity: first-line regimen antiretroviral drugs disrupt placental macrophage function and vascular development. **Indian Society of Immunology, 17-20 Oct, Bangalore, India 2024 (PLENARY)**

Immune consequences of women living with HIV during pregnancy: the HIV exposed uninfected infant. **Global Immunology Summit, Emerging Frontiers of Immunobiology and Immunotherapy, THSTI, Faridabad, India. 15-17th February 2024 (PLENARY)**

The HIV epidemic in South Africa: understanding the immunology of poor birth outcomes and immune ontogeny in HIV exposed Infants. **50th Jubilee Meeting, Indian Society of Immunology, 6th Oct 2023 (PLENARY)**

Memory T cell Expansion in HIV-exposed Uninfected Infants is Preceded by Premature Skewing of TCR clonality, **Society for Leukocyte Biology, 29th October 2022 Hawaii, (PLENARY).**

Maternal events during pregnancy are reflected in the placenta. **South African Immunology Society, 4th October 2022 PLENARY**

The Placenta has a Footprint of Maternal Immunity. **Stellenbosch University Research Day, September 2021 (virtual) PLENARY**

T Cell Homeostatic Imbalance in Placentas from Women with HIV in the absence of Vertical Transmission. **Biometra Seminars**, University of Milan. June 8th 2021 (virtual).

Impact of Maternal HIV Infection on the Placenta and Cord blood T cell landscape. **Placental Science Symposium**. October 19 2020 (Virtual).

What Possible Immune Responses to SARS-CoV-2 cause severe COVID-19 in some and recovery in most? **KZN Doctor Healthcare coalition.** September 9 2020 (Virtual).

The HIV Epidemic and Identity of Immune Dysfunction in the HIV exposed neonate. Global Science: Around the World Advancements in Immunology Research. **52nd Annual Meeting of the Society for Leucocyte Biology.** November 15-18, Boston 2019

The Impact of Maternal HIV on the Immune Ecology at the Foetal-Maternal Interface. **17th Congress of Immunology, Beijing,** 22nd October 2019

The Impact of Maternal HIV Infection on Placental and Neonatal Immunology among Children HIV- Exposed and Uninfected (CHEU). **5th Workshop on Children and Adolescents HIV-Exposed and Uninfected.** Mexico City, 21st July 2019

The impact of maternal HIV infection on the immune ecology at the foetal-maternal interface. 3rd EFIS-EJI African International Conference on Immunity, **Victoria Falls, Zimbabwe** 4th November 2018

HIV Exposed infants and immune ontogeny to different strains of BCG. PathCape 2018, Spier

Asymptomatic STIs alters HIV target cell Frequencies and chemokine Gene expression differentially between the inner and outer foreskin from adolescents undergoing MMC in South Africa. **2nd Mucosal Systems Meeting, 5th May,** Santa Rosa 2018, CA

The timing of antiretroviral therapy (ART) to HIV infected mothers before or during pregnancy has no association with placental inflammation and pathology. **Federation of Infectious Diseases Societies of Southern Africa 2017**, **November, Cape Town**

Sexually-Transmitted Infections and Pathways leading to Elevated HIV Target Cells in the Foreskin: Implications for the HIV Epidemic in South Africa. IMM, Lisbon, Portugal. 2nd November 2017

A subset of circulating blood mycobacteria-specific CD4 T cells can predict the time to Mycobacterium tuberculosis sputum culture conversion. **9th Federation of African Immunology Society Meeting**. Nairobi, 2nd December 2014.

Lessons learned from studying acute HIV infection: HIV-specific T cells and viral control. **8th Federation of African Immunology Society Meeting**. **Durban,** 5th December 2012

Assay Standardisation in HIV studies: ELISPOT and ICS flow cytometry. **OPTIMALVAC final meeting, Paris**, March 21st 2012

Lessons Learned from studying Acute HIV Infection: the case of the HIV-specific CD4 cell. **Virology Africa 2011, Cape Town,** 2nd December 2011.

Understanding Aspects of T cell Immunity during Acute HIV Infection and how this relates to Disease Progression. 2nd EFIS-EJI African International Conference on Immunity, **Victoria Falls, Zimbabwe** 6th November 2011

What have we discovered about immune responses to HIV by studying acute infection? ZIBI Sympoisum: Poverty related diseases – a global challenge. **Berlin, Germany** June 2011**.**

The Immunology of Vaccines. Vaccinology Conference, ***Hermanus, Cape, South Africa***, 21-24 October 2007

HIV-specific T cell responses at the acute Stage of Subtype C infection. ***MASIR meeting, Santorini, Greece,*** June 2006

CD8+ T Responses Associated with Control of Subtype C HIV-1 Infection, ***Keystone Symposia, Banff, Canada***, April 2005.

Summary of Cellular Immunity. ***AIDS Vaccine Meeting, Lausanne, Switzerland,*** September 2004

Virological and Immunological Studies in Recently infected HIV-1 infected individuals in southern Africa: HIVNET 028 Study ***HIV Vaccine Trials Network Meeting, Seattle, USA,*** October 2002

Tracking the frequency of class I restricted CD8+ T cells in HIV-1+ infected individuals receiving highly active antiretroviral therapy (HAART). HIV Symposium, ***Clinical Immunology Society & Experimental Biology '98***, Moscone Center, San Francisco, 22 April 1998

Overview of flow cytometry with reference to measuring cellular function. 4-6 July 1994, ***University of Cape Town, 34th Pathology Conference***

SELECTED INVITED TALKS

The HIV epidemic in South Africa and its impact on pregnancy, birth outcomes and immune ontogeny in the HIV Exposed Uninfected Child. **International Lectures in Infection Biology, University of Zurich; Switzerland October 10th 2024**

Maternal imprinting of the human placenta and immunity at birth in HIV Exposed Uninfected children in South Africa. **Mass Gen Hospital, Harvard University, USA; November 2019**

The impact of maternal HIV infection on placental and neonatal immunology in HIV exposed uninfected infants. **University of Vermont, Burlington USA; May 2019**

Differential HIV Target Cell Density and CCL27 Expression between the Inner and Outer Foreskin from Adolescents Undergoing Medical Male Circumcision in South Africa. ***University of Toronto, Canada. September 2018***

Neonatal and infant immunity in children born to HIV infected mothers. ***Stanford University, December 2017***

Sexually-Transmitted Infections and Pathways leading to Elevated HIV Target Cells in the Foreskin: Implications for the HIV Epidemic in South Africa, ***Northwestern University, December 2017***

Neonatal and infant immunity in children born to HIV infected mothers, ***University of Southampton, UK. February 2017***

The HIV epidemic in South Africa: a search for preventions. ***Medical Academy of Porte Allegre, Brazil, May 2015***

Immune Risk factors for HIV infection in adolescent and young circumcised males: potential mechanisms of medical male circumcision. ***Africa Health Research Institute (formerly K-RITH), April 2015***

The challenges and way forward with vaccine development**.** ***David and Elaine Potter Seminar, University of Cape Town. 2012***

A Dichotomous Relationship between CD4+ T Cell Activation and Memory Maturation with Viral Control in Subtype C HIV Infection. ***University of Pennsylvania, Philadelphia, USA, July 2009***

In vivo susceptibility of activated memory CD4+ T cells to HIV during early subtype C infection. ***Sheraton Hotel, Banjul, the Gambia, GC6 meeting, November 2008.***

Phenotypes of CD8+ T Cells during Early Subtype C HIV-1 Infection, Duke ***Human Vaccine Institute, Duke University, North Carolina, USA, 2008***

HIV-1 specific T cells at the acute stage of subtype C infection. ***Rosebank Hotel, Johannesburg, AIDS Vaccine International Partnership meeting, July 2007***

T cell responses associated with control of subtype C HIV-1 infection: Implications for vaccine design. ***Becton Dickinson Biosciences, San Jose; 2005***

Understanding potential HIV vaccine-induced responses by measuring specific T cell responses in natural subtype C HIV-1 infection. ***The Gladstone Institute, San Francisco, USA; November 2005***

Understanding the Natural History of subtype C HIV-1 infection as a prelude to Vaccine Trials in South Africa. ***Duke University, North Carolina, USA, November 2002***

Natural History of subtype C HIV-1 infection in southern Africa and the choice of HIV vaccine strains for South Africa. ***Henry Jackson Foundation, Rockville, USA, November 2002***

Understanding the HIV-1 epidemic in South Africa: towards a Preventative Vaccine, ***National Cancer Institute, Frederick, Maryland, USA, May 2002***

Virological and Immunological Studies in Recently infected HIV-1 infected individuals in southern Africa. ***International AIDS Vaccine Initiative, New York, USA, October 2001***

Understanding CTL Responses to HIV-1 in South Africa, ***Rockefeller University, New York, USA, October 2001.***

Virological and Immunological Studies in Recently infected HIV-1 infected individuals in southern Africa. ***Partners AIDS Research, Massachusetts General Hospital, Boston, USA, October 2001***

Vaccine Research Initiatives in South Africa, ***Vaccine Center, Emory University, Atlanta, USA, May 2000***

Vaccine Research Initiatives in South Africa, ***Centers for Disease Control, Atlanta, USA, May 2000***

Immune restoration in HIV-1 infected individuals in response to highly active antiretroviral therapy, **AIDS Research Consortium of Atlanta, USA. May 1999.**

PROFESSORIAL INAUGURAL LECTURES

Moving Targets. HIV and the Immune System. In Search of Self Preservation. University of Cape Town (**INAUGURAL WERHNER AND BEIT CHAIR OF IMMUNOLOGY).** October 2012.

The Promiscuous Nature of Immunity to HIV: T cell Immune Reactivities to the Complete set of HIV-1 Subtype C Expressed Genes. University of the Western Cape (**INAUGURAL VISITING PROFESSORSHIP**). August 2004.

The AIDS Epidemic in South Africa, Subtype C HIV-1 Dynamics and Host Cellular Immune Responses: Preparation for Vaccine Trials. Duke University, Department of Immunology (**INAUGURAL ADJUNCT PROFESSORSHIP**). May 2003

INVITED REVIEWER

Journals

AIDS

Journal of Infectious Diseases
Journal of Virology
Journal of General Virology
Clinical Flow Cytometry
Human Immunology
PLOS One
PLos Medicine
Journal of Immunology
Nature Communications

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