

**Clive Maurice Gray**  
**Chair and Professor, Division of Immunology, Institute of Infectious  
Disease and Molecular Medicine, Clinical Laboratory Sciences and  
National Health Laboratory Services. University of Cape Town and  
Groote Schuur Hospital, Cape Town.**

**PERSONAL DETAILS**

Surname: Gray  
First Names: Clive Maurice  
Title: Professor  
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ID: 6110315216086  
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NRF rating: B2

**CONTACT DETAILS**

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**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 (Bristol Polytechnic)  
BSc (Hons), Applied Biological Sciences

**AWARDS**

2010 Science Prize for Online Resources in Education (SPORE), Science Magazine.

2004-2007 International Leadership Award, Elizabeth Glaser Pediatric AIDS Foundation.

1999 Fogarty Fellowship, Fogarty AITRP, Columbia University

1995-1997 James Gear Fellowship. Awarded 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 15<sup>th</sup> Congress of the South African Transplantation Society and the 2<sup>nd</sup> 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

2011- **Wernher and Beit Chair, Professor and Head of Immunology**, University of Cape Town, Cape Town, South Africa.

2011- **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

2014-current **President, South African Immunology Society (SAIS)**.

2013-current **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.
- 2005-current **Founder and Director**, Immunopaedia ([www.immunopaedia.org](http://www.immunopaedia.org)), an on-line education tool for clinicians to learn immunology.
- 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 **Flow Cytometry Laboratory Director**, 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.

## COMMITTEES

- 2015-current **Executive Committee of the Federation of African Immunology Societies (FAIS).**
- 2015-current **Expert Chairs Committee (Chair)**, NHLS
- 2015 **Medical Scientist Committee (Chair)**, NHLS
- 2015-current **Executive Committee**, NHLS
- 2014-current **Vice-chair of the Clinical Immunology Committee** of the International Union of Immunology Societies (IUIS).
- 2014-current **Executive Committee of the South African Immunology Society (SAIS)**, Chair
- 2014-2015 **Research sub-committee of the NAPC**, NHLS
- 2013-current **National Academic Pathology Committee (NAPC)**, NHLS
- 2011-current **Executive Committee**, IIDMM, Education Portfolio
- 2011-2015 **NHLS Immunology Expert Committee**, Chair
- 2011-current **CLS Executive Committee**, Faculty of Health Sciences, UCT
- 2011-2014 **Clinical Immunology Committee**, 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.
- 2009-2014 South African Immunology Society (SAIS), Education portfolio.

2007-current	<b>Operations and Training Committee</b> , Canadian African Prevention Trials Network (CAPT).
2007-current	<b>Steering Committee</b> (CAPT).
2002-2007	<b>Vaccine Development Team</b> , South African AIDS Vaccine Initiative (SAAVI).
2002-current	<b>Executive Committee</b> , Centre for the AIDS Programme of Research in South Africa (CAPRISA), South Africa.
2002-2012	<b>Chair: Scientific Research Sub-Committee</b> , CAPRISA, South Africa.
1998-2010	<b>Management Committee</b> , National Institute for Communicable Diseases, South Africa.
2001-2006	<b>Phase III Vaccine Trials Committee</b> , HIV Vaccine Trials Network, USA.

### WORKSHOPS AND MEETINGS ORGANIZED

Over the past twenty-five years, I have organized a number of workshops, seminars and meetings designed to educate and improve academic and technical skills:

2014	Organised an Immunology Primer and 5 <sup>th</sup> Symposium on Infectious Diseases in Africa: Immune regulation and dysfunction in malaria, TB and HIV, UCT, Cape Town, South Africa. 21-26 <sup>th</sup> October
2014	Carnegie-K-RITH MSc/PhD/Post-Doc Retreat, 6-7 <sup>th</sup> October, Devon Valley Hotel, Stellenbosch.
2013	Co-organised the 4 <sup>th</sup> Symposium on Infectious Diseases in Africa: "Measurement of Immune Responses", UCT, Cape Town, South Africa
2011	Co-organised the 3 <sup>rd</sup> Symposium on Infectious Diseases in Africa: "Measurement of Immune Responses", UCT, Cape Town, South Africa followed by the 4 <sup>th</sup> African Workshop on Flow Cytometry: "Detection of Antigen-Specific T Cells by Intracellular Cytokine Staining (ICS)" .
2009	Co-organised the 2 <sup>nd</sup> Symposium on Infectious Diseases in Africa: "Measurement of Immune Responses", Johannesburg, South Africa followed by the 3 <sup>rd</sup> African Workshop on Flow Cytometry: "Detection of Antigen-Specific T Cells by Intracellular Cytokine Staining (ICS)" .
2008	2 <sup>nd</sup> Immunopaedia Workshop: a novel immunology teaching tool, 12 <sup>th</sup> March 2008, Stellenbosch University Medical School, Cape Town, South Africa.
2007	Co-organized 2 <sup>nd</sup> African CHAVI meeting, November.
2007	Trojan Horses, Immunology and the Clinic: introducing Immunopaedia, Stellenbosch University Medical School, Cape Town, South Africa.
2007	Co-organised the 1 <sup>st</sup> Symposium on Infectious Diseases in Africa: "Measurement of Immune Responses", Johannesburg, South Africa followed by the 2 <sup>nd</sup> African Workshop on Flow Cytometry: "Detection of Antigen-Specific T Cells by Intracellular Cytokine Staining (ICS)".

2006	Co-organized NICD academic day.
2006	Co-organized 1 <sup>st</sup> African CHAVI meeting, November.
2006	Convener of a workshop on HIV and the Gastrointestinal Tract, Academy of Science of South Africa, Department of Science and Technology, Pretoria.
2005	Co-organised the 1 <sup>st</sup> African Workshop on Flow Cytometry: "Detection of Antigen-Specific T Cells by Intracellular Cytokine Staining (ICS)", NICD.
2005	Organized and co-chaired: Scientific Progress Towards Developing HIV Vaccines for South Africa, Durban AIDS Conference.
2005	Co-organized a 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	Organized three 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	Organized workshop on: "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 STUDENTS

Name	Degree	Institution	Year
Joanne Keeton	BSc (Hons)	Wits	1995
Tumelo Mashishi	MSc (Med)	Wits	1999-2003
Stephina Nyoka	MSc (Med)	Wits	2006-2008
Melinda Suchard*	MMed	Wits	2008
Elizabeth Mayne*	MMed	Wits	2008
Agatha Masemola	Post-Doc	Wits	2001-2003
Vivan Morafo	Post-Doc	Wits	2002-2007
Debra de Assis Rosa	Post-Doc	Wits	2002-2007
Catherine Riou	Post-Doc	Wits	2007-2011
Mandla Mlotshwa	PhD	Wits	2009-2013
Pholo Maenetje	PhD	Wits	2009-2013
Valmy Calfert*	BSc (Hons)	UCT	2012
Elvis Kidzeru*	MSc	UCT	2011-2013
Christoph Tchakoute*	MSc	UCT	2012-2014
Lycias Zembe	Post-doc	UCT	2011-2013
Jerome Wendoh*	PhD	UCT	2014-
Selena Ferrian	Post-doc	UCT	2013-
Abraham Olivier*	Post-doc	UCT	2012-
Trishana Nundallal*	MSc	UCT	2014-

Rushil Harryparsad*	MSc	UCT	2014
Ngiambudulu Francisco*	Post-doc	UCT	2014-15
Stephanus Rautenbach	MSc	UCT	2015-
Michael Zulu	PhD	UCT	2015-
Rachel Esra*	BSc (Hons)	UCT	2015

\* co-supervision

## **GRANT FUNDED PROJECTS AND RESPONSIBILITIES**

### Institutional PI or Grant PI (\*current funded projects):

2015	International Union of Immunology Societies (IUIS), for adapting Immunopaedia for on-line learning
2015-2016*	The Canada-Africa Prevention Trials (CAPT) Network PhD and post-doctoral training, International Development Research Center (IDRC), Canada. (PI: Gray, \$216,000).
2015-2017*	Mechanisms of altered immune responses in HIV-exposed infants (1R21HD083344-01, PI: Gray). \$225,000
2015-2020*	ART and risk of preterm delivery in a rural high HIV prevalence area (1R01HD080385-01, PI Marie Louise Newell).
2014-2016*	National Research Foundation, Competitive funding for Rated Researchers: “THE IMPACT OF MATERNAL HIV EXPOSURE ON INFANT IMMUNITY AND RESPONSES TO VACCINATION” Grant #: 92770. R1,111,000
2014-2015*	Canadian Institutes of Health Research application: Intestinal microbiota, immune activation and vaccine responsiveness of the HIV-exposed infant. (PI: Cameron, Jaspan)
2013-2014*	Canadian Institutes of Health Research: “Making Immunology Accessible: AFRICan-CANadian (AFRI-CAN) Dissemination Network.” PI, Gray
2013-2015	EDCTP Strategic Primer: "Factors affecting HIV susceptibility in the adolescent genital tract." PI, Passmore;
2012-2013*	Pilot implementation of Immunopaedia as an immunology learning resource at UCT. UCT Teaching Fund. PI. Gray; R30,000
2012-2015	Polimyelitis Research Foundation: Characterization of virus and host immune responses in the Synovial Fluid of Children with HIV Arthropathy. PI's Gray and Scott; R300,000
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: R2 500 000
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

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).
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 Initiative, DST, R1,000,000
2009-2014	Emerging XDR-TB: Host and pathogen contributions, NIH: RO1 AI080737 (PI: G Kaplan): \$120,000/year
2010-2014	Canada Africa Prevention Trials Network Training and Research Grant: \$70,000/year
2010-2015*	NRF rated researcher: R80,000/year
2011-2012	Immunopaedia e-learning methods, Office of AIDS Research, NIH. \$96,000
2009-2010	Immunopaedia e-learning methods, Office of AIDS Research, NIH. \$86,000
2009-2010	Virax, Therapeutic Vaccine Trial: VIR201-04-06. \$145,800
2007-2010	HIV Vaccine Trials Network Central Immunology Laboratory, NIH; 1U01 AI068618: \$1,897,000
2007-2010	Comprehensive T cell Vaccine Immune Monitoring Consortium. Bill and Melinda Gates Foundation; GRAY06VIMC0: \$135,472
2007-2009	HIV-1 vaccine based on chimp serotype of Adenovirus, NIH; 5U19 AI074078: \$107,378
2007-2009	Canada Africa Prevention Trials Network Training and Research Grant: \$70,000
2007-2009	FIT Biotech, Therapeutic Vaccine Trial: Euro 51,000
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
2005-2012	Regional T cell Immunology Core, Center for HIV AIDS Vaccine Immunology (CHAVI); U01 A1067854-03: approx \$136,000 (final year).
2004-2007	Program for the Enrichment of Pediatric HIV Immunology in South Africa, International Leadership Award, Elizabeth Glaser AIDS Pediatric Foundation: \$472,000
2002-2007	Cellular Core, CAPRISA; U19-AI51794-01: \$1,685,048
2001-2006	HIV Vaccine Trials Network Central Immunology Laboratory, NIH; 1U01 AI068618: approx \$1,200,000
2003-2006	Cellular Immunology Core, South African AIDS Vaccine Initiative: \$1,100,020
2003-2004	HLA typing and Epitope Mapping to Guide HIV Vaccine Design, Harvard University; N01-AI-15442: \$175,000
2002-2004	International AIDS Vaccine Initiative, Cross-Clade Reactivity in subtype C HIV infected individuals: \$30,000
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

**PENDING APPLICATIONS:****Patents**

HIV-1 Subtype C Isolate Regulatory Genes, and Modifications and Derivatives Thereof (SAAVI Consortium)

**PUBLICATIONS**

1. Blakney AK, Tchakoute CT, Hesseling AC, Kidzeru EB, Jones CE, Passmore JA, Sodora DL, **Gray CM**, Jaspan HB. 1. Delayed BCG vaccination results in minimal alterations in T cell immunogenicity of acellular pertussis and tetanus immunizations in HIV-exposed infants. *Vaccine*. 2015;33(38):4782-9
2. Peter J, Ress S, **Gray C**. Immunology as a medical discipline in South Africa: Why, how and what form? *S Afr Med J*. 2014; 104 (11):785-786
3. **Gray CM**, Addo M, Schmidt RE. A dead-end host: is there a way out? *Frontiers in Immunology*. 2014; 562 (5):1-4 (doi: 10.3389/fimmu.2014.00562)
4. Garrett NJ, Werner L, Naicker N, Naranbhai V, Sibeko S, Samsunder N, **Gray C**, Williamson C, Morris L, Karim QA, Abdool Karim SS HIV Disease Progression in Seroconvertors from the CAPRISA 004 Tenofovir Gel Pre-exposure Prophylaxis Trial. *J Acquir Immune Defic Syndr*. 2014; 68(1):55-61
5. Loubser S1, Paximadis M, Gentle N, Puren A, **Gray CM**, Tiemessen CT. Frequencies of immune hypersensitivity reaction-associated HLA class I alleles in healthy South African Indian and mixed ancestry populations determined by a novel real-time PCR assay. *Tissue Antigens*. 2014;84(4):389-97.
6. Christophe Toukam Tchakoute; Anneke C. Hesseling; Elvis B. Kidzeru; Hoyam Gamielidien; Jo-Ann S. Passmore; Christine E Jones; **Clive M. Gray**; Donald L. Sodora; Heather B. Jaspan. Delaying BCG vaccination until 8 weeks of age results in robust BCG-specific T cell responses in HIV-exposed infants. *Journal of Infectious Diseases* 2014; 211(3):338-46
7. Mlisana K, Werner L, Garrett NJ, McKinnon LR, van Loggerenberg F, Passmore JA, **Gray CM**, Morris L, Williamson C, Abdool Karim SS; the CAPRISA 002 Study Team. Rapid disease progression in HIV-1 subtype C infected South African women. *Clin Infect Dis*. 2014; 59 (9): 1322-31
8. Riou C, **Gray CM**, Lugongolo M, Gwala T, Kiravu A, Deniso P, Stewart-Isherwood L, Omar SV, Grobusch MP, Coetsee G, Conradie F, Ismail N, Kaplan G, Fallows D. A Subset of Circulating Blood Mycobacteria-Specific CD4 T Cells Can Predict the Time to Mycobacterium tuberculosis Sputum Culture Conversion. *PLoS One*. 2014;9(7):e102178
9. Sarzotti-Kelsoe M, Needham LK, Rountree W, Bainbridge J, **Gray CM**, Fiscus SA, Ferrari G, Stevens WS, Stager SL, Binz W, Louzao R, Long KO, Mokgotho P, Moodley N, Mackay M, Kerkau M, McMillion T, Kirchherr J, Soderberg KA, Haynes BF, Denny TN. The Center for HIV/AIDS Vaccine Immunology (CHAVI) Multi-site Quality



- Assurance Program for Cryopreserved Human Peripheral Blood Mononuclear Cells. *J Immunol Methods*. 2014; 409:21-30
10. Rametse CL, Olivier AJ, Masson L, Barnabas S, McKinnon LR, Ngcapu S, Liebenberg LJ, Jaumdally SZ, **Gray CM**, Jaspan HB, Passmore JA. Role of Semen in Altering the Balance Between Inflammation and Tolerance in the Female Genital Tract: Does it Contribute to HIV Risk? *Viral Immunol*. 2014;27(5):200-6
  11. Kidzeru, E., AC Hesselning, JS Passmore, L Myer, H Gamielien, C Toukam Tchakoute, **CM Gray**, DL Sodora and HB Jaspan. *In-utero* Exposure to Maternal HIV Infection Alters T cell Immune Responses to Vaccination in HIV-uninfected Infants. *AIDS*. 2014;28(10):1421-30
  12. Katherine M Young, **Clive M Gray** Linda-Gail Bekker. Is Obesity a Risk Factor for Vaccine Non-Responsiveness? *PloS One*. 2013;8(12):e82779
  13. Catherine Riou, Wendy A. Burgers, Koleka Mlisana, Richard Koup, Mario Roederer, Salim Abdool Karim, Carolyn Williamson and **Clive M. Gray**. Frequency, functional ability and specificity of HIV-specific CD8+ T cell responses differentially influence HIV viral set point. *J Virol*. 2014;88(3):1819-24
  14. Abrahams MR, Treurnicht FK, Ngandu NK, Goodier SA, Marais JC, Bredell H, Thebus R, de Assis Rosa D, Mlisana K, Seoighe C, Karim SA, **Gray CM**, Williamson C. Rapid, complex adaptation of transmitted HIV-1 full-length genomes in subtype C-infected individuals with differing disease progression. *AIDS*. 2013;27(4):507-18.
  15. Dintwe OB, Day CL, Smit E, Nemes E, **Gray C**, Tameris M, McShane H, Mahomed H, Hanekom WA, Scriba TJ. Heterologous vaccination against human tuberculosis modulates antigen-specific CD4+ T-cell function. *Eur J Immunol*. 2013; 43(9):2409-20.
  16. **Clive M. Gray**, Heather A. Hong, Katherine Young, David A. Lewis, Dorothy Fallows, Claudia Manca, Gilla Kaplan. Plasma Interferon-gamma-inducible protein-10 (IP-10) can be used to predict viral load in HIV-1 infected individuals. *J Acquir Immune Defic Syndr*. 2013 Jul 1;63(3):e115-6.
  17. Liu MK, Hawkins N, Ritchie AJ, Ganusov VV, Whale V, Brackenridge S, Li H, Pavlicek JW, Cai F, Rose-Abrahams M, Treurnicht F, Hraber P, Riou C, **Gray C**, Ferrari G, Tanner R, Ping LH, Anderson JA, Swanstrom R, Cohen M, Karim SS, Haynes B, Borrow P, Perelson AS, Shaw GM, Hahn BH, Williamson C, Korber BT, Gao F, Self S, McMichael A, Goonetilleke N. Vertical T cell immunodominance and epitope entropy determine HIV-1 escape. *J Clin Invest*. 2013;123(1):380-93.
  18. Chopera DR, Cotton LA, Zawaira A, Mann JK, Ngandu NK, Ntale R, Carlson JM, Mlisana K, Woodman Z, de Assis Rosa D, Martin E, Miura T, Pereyra F, Walker BD, **Gray CM**, Martin DP, Ndung'u T, Brockman MA, Abdool Karim S, Brumme ZL, Williamson C; the CAPRISA 002 Study Team. Intersubtype differences in the effect of a rare p24 Gag mutation on HIV-1 replicative fitness. *J Virol*. 2012;86(24):13423-33
  19. Roman Ntale, Denis Chopera, Nobubelo Ngandu, Debra Assis de Rosa, Lycias Zembe, Hoyam Gamielien, Mandla Mlotshwa, Lise Werner, Zenda Woodman, Koleka Mlisana, Salim Abdool Karim, **Clive Gray**, Carolyn Williamson, and the CAPRISA 002 Study Team. Temporal association of HLA-B\*81:01 and B\*39:10 mediated HIV-1 p24 sequence evolution with disease progression. *J Virol*. 2012;86(22):12013-24
  20. Catherine Riou, Florette Treurnicht, Melissa-Rose Abrahams, Koleka Mlisana, Michael K.P. Liu, Nilu Goonetilleke, Richard Koup, Mario Roederer, Salim Abdool Karim, Guy de Bruyn, Carolyn Williamson, **Clive M. Gray** and Wendy A. Burgers. Increased

- memory differentiation is associated with decreased polyfunctionality for HIV but not for CMV-specific CD8+ T cells. *J Immunol.* 2012 189(8):3838-3847
21. Catherine Riou, Blas Peixoto, Lindi Roberts, Katharina Ronacher, Gerhard Walzl, Claudia Manca, Roxana Rustomjee, Thuli Mthiyane, Dorothy Fallows, **Clive M Gray**, Gilla Kaplan. Effect of standard tuberculosis treatment on plasma cytokine levels in patients with active pulmonary tuberculosis. *PLoS One.* 2012;7(5):e36886
  22. Diomede L, Nyoka S, Pastori C, Scotti L, Zambon A, Sherman G, **Gray CM**, Sarzotti-Kelsoe M, Lopalco L. Passively transmitted gp41 antibodies in babies born from subtype C HIV-1 seropositive women: correlation between fine specificity and protection. *J Virol* 2012; 86(8):4129
  23. Catherine Riou, Vitaly V. Ganusov, Suzanne Champion, Mandla Mlotshwa, Michael K.P. Liu, Victoria E. Whale, Nilu Goonetilleke, Persephone Borrow, Guido Ferrari, Michael R. Betts, Barton F. Haynes, Andrew J. McMichael and **Clive M Gray**. Distinct kinetics of Gag-specific CD4+ and CD8+ T cell responses during acute HIV-1 infection. *J Immunol* 2012; 188(5):2198-206
  24. Paximadis M, Mathebula TY, Gentle N, Vardas E, Colvin M, **Gray CM**, Tiemessen CT, Puren A. Human leukocyte antigen class I (A, B, C) and II (DRB1) diversity in the black and Caucasian South African population. *Human Immunol.* 2012 Jan;73(1):80-92
  25. Lycias Zembe, Wendy A. Burgers, Heather B. Jaspan, Linda-Gail Bekker, Helba Bredell, Gwynneth Stevens, Jill Gilmour, Josephine. H Cox, Patricia Fast, Peter Hayes, Eftyhia Vardas, Carolyn Williamson, **Clive M. Gray**. Intra- and Inter-clade Cross-reactivity by HIV-1 Gag specific T-cells reveals Exclusive and Commonly-targeted regions: Implications for vaccine trials. *PLoS One* 2011; 6(10):e26096.
  26. Hong HA, Loubser AS, de Assis Rosa D, Naranbhai V, Carr W, Paximadis M, Lewis DA, Tiemessen CT and **Gray CM**. *KIR* genotyping and HLA KIR-ligand identification by real-time PCR. *Tissue Antigens* 2011; 78:185-194.
  27. D.R. Chopera, M. Mlotshwa, Z. Woodman, K. Mlisana, D. de Assis Rosa, D.P. Martin, S. Abdool Karim, **CM. Gray**, C. Williamson. Virological and Immunological Factors Associated with HIV-1 Differential Disease Progression in HLA-B\*5801 Positive Individuals. *J Virol* 2011 85(14):7070-7080.
  28. Ferrari G, Korber B, Goonetilleke N, Liu MK, Turnbull EL, Salazar-Gonzalez JF, Hawkins N, Self S, Watson S, Betts MR, Gay C, McGhee K, Pellegrino P, Williams I, Tomaras GD, Haynes BF, **Gray CM**, Borrow P, Roederer M, McMichael AJ, Weinhold KJ. Relationship between Functional Profile of HIV-1 Specific CD8 T Cells and Epitope Variability with the Selection of Escape Mutants in Acute HIV-1 Infection. *PLoS Pathog.* 2011;7(2):e1001273.
  29. **Gray, CM**, Loubser S, Kriel C, Mercer M, Brookes, HJ. Immunology for Clinicians: A Trojan Horse Approach. *Science* 2010; 239:1613-14
  30. Mlotshwa M, Riou C, Chopera D, de Assis Rosa D, Ntale R, Treunicht F, Woodman Z, Werner L, van Loggerenberg F, Mlisana K, Karim SA, Williamson C, **Gray CM**. Fluidity of HIV-1 Specific T Cell Responses during Acute and Early Subtype C HIV-1 Infection and Associations with Early Disease Progression. *J Virol* 2010; 84(22):12018-29
  31. Suchard. M., Mayne. E, Green, VA, Shalekoff, S, Donninger, SL, Stevens W, **Gray CM**, Tiemessen CT. FOXP3 Expression is Upregulated in CD4+T Cells in Progressive HIV-1 Infection and is a Marker of Disease Severity. *PLoS One* 2010; Jul 23;5(7):e11762.
  32. Chen H, Xiang ZQ, Li Y, Kurupati RK, Jia B, Bian A, Zhou DM, Hutnick N, Yuan S, **Gray C**, Serwanga J, Auma B, Kaleebu P, Zhou X, Betts M, Ertl HC. Adenovirus-Based

- Vaccines: Comparison of Vectors from Three Families of Adenoviridae. *J Virol.* 2010; 84(20):10522-32
33. Maenetje, P. Riou, C Casazza, J.P., Ambrozak, D., Hill, B., Gray, G., Koup, R.A., de Bruyn, G., **Gray, CM.** A Steady-State of CD4 T cell Memory Maturation and Activation is established during Primary Subtype C HIV-1 Infection. *J Immunol.* 2010; 184(9):4926-35
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#### CHAPTERS IN BOOKS

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3. **Gray CM**. Cellular Immunity in HIV: a synthesis of responses to preserve self. In *HIV/AIDS in South Africa*. Ed. Salim and Quarraisha Abdool Karim. Cambridge University Press, 2<sup>nd</sup> Ed. 2010
4. **Gray CM** and Walker, BD. The Immune Response to HIV. In *Global HIV/AIDS Medicine*. Ed. Sande, Volberding & Lange. Elsevier, 2008 and updated 2012

#### 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 PLENARY SESSION TALKS

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

**Gray CM**. 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

**Gray CM**. 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

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

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

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

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

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

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

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

**Gray CM.** Assay Standardisation in HIV studies: ELISPOT and ICS flow cytometry. **OPTIMALVAC final meeting, Paris, March 21<sup>st</sup> 2012**

**Gray CM.** The challenges and way forward with vaccine development. **David and Elaine Potter Seminar, University of Cape Town. May 24<sup>th</sup> 2012**

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

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

### **INVITED TALKS**

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

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

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

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

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.

Understanding the HIV-1 epidemic in South Africa: towards a Preventative Vaccine, National Cancer Institute, Frederick, Maryland, USA, May 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 Natural History of subtype C HIV-1 infection as a prelude to Vaccine Trials in South Africa. Duke University, North Carolina, USA, November 2002

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

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

### **HONORARY LECTURES**

**Gray CM.** 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



**Gray CM.** 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.

**Gray CM.** 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.

## **INVITED REVIEWER**

### **Journals**

AIDS

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