



Professor Wendy Burgers

Professor of Virology, Department of Pathology Faculty of Health Sciences

Wendy Burgers is Professor of Virology in the University of Cape Town's (UCT) Department of Pathology, Faculty of Health Sciences. She obtained a BSc degree, a BSc (Hons) degree and MSc degree with distinction from UCT; and a PhD at the University of Cambridge. On her return to South Africa in 2001, she was awarded a postdoctoral fellowship from the South African Medical Research Council (SAMRC) and joined the South African AIDS Vaccine Initiative at UCT, developing candidate HIV vaccines. Professor Burgers established an independent research programme focusing on understanding cellular immune responses in HIV infection, funded through a prestigious Wellcome Trust Intermediate Fellowship in Public Health and Tropical Medicine, followed by a Senior Fellowship award from the European and Developing Countries Clinical Trials Partnership. During this time Burgers trained at the Vaccine Research Center in the National Institute of Health (NIH), USA on a Fogarty International Training Fellowship. She was a soft-funded senior researcher until 2014, after which she was appointed a Senior Lecturer at UCT; was promoted ad hominem to Associate Professor in 2017, and full Professor in 2022. She is a full member of the Institute of Infectious Disease and Molecular Medicine and a contributing member of the Wellcome Centre for Infectious Disease Research in Africa.

Burgers is a viral immunologist and is globally recognised for her significant contribution to understanding immunity to infectious diseases, and their application to vaccine development and vaccine protection. She has studied immunity to pathogens causing the three global pandemics of our time: HIV/AIDS, TB and COVID-19. Her recent work has focused on understanding cellular immunity to the SARS-CoV-2 virus after infection and vaccination. Burgers led several high impact studies describing the strength and duration of immunity to COVID-19 vaccination and infection, and the ability of SARS-CoV-2 variants of concern to evade immunity. Her work in these areas has been highly cited and is published in the world's leading science and medical journals, namely Science Translational Medicine, New England Journal of Medicine and The Lancet. These studies are among the best internationally in the field, informing our understanding of vaccine immune memory responses and shaping COVID-19 vaccination policy. Notably, her pioneering work on T cell responses to SARS-CoV-2 culminated in a senior author paper in the scientific journal Nature, where her group was the first to show that T cell responses from COVID-19 vaccination could cross-react with the Omicron variant and vaccines would still provide protection against this highly mutated form of the virus. This was a major breakthrough, and the work has been cited 382 times since 2022 and was featured by 60 news outlets. Prior to the COVID-19 pandemic, her work focused on HIV pathogenesis and how HIV alters the immune system; and the consequences for co-infections and co-morbidities. She identified specific T cell responses associated with viral control in untreated HIV infection and described persistent and damaging immune activation despite treatment. People infected with HIV have a heightened risk of developing TB, and in a seminal series of publications, her group identified a range of immune

defects in the TB response during HIV infection. She was the first to demonstrate the depletion of a specific T helper subset, Th22 cells, in HIV-TB co-infection, highlighting the importance of this understudied aspect of TB immunity and the potential importance of vaccines.

Burgers' work has been published in 75 international journals and has garnered over 5 830 citations (Google Scholar). She is the leading scientist in South Africa on cellular immunity to viruses, and is highly respected globally as such. She is regularly invited to present plenary presentations at local and international conferences, and is constantly called upon as a reviewer for high impact journals and funding bodies. Burgers led the Cellular Immunology working group of the South African National COVID-19 Variants Consortium, a large group of local scientists who met weekly over the pandemic to address key research questions and share data. In 2022, she established the SA-MRC-funded Clinical Cellular Immunology Platform at the IDM, a hub for vaccine evaluation, clinical immunology research and capacity building, for new and existing viral pathogens and future epidemics and pandemics. She has subsequently expanded this capacity to include preclinical immunogenicity to support the development of locally made mRNA vaccines in collaboration with Afrigen and the World Health Organization's (WHO) mRNA Technology Transfer Hub in South Africa. The work in her research group is funded by Horizon Europe, the Wellcome Trust, Bill and Melinda Gates Foundation, SAMRC, NIH and Poliomyelitis Research Foundation. In the past five years, she has successfully attracted R66 million in grant funding to UCT as Principal Investigator, and over R65 million as co- investigator.

Prof Burgers serves as a member of the Ministerial Advisory Committee on COVID-19 Vaccines (DoH) and a member of the GMO Advisory Committee (DALRRD). Throughout the COVID-19 pandemic she had extensive interactions in local and international media, including being featured in news articles in Nature and Science, The Guardian, New York Times, El Pais and local news outlets. She shares science on viruses and vaccines on social media, and has close to 5 000 followers on Twitter.

Burgers' record in supervision and mentoring speaks to her intentional commitment to training and transformation. She has graduated or currently supervises 11 Honours, 12 MSc and 13 PhD students, 11 Postdoctoral Fellows, three Junior Research Fellows and nine scientific officers. Of her trainees, 80% are black and 70% are women. Outside of her research group she mentors four black women (staff and students) and is a student advocate. She is a committed educator, having obtained a Postgraduate Diploma in Health Professional Education, and is driving the introduction of a new undergraduate science programme in infectious disease and immunology at UCT. She also serves as Chair of the Board of Outliers, an NPO supporting community-based after-school programs and curriculum recovery in underserved communities across the Western Cape.