

Caroline T Tiemessen



Prof Caroline T Tiemessen is the head of the Cell Biology laboratory within the Centre for HIV and STIs at the National Institute for Communicable Diseases (NICD). She is a research Professor in Virology and DSI/NRF Chair of HIV Vaccine Translational Research, University of the Witwatersrand. Prof Tiemessen studies HIV vaccines and HIV cure in paediatric and adult patients, with a major focus on natural resistance models for identifying and understanding correlates of protection. These include maternal-infant HIV-1 transmission and adult transmission models for studying protective immunity to HIV-1, as well as long term non-progressors and elite controllers to understand natural attenuation of disease progression. Post-treatment controllers provide another important model for the study of what constitutes HIV remission. Dana Savulescu, who is an Immunopaedia ambassador, was fortunate to interview Prof Tiemessen where she discussed why she became an immunologist, her achievements and contribution to HIV immunology.

Why did you become involved in Immunology work? The defining moment that drove my interest in immunology was an inspiring talk delivered by Prof Yechiel Becker from Israel, who was visiting the then National Institute for Virology (now the NICD). This presentation had me on the edge of my seat. It was about the interaction between Herpes Simplex Virus and cholesterol receptors. This was when I decided that I wanted to study virus-host interactions in human disease causation. This necessitated the need to understand the human immune system. I then spent three months in Israel in Prof. Becker's laboratory at Hadassah Medical school in Jerusalem, and focussed on studying blood dendritic cells and cytokines. My return saw the start of my journey in HIV with a strong focus on immunology, HIV and also tuberculosis. Later work on mother-to-child transmission of HIV and protective immunity drove the inclusion of host genetics, now also strong component of the research conducted in my lab.

What would you advise young scientists? You need to love what you do – enormously. Things don't always work out as you may think, you need to persevere, be proactive and be resilient. See failure as opportunity – more is often learnt from facing challenges.

What has been your proudest achievement to date? Any of my personal professional achievements are not mine alone – any success takes teamwork. I am probably most proud of the working environment created within my lab, we are like a family who genuinely care about each other, are friendly and supportive. I work and have worked with some amazing people. A recent stand-out scientific achievement would be seeing the culmination of many years of establishing virological, immunological and genetic assays by my staff and students for research studies – being applied very quickly in studies of the South African child who remains in HIV remission to date (now for more than 11 years). The achievements that give me the most joy are those small incremental leaps we make in

furthering our scientific understanding, nothing beats those little “eureka” moments.

How has your work contributed to the field? Over the years my research group has made substantial contributions to understanding mother-to child transmission of HIV. Adult studies address mechanisms underlying HIV-1 control. A more recent and major focus of research efforts is in the field of paediatric HIV cure. Here we are exploring the viral reservoir and host biomarkers as part of an NIH U01-funded LEOPARD clinical trial conducted in Johannesburg. We are also intensely studying the recent case of the HIV-infected South African child in remission. This case offers a unique study opportunity to find clues as to what might make long-term remission possible for more individuals, and could help inform the search for the more challenging goal of a complete cure for HIV. We have also been involved in studies of the life-saving partial liver transplantation from an HIV-infected mother (living donor) to her uninfected child which was conducted in 2017 at the University of the Witwatersrand's Donald Gordon Medical Centre, Johannesburg. These fascinating cases have opened interesting channels of future exploration.

Interview by Dana Savulescu