

# Melissa Murphy



Melissa Murphy grew up in Cape Town, South Africa. She attended the University of Cape (UCT) Town and graduated with a BSc in Biochemistry and Microbiology and a BSc Honours in Molecular and Cell Biology. Melissa worked for a scientific sales company as a Sales Administrator before returning to UCT and joined the [South African Tuberculosis Vaccine Initiative \(SATVI\)](#) to pursue her MSc in Clinical Science and Immunology and later upgraded to a PhD in Clinical Science and Immunology which she completed in 2022.



She was supported by the National Research Foundation for her MSc and PhD. Melissa is also passionate about youth mentorship, particularly with first-generation students pursuing studies at tertiary institutions, and was involved in running youth mentorship programmes through a partnership with UCT and [IkamvaYouth](#). Melissa recently joined the [Kløverpris research group](#) at the [Africa Health Research Institute \(AHRI\)](#) as a postdoctoral research fellow.

**What is your research background and what led you into the field of immunology?**

My majors were in biochemistry and microbiology in my undergraduate studies. It was in third year during a 3-week module on the human immune response, followed by modules on the three major infectious diseases that I really became

interested in the field of immunology. I thought that the immune response was a fascinating and brilliant system, and I was more intrigued during the tuberculosis (TB) module when I learned that we have essentially co-evolved with *Mycobacterium tuberculosis* (*M.tb*).

**What have been the most interesting research topics you have got to tackle while you were a postgraduate?**

The research projects trying to understand the role of immune cells beyond conventional T cells in the context of TB has been the most interesting for me. I think that there has been a paradigm shift in the field, yes CD4<sup>+</sup> T cells, in particular, are necessary for a protective immune response against *M.tb*, but other immune cells may also play an important role and this must be explored.

**What difference do you feel your work has made so far in the field of infectious diseases?**

Wow, I don't know about a difference just yet. I do think that my work investigating myeloid, natural killer (NK) and donor unrestricted T (DURT) cell responses elicited by the whole cell TB vaccine BCG in infants was important. In addition, seeing other studies stemming from my original observations (that BCG does in fact elicit strong immune responses in previously underappreciated cell types) is a good feeling.

**Congrats on making it to the big leagues of post-doctoral scientists. Care to share where this post-doc is happening and what you are currently working on?**

Thank you! I've realised that there isn't quite a finishing line, and I'm always going to feel like there's the next big thing that I have to work towards. It is important to take in the moment when you do achieve something and celebrate the victories, no matter how big or small.

I'm currently working as a postdoctoral research fellow in the

Kløverpris research group at the Africa Health Research Institute (AHRI). My research focus now is investigating the role of NK and innate lymphocyte cells within mucosal tissues in HIV-infected individuals.

**What impact do you believe all your research work will have in the years to come?**

I think that the general theme in my research has and will be to try and characterise and understand the function of underappreciated immune cell types in a particular disease context. I think that we tend to work in silos and become too myopic as scientists. I'm hoping that my research in the future will help expand and add to a more holistic understanding of the human immune response to infectious diseases.

**A lot of talk has gone on recently about the need for people to leave academia alone. What advice do you have for scientists that are at a crossroads having to choose between academia and industry.**

My advice is to take time to self-reflect so that you have a clear understanding of what is important to you and what you want your life to look like. Whether you choose the academic or industry route, there are always going to be pros and cons. Also, nothing is set in stone and you can always pivot and do something different. The worst thing is to get stuck.

**As someone that has been in Cape Town for a while, what has it been like moving to Durban?**

I've been in Cape Town all my life actually. It's been an adjustment, but on the other hand I have never experienced such a warm Winter and the people in Durban are so friendly and welcoming.

**I know you just moved, but in your opinion, what would be the top 3 things you think people have to do in Durban even if**

**they are there for less than a month?**

I must admit that I haven't done much exploring since my move. However, I've been to the Umhlanga promenade and Florida Road for dining and fun which I would recommend. I plan on visiting the Midlands, Drakensberg Mountain Range and a couple of Safaris which is what people have suggested when I've asked them for must-see places in and around Durban.

**What do you like doing for fun when you are not busy being a lab ninja or writing the best Immunology papers in Southern Africa?**

I'm an avid homebrewer-I brew kombucha and craft beer. I plan on expanding to growing chilli and making my own chilli sauces as well. I also love reading fiction, and I've finally started making a dent in my to-be-read list.

**What is the one country you would love to attend a scientific conference in and why?**

Kenya, it's a beautiful country. Also, we need more infectious disease international conferences to take place in Africa.

**What advice do you have for young aspiring immunologists?**

There's no perfect road map or prototype that you have to be to become an immunologist. Seek out mentors, work hard, and stay curious.

**Care to share any of your favourite publications? I am sure people would love to get more acquainted with the work you have done.**

I'm working on getting a couple of more papers from my PhD published soon, but the papers below showcase the general theme of my research so far.

[Effects of BCG vaccination on donor unrestricted T cells in two prospective cohort studies](#)

MR1-Independent Activation of Human Mucosal-Associated Invariant T Cells by Mycobacteria

Bacillus Calmette–Guérin (BCG) Revaccination of Adults with Latent Mycobacterium tuberculosis Infection Induces Long-Lived BCG-Reactive NK Cell Responses

*Interview by Vanessa Muwanga*