**Personal Profile**

Ms Pule is an enthusiastic hard working Medical Scientist who is passionate about science and love challenges. I’m currently enrolled for PhD degree at University of Stellenbosch. My research focuses on understanding the physiology of drug resistant and tolerant *M. tuberculosis* and their host responsein the context of the host macrophage. I explore these by the use of proteomic analysis, fluorescence dilution and macrophage-model experiments and integrate resulting data using bioinformatics. My work my lead to the development of novel drug targets to combat the spread of drug-resistant TB.

**Career and Employment History**

**2015 Present Full-Time Doctoral Candidate, Medical Scientist**

DST/NRF Centre of Excellence in Biomedical Sciences, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, PhD candidate in Drug resistance and Mycobactomics groups

**2013-2014 Research Assistant (Intern)**

A\*STAR Bioinformatics Research Institute (2 and half months), Singapore **Duties:** To apply molecular modelling techniques (Pymol Viewer; Python terminal directory and Autodock tools) to design and validate small molecules that act as inhibitors of Mdm2-complexes; Cancer Therapy Research. Also submit progress reports

**2012-2014 Junior Medical Scientist Research Intern,**

Centre for Molecular and Cellular Biology of the Medical Research Council (MRC) and the University of Stellenbosch. South Africa **Duties:** To explore different mechanisms of MTB drug resistance in relevance to Drug resistant Tuberculosis epidemic using multiple molecular biology techniques in Biosafety level III (P3).Clinical Implications address for improving TB treatment. Submit quarterly research progress reports and complete Thesis Dissertation.

**2011 Research Laboratory Technologist**

Task Applied Sciences (CCTR): Centre of Clinical Tuberculosis Research South Africa. Duties: Working in a BSL3 safety laboratory with TB specimens for EBA clinical trials. Main duties were processing of sputum specimens, TB screening samples using Gene-Expert and microscopy staining. Additionally, reading of microscopy results, CFUs on colony counter and MGIT tubes on EpiCenter Technology.

**2010 Microbiology Laboratory Technician, Brewing Ferment General**

SAB Limited - Newlands Brewery: Microbiology and Chemistry QA/QC Labs, South Africa **Duties:** sampling and analysis of beer to detect growth of [***Saccharomyces cerevisiae***](http://en.wikipedia.org/wiki/Saccharomyces_cerevisiae) (microbiological contamination), Media preparation, Taking swaps and doing microscopy for environmental surveys, sampling beer samples across the brewery. Lastly, laboratory instruments calibration, responsible for ensuring lab technicians to comply with 5S (lab clean), lab audits and assessments.

**2008–2009 Student Counselling Peer Helper**

Student Counselling Department, Cape Peninsula University of Technology, Cape Town Campus, South Africa. **Duties:** Plan and execute Student Wellness events annually, participate in campus activity focused on helping student to succeed in their academics, career guidance and financial aid awareness.

**Membership of Professional Societies**

**2012-2014 Present Research Director**: The Governance NGO

**2014 -2015 Running Vice-President**: South African Association Women Graduates (SAAWG)

**2014- 2015** **Affiliated Member**: International Federation of University Women (IFUW)

**2012-2015 Executive Committee Member**: SA Women in Science and Technology (SAWISE)

**2013-2015 Junior Volunteer Scientist**: Women in Science, Tech, Engineering, Mathematics (STEM)

**2011-2013 Volunteer Counsellor**: Women and Beyond Non-profit Organisation, CT

**2012 Member of “Groen Committee”**: Stellenbosch University, Tygerberg Medical Campus

**2010 Member** **of “Academic Desk Committee”**: Student Christian Organisation (SCO), CT

**2006- 2015 Member** of South African National Youth Service (SANYS)

**Academic Qualifications**

**2014-2015 PhD (2nd year), University of Stellenbosch, Cape Town, South Africa**

Thesis Title: “Deciphering the physiology of drug tolerant and resistant *Mycobacterium tuberculosis*”

**2012–2013 MScMmedSc (Molecular Biology)** graduated with 1st class pass, same university

Thesis Title: “Defining the effect of efflux pump inhibitors on first and second-line anti-tuberculosis drugs in rifampicin mono-resistant clinical isolates of *Mycobacterium tuberculosis*”

**Cape Peninsula University of Technology (CPUT), Cape Town, South Africa**

**2011 BTech. Hons (Medical Biotechnology)** graduated with 2 distinctions and upper 2nd class

**2008-2010 ND. Biotechnology** graduated with 8 distinctions 1ST class pass

**2007: S2 Certificate:** Horticultural Science passed with 4 distinctions

**Short training courses qualifications relevant to my research**

**2014 Courses**

**29/09-03/10** Practical Course on computational analysis **of Protein-Protein Interactions**: from sequences to networks offered by EMBO hosted by University of Cape Town

**07/08-11/08** Mass Spectrometry Based **Proteomics Practical course**, Central Analytical Facility, University of Stellenbosch

**2013 Courses**

**16/09-18/09** 3rd Annual Novartis **Clinical Science workshop**, University if Stellenbosch

**04/08-08/08 Biostatistics** Practical Course, SAMRC Durban Unit

**2012 Courses**

**20/08-29/08** **Workshop in Scientific Writing Skills** for Research Proposal Research Article, Thesis and Dissertation, Language Centre, Stellenbosch University

**21/05-13/08 Clinical Research Skills** Course, Research Development and Support Division (RDSD), Stellenbosch University

**01/03-31/03 Biosafety Level III** (P3) Practical Course, Stellenbosch University

**15/03-15/03** One-Day **Research Overview Workshop**, RDSD, Stellenbosch University

**2008-2011 Courses**

**10/11/11-16/11/11 NIH Web-based Human Ethics** online course, National Institute of Health, USA

**06/05/09-10/05/09** **First Aid** Course, Dynamikos Training Network, CPUT

**01/04/08-27/05/08** **Life Skills Workshop**: focused on Leadership, time management goal setting and communication skills, CPUT

**Selected Honours and Research Achievements (awarded in open competition)**

**2015 February**  WhiteSci Scientific Travel Award, Whitehead Scientific

**2015 March** International Scientific Travel Award to attend conference in UK, RDSD

**2014 September** Prestigious Rectors Award for exceptional excellence: Succeeding against all odds

**2014 August** Distinguished Young South African Women Scientist Doctoral Fellowship

**2014 July** International Scientific Travel Award to attend conference in Austria, RDSD

**2014 June** National Scientific Travel Award, RDSD

**2014 May** Stella and Paul Lowenstein Charitable and Educational Trust

**2014 April** WW ROOME Private Bursary (also awarded in 2012)

**2013 November** Singapore International Pre-graduate Internship Attachment Award (SIPGA) to work at A\*STAR Bioinformatics Research Institute

**2013 August** Awarded 2nd prize for runner-up oral presentation at the 57th Annual Academic Year Day, Stellenbosch University

**2012 October** Award 1st prize for best oral presentation and 4 Continuing Professional Development points at the 2012 Drug Resistant TB Biennial Conference, University of Cape Town

**2012 April** Medical Research Council of South Africa (MRCSA) Internship Grant Award

**2011 August** National Research Foundation (NRF) Scarce Skills Scholarship

**2010 September** Awarded Academic Giant Prestigious Trophy, CPUT

**2009 October** Awarded 2 gold medals for outstanding academic excellence, CPUT

**2008 February** Sheila Brand Educational Brand Educational Trust (Top Achiever Merit award)

**Science Communication and public awareness Achievements**

**2014 August** **Profiled on the Mail&Guardian** News paper under banner SA women in Science Awards 2014, under Department of Science and Technology

**2014 August National Science Week** **Participation:** gave a lecture about TB Research done at Stellenbosch University Centre of Excellence

**2014 May Profiled on the SAWISE website** under the banner “role models” for young girls thinking of a career in science (<http://web.uct.ac.za/org/sawise/Profiles/201405Pule.html>).

**2014 January** represented Stellenbosch University at the National University Singapore Student Fair

**2013 July** **gave a talk** on Careers in Medical Sciences at event “High Science meet High School Learners”, Stellenbosch University Main Campus

**2013 May** **poster presentation** entitled “Careers in Health Care” with Prof. Valerie Corfield on behalf of the NRF’s Centre of Excellence exhibited at the Science and Technology Minister’s Budget Vote and the poster is published on SAWISE ([www.sawise.org.za](http://www.sawise.org.za/))

**2013 March** **participated in the Centre of Excellence Annual Review**, as Stellenbosch University postgraduate representative for interview and discussions with DST/NRF CoE International Programme Panel.

**Research Outputs**

**A list of selected peer reviewed published conference proceedings papers**

C.M Pule, G.E Louw, R.M Warren,JM Mouton, P.D Van Helden, S.L Sampson. Poster presentation: **Deciphering the physiology of drug resistant *Mycobacterium tuberculosis*** Presented at the EMBO PPI Course/Workshop, UCT, Cape Town, SA, October 2015

C.M Pule, G.E Louw, R.M Warren, P.D Van Helden, T.C Victor. Oral presentation: **The effect of efflux pump inhibitors on first and second-line anti-tuberculosis drugs differs in rifampicin mono-resistant clinical isolates of *mycobacterium tuberculosis.*** Presented at 4th SA TB conference, Durban, SA, June 2014, pg 32-33

C.M Pule, G.E Louw, R.M Warren, P.D Van Helden, T.C Victor. Oral presentation: **The effect of efflux pump inhibitors on first and second-line anti-tuberculosis drugs differs in rifampicin mono-resistant clinical isolates of *mycobacterium tuberculosis.*** Presented at European Society of Mycobacteriology 35th Annual Congress, Vienna, Austria, July 2014, pg 11-18; 50

C.M Pule, G.E Louw, R.M Warren, P.D Van Helden, T.C Victor. Oral presentation: **Deciphering efflux pump inhibitors on first and second-line anti-tuberculosis drugs differs in rifampicin mono-resistant clinical isolates of *mycobacterium tuberculosis.*** Paper presented at A\*star Bioinformatics Research Institute Meeting, Biopolis, Singapore, January 2014.

C.M Pule,G.E Louw, R.M Warren, P.D Van Helden, T.C Victor. Oral presentation: **The effect of efflux pump inhibitors on first and second-line anti-tuberculosis drugs differs in rifampicin mono-resistant clinical isolates of *mycobacterium tuberculosis.*** Paper presented at SU 57th Annual Academic Year Day (won 1st runner-up prize), Cape Town, SA, August 2013.

C.M Pule, G.E Louw, R.M Warren, P.D Van Helden, T.C Victor. Oral presentation: **The effect of efflux pump inhibitors on first and second-line anti-tuberculosis drugs differs in rifampicin mono-resistant clinical isolates of *mycobacterium tuberculosis.*** Paper presented at the Drug-Resistance TB Biennial Conference (won 1st prize), Cape Town, SA, 0ctober 2012.

C.M Pule, G.E Louw, R.M Warren, P.D Van Helden, T.C Victor. Oral presentation: **The level of resistance to first and second-line anti-tuberculosis drugs differs in rifampicin mono-resistant clinical isolates of *mycobacterium tuberculosis.*** Paper presented at the 6th Annual Medical Research Council Early Career Scientist Conference, Cape Town, SA, 0ctober 2012, 11; 22

**Articles in Referees/Peer-reviewed Journals**

***Review Article final edits and to be submitted between April and June for publication:***

1. Caroline M Pule, Robin M Warren,Samantha L Sampson,Paul D van Helden, Tommie C Victor, Gail E Louw**The Impact of Efflux Pump Inhibitors (EPIs) on Mycobacterial Efflux Systems: Implications in TB therapy.** *(Manuscript to be submitted to Antimicrobial Agents and Chemotherapy (AAC) in March 2015)*

2. Caroline M Pule, Robin M Warren, Tommie C Victor, JM Mouton, Paul D van Helden, Samantha L Sampson, Gail E Louw **Drug tolerance: An adaptive state essential for Mycobacterium tuberculosis survival** *(Manuscript to be submitted to Antimicrobial Agents and Chemotherapy (AAC) in May 2015)*

**Additional non-peer reviewed research presentation outputs**

**Oral Presentation: entitled** “Breaking The Wall of TB Drug Resistance” (Johannesburg, SA, September 2014)

**Oral presentation: entitled** “The Docking studies of MDM2 ligand complexes” cancer therapy research (A\*STAR BII, January 2014)

**Oral Presentation: entitled** “The A-Z Careers in Health Care” (Stellenbosch University, South Africa, April 2013)

**Voluntary Work and Leadership Roles Experience**

**2014- 2015** Tutor (Maths and Science), for Evergreen Tutoring Centre

**2008 -2015** Part-time Motivational Speaker

**2014** One of the top 9 candidates nominated to compete for prestigious

Annual Abe Bailey Travel Award 2014, to represent Stellenbosch University

2008 – 2011 Biochemistry, Microbiology Tutor and a Mentor to 3 first year students, CPUT

2010 -2011 Helper in Children Ministry, Church on Main Christian Organization

2010 Master of Ceremony at Academic Giants Awards, CPUT.

**2009** St Peters Residence Housing Committee Financial Coordinator, CPUT

2009 Miss CPUT (Cape Peninsula University of Technology) 2009

2008 Civil Guard of Honor at state address by SA president

Extramural activities

Scientific Journal clubs, writer of motivational books, dancer and choreographer, D&A talent model, play guitar, talk show presenter, actor, choir member, prayer ministry and involved in sports.

**References**

**Prof. P van Helden** (Director and Head), contact [pvh@sun.ac.za](mailto:pvh@sun.ac.za) , SU

**Dr Gail Louw**; (Research Scientist Fellow), Contact: [gail.louw@nih.gov](mailto:gail.louw@nih.gov) , NIH, USA

**Prof. S Sampson** (SARChI Chair in Mycobactomics), contact [ssampson@sun.ac.za](mailto:ssampson@sun.ac.za) , SU

**Prof. Valerie Corfield** (Retired Medical Scientist; Communication consultant; SAWISE Western Cape Vice Chair person), Contact: [vc1@sun.ac.za](mailto:vc1@sun.ac.za) (SU);

**Ms Amour Venter** (Laboratory Manager), Contact: [av@sun.ac.za](mailto:av@sun.ac.za), Task Applied Sciences

**Prof. Sehaam Khan (**BTECH Co-ordinator in Molecular Biology & associate Prof.), contact: [KhanS@cput.ac.za](mailto:KhanS@cput.ac.za), CPUT