

# TAAHIRAH BOLTMAN

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## PERSONAL PROFILE

Highly motivated, enthusiastic and an adaptable researcher with a background in target specific nanoscience based biomedical applications and diseases prevalent in South Africa. Experienced in scientific writing, teaching, student supervision, and laboratory management. Demonstrates excellent communication, data analysis, and problem-solving skills, with a proven ability to consistently meet deadlines. Detail-oriented, proactive, and capable of working both independently and collaboratively within a team.

## EDUCATION

### PhD Medical Biosciences | 2022 | University of the Western Cape

- Thesis Title: The development of targeting nanosystems for the treatment of glioblastoma and neuroblastoma tumours
- Supervisors: Prof. Okobi Ekpo and Prof. Mervin Meyer

### M.Sc. Nanoscience Cum Laude | 2015 | University of the Western Cape

- Thesis Title: Liposomal Drug Delivery to Brain Cancer Cells
- Supervisors: Prof. Okobi Ekpo and Prof. Mervin Meyer

### B.Sc. Honours (Medical Bioscience) | 2013 | University of the Western Cape

- Thesis Title: The effects of Bisphenol A and Rooibos (*Aspalathus linearis*) on bEnd 5 cells
- Supervisor: Prof. Okobi Ekpo, Prof. David Fischer and Dr Kareemah Najaar

### B.Sc. (Medical Bioscience) | 2012 | University of the Western Cape

## PROFFESIONAL EXPERIENCE

### Postdoctoral Fellow | 2022-Present | Centre for Cardiometabolic Disease in Africa (CARMA), Division of Medical Physiology, Stellenbosch University

- Co-supervision of Honours and Master students.
- Involvement in mitochondrial function research linked to cardiometabolic disease in HIV.
- Manage the Division of Medical Physiology and CARMA websites. Create content for division's social media accounts including Facebook and Instagram

### Lecturer (Part-time) | 2021-2022 | Emergency Medical Sciences, Cape Peninsula University of Technology, Bellville Campus

- Lectured Physiology to Emergency Medical Care undergraduates.

### Lab Manager and research assistant | 2015-2021 | University of the Western Cape

- Managed cell culture laboratory, including inventory control, ordering consumables, requesting quotations, and overseeing autoclaving processes.
- Co-supervised MSc students, conducted nanoparticle synthesis, and trained on cell culture techniques, nanoparticle synthesis and characterization techniques using laboratory equipment.

## LABORATORY SKILLS

- Nanoparticle synthesis: Liposomes for drug delivery and functionalized metallic nanoparticles.
- Cell culture: Expertise in human and animal cell lines, including cancer cells, fibroblasts, and co-culture techniques.
- Biological assays: Proficient in trypan blue, XTT, MTT, WST-1, TMRE, Annexin V, ROS, and other assays.

- Molecular techniques: Cloning, DNA/RNA purification, PCR, qPCR, and gel electrophoresis.
- Microbiology: Basic skills in plate preparation and streaking.
- Microscopy: Skilled in light, darkfield, and electron microscopy.
- Retinal imaging and inter-media thickness analysis.
- High-Resolution Respirometry: Mitochondrial function research and analysis.

## EQUIPMENT HANDLING SKILLS

Capable of operating laboratory equipment:

- UV-vis analysis
- Photon correlation spectroscopy
- Confocal microscopy
- Transmission electron microscopy and scanning electron microscopy
- Flow cytometry
- Fourier transform infrared spectroscopy and Raman spectroscopy
- High-performance liquid chromatography
- Canon CR-2 non-mydratic digital retinal camera
- Esaote MyLab Five Ultrasound System

## ANALYTICAL SKILLS

- Basic programming: Linux (Ubuntu) command line and bash scripting and Python programming language
- Microsoft Word, Excel, PowerPoint and Outlook
- Statistical programs: MedCalc, GraphPad Prism, SPSS and Origen 8
- Data storage and management: Research Electronic Data Capture (REDCap)
- Microscopy and imaging analysis programs: Image J and BioRender.com
- Bioinformatics software programs: STRING and DAVID
- Blackboard teaching platform and Primal Pictures 3D human Anatomy Software
- Canon Retinal Imaging Control Software (RICS)
- O2k-Software for data acquisition and analysis for high-resolution respirometry (DatLab8)

## HONOURS AND AWARDS

**2025:** DSTI-NRF Freestanding and Innovation Postdoctoral Fellowship

**2025:** Oppenheimer Memorial Trust Award

**2024:** 163rd International Workshop on High-Resolution Respirometry (IOC163) Certificate

**2024:** 50th Anniversary of the Physiology Society of Southern Africa Conference Certificate

**2024:** Stellenbosch University Faculty of Medicine and Health Sciences Scientific Travel Fund

**2024:** NRF Travel Grant for Equipment-related Travel and Training

**2023:** CHPC-NITheCS Coding Summer School Certificate (92.36% pass)

**2023:** Harry Crossley Foundation Research Project Funding

**2023:** NIH funded scholarship

**2023:** Global Health Network Certificates (GCLP: Sample Management, Conduct of Work, Data Recording, Quality Management, Facilities and Equipment, Method Validation, SOPs, and Personnel Management) Certificates

**2022:** DSI/NRF Innovation Postdoctoral Scholarship

**2019:** NRF Extension Support Doctoral Scholarship

**2018:** NRF Travel Grant for International Travel

**2016:** NRF Freestanding, Innovation and Scarce Skills Masters and Doctoral Scholarship

**2013:** Department of Science and Technology Full Scholarship for MSc Nanoscience

**2010:** Golden Key Award (Certificate)

## CONFERENCE PRESENTATIONS

- August 2024: 50th Anniversary of the Physiology Society of Southern Africa Conference, Polokwane, South Africa. Oral presentation: **"Mitochondrial function and retinal microvascular changes in people living with HIV: Findings from the MitoSAken study."** Authors: T. Boltman et.al.,  
Affiliation: <sup>1</sup>Centre for Cardiometabolic Research in Africa, Division of Medical Physiology, Faculty of Medicine and Health Sciences, Stellenbosch University, South Africa.
- September 2018: International Conference on Nanomedicine and Nanobiotechnology (ICONAN-2018), Rome, Italy. Poster presentation: **"Preliminary investigation of metallic nanosystems against glioblastoma and neuroblastoma cell lines."** Authors: T. Boltman<sup>1</sup>, O. Ekpo<sup>1</sup>, M. Meyer<sup>2</sup>  
Affiliations: <sup>1</sup>Department of Medical Bioscience, University of the Western Cape, South Africa; <sup>2</sup>DST/Mintek Nanotechnology Innovation Centre, University of the Western Cape, South Africa.
- October 2016: 1st Nanoscience Symposium of the National Nanoscience Postgraduate Teaching and Training Platform, Hotel Verde, Cape Town, South Africa. Oral presentation: **"Liposomal drug delivery to brain cancer cells."** Authors: T. Boltman<sup>1</sup>, O. Ekpo<sup>1</sup>, M. Meyer<sup>2</sup>  
Affiliations: <sup>1</sup>Department of Medical Bioscience, University of the Western Cape, South Africa; <sup>2</sup>DST/Mintek Nanotechnology Innovation Centre, University of the Western Cape, South Africa.
- November 2014: 7th International Symposium on Macro- and Supramolecular Architectures and Materials, Emperors Palace Hotel, Boksburg, South Africa. Poster presentation: **"Development of a novel drug delivery system for betulinic acid."** Authors: T. Boltman<sup>12</sup>, N. Ebrahim<sup>3</sup>, O. Ekpo<sup>2</sup>, M. Meyer<sup>145</sup>  
Affiliations: <sup>1</sup>National Nanoscience Postgraduate Teaching and Training Program; <sup>2</sup>Department of Medical Bioscience, University of the Western Cape, South Africa; <sup>3</sup>School of Pharmacy, University of the Western Cape, South Africa; <sup>4</sup>DST/Mintek Nanotechnology Innovation Centre; <sup>5</sup>Department of Biotechnology, University of the Western Cape, South Africa.

## WORKSHOPS, SEMINARS AND CONFERENCES ATTENDED

- **October 2024:** Nobel Symposium in Physiology or Medicine on Progress and Challenges in Cardiovascular Medicine, Stellenbosch Institute for Advanced Study, Cape Town.
- **October 2024:** 14th Annual Biomedical Research and Innovation Platform Conference, South African Medical Research Council, Cape Town.
- **June 2024:** 163rd International Workshop on High-Resolution Respirometry, Schröcken, Vorarlberg, Austria.
- **January-February 2023:** 13th CHPC Coding Summer School and 5th NITheCS Summer School on The Foundations of Theoretical and Computational Science.
- **November 2019:** 5th South African Nanoscience and Nanotechnology Summer School, Devonvale Gold and Wine Estate, Stellenbosch, Western Cape.
- **2017:** 8th International Congress on Nanotechnology in Biology & Medicine, Krems, Austria (Abstract accepted for presentation).
- **January 2017:** 7th Annual DST/MINTEK Nanotechnology Innovation Centre Workshop, University of the Western Cape, South Africa.
- **December 2014:** 1st Nanotechnology-Cancer Symposium, SANBI, New Life Sciences Building, University of the Western Cape.

- **November 2013:** South African Nanoscience and Nanotechnology Summer School, University of the Western Cape, South Africa.

## MANUSCRIPTS AND PUBLICATIONS

- Boltman T, Sibuyi, N, Meyer M, Ekpo O. **Synthesis of chlorotoxin functionalized metallic nanoparticles and their *in vitro* evaluation of cytotoxic effects in nervous system cancer cell lines.** 2024. Nano Express. 5 (2024) 045002. DOI: 10.1088/2632-959X/ad80b0
- Boltman T, Meyer M, Ekpo O. **Diagnostic and Therapeutic Approaches for Glioblastoma and Neuroblastoma Cancers Using Chlorotoxin Nanoparticles.** 2023. Cancers (Basel)., 15(13):3388. DOI: 10.3390/cancers15133388.

## PROFFESIONAL MEMBERSHIP

- Member of the Physiology Society of Southern Africa and The African Association of Physiological Sciences

## COMMUNITY WORK

- Charity work with local charity organization. This involves creating and delivering food parcels to the less advantaged areas around the Western Cape
- Involved in numerous social community outreach projects at Stellenbosch University

## PERSONAL

- Driving license: Yes
- Nationality: South African
- Languages: English and Afrikaans (2nd)

## REFERENCES

- **Prof. Hans Strijdom** | Stellenbosch University | [hstrijdom@sun.ac.za](mailto:hstrijdom@sun.ac.za) | Tel: +27 (021) 938 9387
- **Prof. Mervin Meyer** | University of the Western Cape | [memeyer@uwc.ac.za](mailto:memeyer@uwc.ac.za) | Tel: +27 (021) 959 2032
- **Prof. David Fischer** | University of the Western Cape | [dfisher@uwc.ac.za](mailto:dfisher@uwc.ac.za) | Tel: +27 (021) 959 2185
- **Prof. Kareemah Najaar** | Cape Peninsula University of Technology | [NajaarK@cput.ac.za](mailto:NajaarK@cput.ac.za) | Tel: +27 (021) 959 6542
- **Prof. Okobi Ekpo** | Khalifa University | [okobi.ekpo@ku.ac.ae](mailto:okobi.ekpo@ku.ac.ae)