



RHODES UNIVERSITY, MAKHANDA, SOUTH AFRICA



DR LONDIWE MBATHA (POSTDOCTORAL FELLOW)
SUPERVISOR: PROFESSOR PHILANI MASHAZI

CONTACT DETAILS:

Rhodes University
Tebello Nyokong Institute for Nanotechnology Innovation
P O Box 94
Makhanda (Grahamstown) 6140, South Africa
Email: l.mbatha@ru.ac.za or mbathalondy@gmail.com

EDUCATION DETAILS:

PhD (Biochemistry) 2018 – University of KwaZulu-Natal, South Africa
MSc – (Biochemistry) 2015 – University of KwaZulu-Natal, South Africa
BScH (Biochemistry) 2013 – University of KwaZulu-Natal, South Africa
BSc (Biochemistry and Microbiology) 2012 – University of KwaZulu-Natal, South Africa

CURRENT RESEARCH TITLE/PROJECT:

Development of a Theranostic Biosensor Platform Integrating Silver Nanoparticle Electrodes and Cannabis L. sativa Nanocarriers for Early Cancer Detection and Therapy

WORK EXPERIENCE:

Work experience in academic and research activities in higher institutions

i. September 2023 – September 2024: Ad-hoc lecturer [modules: Pharmaceutical Microbiology (PHRM361); Advanced Pharmaceutics (PHRM452); Pharmacy Research Projects (PHRM440)] and postdoctoral senior researcher, University of KwaZulu Natal, School of Health Sciences, Department of Pharmaceutical Sciences, South Africa.

ii. November 2018 - August 2023: Ad-hoc lecturer [modules: Biotechnology Research Project 1&2 (BIRP801&802); Biochemistry (BCHY201); Applied Biological Sciences III Module 1 (ABSC311)]; and postdoctoral senior researcher, Durban University of Technology, School of Applied Sciences, Department of Biotechnology and Food Sciences, South Africa.

iii. July 2018 - October 2018: Ad-hoc lecturer [module: Principles and Techniques (SBCH222)] and postdoctoral research fellow in the Faculty of Science, Agriculture and Engineering, Department of Microbiology and Biochemistry, University of Zululand, South Africa.

iv. February 2012 - December 2017: Junior researcher in the Faculty/College of Agriculture, Engineering, and Science, Department of Biochemistry, University of KwaZulu-Natal, South Africa.

v. February 2016 - December 2016: Teaching assistant for 3rd year-level Biochemistry courses including DNA Chemistry (BIOC315), and Immuno- and Protein Chemistry (BIOC316), in the Faculty/College of Agriculture, Engineering, and Science, Department of Biochemistry, University of KwaZulu Natal, South Africa.

vi. February 2010 - December 2017: Tutor and Protocol/practical demonstrator for foundation phase, 1st, 2nd, 3rd-year and Honours level courses including Biology [Foundation Biology A (BIOL009), The Smaller Side of Life (BIOL101)], Physics [Intro Physics for Life Sciences & Agriculture (PHYS131), Electromagnetism & Modern Phys for Life Sc (PHYS132), Mechanics, Optics and Thermal Physics (PHYS110)], Biochemistry and Microbiology [Biochemistry and Microbiology for Optometry (BIMI120/200), Introduction to Biomolecules (BIOC201), Bioenergetics and Integrated Metabolism (BIOC202), Molecular DNA Technology (RDNA202), DNA Chemistry (BIOC315), Immuno- and Protein Chemistry (BIOC316), RNA Chemistry and Gene Expression (BIOC307), Physiological Biochemistry (BIOC308), Cell Biology & Methods in Cell Biology (BIOC701), and Research Project (BIOC702)] in the Departments of Biology, Physics, and Biochemistry, University of KwaZulu-Natal, South Africa.

vii. February 2010 - December 2011: Laboratory technician assistant in the Faculty/College of Agriculture, Engineering, and Science, Department of Microbiology, University of KwaZulu-Natal, South Africa.

Work experience outside academic and research activities

i. January 2022 – December 2023: Human resource assistant, Engineering & Consulting Services, South Africa.

PUBLICATIONS/BOOK CHAPTERS:

- i. Londiwe Simphiwe Mbatha*, Jude Akinyelu, Chika Ifeanyi Chukwuma, Mduduzi Paul Mokoena, and Tukayi Kudanga (2023). "Current trends and prospects for application of green synthesized metal nanoparticles in cancer and COVID-19 therapies". *Viruses*. 15(3): 741. <https://doi.org/10.3390/v15030741>
- ii. Londiwe Simphiwe Mbatha*, Jude Akinyelu, Fiona Maiyo, and Tukayi Kudanga (2023). "Future prospects in mRNA vaccine development: a detailed review". *Biomedical Materials*. 18 (2023): 052006. <https://doi.org/10.1088/1748-605X/aceceb>
- iii. Jude Akinyelu, Abiodun Aladetuyi, Londiwe Simphiwe Mbatha, and Olakunle Oladimeji (2022). "Evaluation of the antioxidant, antidiabetic, and anticholinesterase potential of biogenic silver nanoparticles from *Khaya grandifoliola*". *Pharmaceutical Nanotechnology*. 11(1): 82-92. <https://doi.org/10.2174/2211738511666221101123633>
- iv. Thoko Malinga, Tukayi Kudanga, and Londiwe Simphiwe Mbatha* (2021). "Stealth doxorubicin conjugated bimetallic selenium/silver nanoparticles for targeted cervical cancer therapy". *Advances in Natural Sciences: Nanoscience and Nanotechnology* 12(4):045006. <https://doi.org/10.1088/2043-6262/ac389c>
- v. Londiwe Simphiwe Mbatha, Fiona Maiyo, Aliscia Daniels, and Moganavelli Singh (2021). "Dendrimer-coated gold nanoparticles for efficient folate targeted mRNA delivery in vitro". *Pharmaceutics* 13(6): 900. <https://doi.org/10.3390/pharmaceutics13060900>
- vi. Ramdath Shiara, John Mellem, and Londiwe Simphiwe Mbatha* (2021). "Anticancer and antimicrobial activity evaluation of cowpea porous starch formulated silver nanoparticles". *Journal of Nanotechnology* 2021. <https://doi.org/10.1155/2021/5525690>
- vii. Maiyo Fiona, Mbatha Londiwe Simphiwe, and Singh Moganavelli (2021). "Selenium nanoparticles for targeted delivery of pCMV Luc DNA reporter gene". *Current Nanoscience* 17(3). 871-880. <https://doi.org/10.2174/1573413716666201207141657>
- viii. Patel Naazlene, Kabange Kasumbwe, Viresh Mohanlall, and Londiwe Simphiwe Mbatha (2020). "Antibacterial screening of *Gunnera perpensa* mediated silver nanoparticles". *Journal of Nanotechnology* 2020. <https://doi.org/10.1155/2020/7916862>
- ix. Mbatha Londiwe Simphiwe, and Singh Moganavelli (2019). "Starburst poly (amidoamine) dendrimer grafted gold nanoparticles as a scaffold for folic acid-targeted plasmid DNA delivery in vitro". *Journal of Nanoscience and Nanotechnology* 19(4): 1959-1970. <https://doi.org/10.1166/jnn.2019.15798>
- x. Mbatha Londiwe Simphiwe, Maiyo Fiona Chepkoech, and Singh Moganavelli (2019). "Dendrimer functionalized folate-targeted gold nanoparticles for luciferase gene silencing in vitro: a proof of principle study". *Acta Pharmaceutica* 69(1): 49-61. <https://doi.org/10.2478/acph-2019-0008>

xi. Aruleba Raphael, Tayo Alex Adekiya, Babatunji Emmanuel Oyinloye, Priscilla Masamba, Londiwe Simphiwe Mbatha, Ashley Pretorius, and Abidemi Paul Kappo (2019). "PZQ therapy: how close are we in the development of effective alternative anti-schistosomal drugs?". *Infectious Disorders-Drug Targets (Formerly Current Drug Targets-Infectious Disorders)* 19(4): 337-349.
<https://doi.org/10.2174/1871526519666181231153139>

xii. Khanyile, Sbonelo, Priscilla Masamba, Babatunji Emmanuel Oyinloye, Londiwe Simphiwe Mbatha, and Abidemi Paul Kappo (2019). "Current biochemical applications and future prospects of chlorotoxin in cancer diagnostics and therapeutics". *Advanced Pharmaceutical Bulletin* 9(4): 510.
<https://doi.org/10.15171/apb.2019.061>

xiii. Paul Chukwudi Ikwegbue, Priscilla Masamba, Londiwe Simphiwe Mbatha, Babatunji Emmanuel Oyinloye, and Abidemi Paul Kappo (2019). "Interplay between heat shock proteins, inflammation and cancer: a potential cancer therapeutic target". *American Journal of Cancer Research* 9(2): 242–249.
PMID: 30906626; PMCID: PMC6405974

xiv. Molefe Philisiwe Fortunate, Priscilla Masamba, Babatunji Emmanuel Oyinloye, Londiwe Simphiwe Mbatha, Mervin Meyer, and Abidemi Paul Kappo (2018). "Molecular application of aptamers in the diagnosis and treatment of cancer and communicable diseases". *Pharmaceuticals* 11(4):93.
<https://doi.org/10.3390/ph11040093>

xv. Londiwe Mbatha, Santanu Chakravorty, Charles B de Koning, Willem AL van Otterlo, Patrick Arbuthnot, Mario Ariatti, and Moganavelli Singh (2016). "Spacer length: a determining factor in the design of galactosyl ligands for hepatoma cell-specific liposomal gene delivery". *Current Drug Delivery* 13(6): 935-945. <https://doi.org/10.2174/1567201813666160224123450>

xvi. Mathabo Lutu, Blessing Ike, Nkeiruka Igbokwe, Joshua Nwabuike, Londiwe Simphiwe Mbatha, Mbuso Faya (2025). "Peptide decorated liposomes as efficient carriers of anticancer drugs for targeted therapy: State of the art and future perspectives". || *Pharmaceutical Development and Technology*: 241583129 || Submitted (Addressing reviewers' comments).

xvii. Lusanda Mtetwa, Nkeiruka Igbokwe, Eman Ismail Abdallah, Makabongwe Mazibuko, Terisha Ghazi, Aviwe Ntsethe, Londiwe Simphiwe Mbatha, Anil Chuturgoon, Mbuso Faya (2025). Design and Development of Novel Anticancer Peptide Encapsulated Liposomes for Targeting of Solid Tumours In Vitro. || *International Journal of Clinical Oncology: IJCO-D-24-00763* || Submitted

xviii. Thoko Malinga, Mbuso Faya, Tukayi Kudanga, and Londiwe Simphiwe Mbatha* (2025). "Stabilised fenugreek bio-formulated bimetallic selenium-silver nanoparticles for targeted doxorubicin delivery in vitro cervical cancer treatment". || Ready for resubmission.

xix. Londiwe Simphiwe Mbatha*, Thoko Malinga, Mbuso Faya, and Tukayi Kudanga (2025). "Characterization, cytotoxicity, and apoptosis evaluation of *Trigonella foenum-graecum* L. formulated doxorubicin loaded platinum-selenium bimetallic nanoparticles capped with chitosan". || Ready for resubmission.

xx. Thabani Nxumalo, Luyanda Mbambo, Bianca Shunmugam, Revara Naidoo, Zipho Makhubo, Mbuso Faya, and Londiwe Simphiwe Mbatha* (2025). "Folic acid targeted chitosan coated bio formulated silver nanoparticles for quercetin delivery to tumors". || Manuscript preparation.

Book chapter(s)

i. Londiwe Simphiwe Mbatha, Fiona Maiyo, Aliscia Daniels, and Moganavelli Singh (2022). "Dendrimer-coated-gold-nanoparticles for efficient folate targeted mRNA delivery in vitro" *Pharmaceutics* 13(6): 900. Book title: *supramolecular systems for gene and drug delivery* (pp. 115-132). MDPI Books. (Impact factor = 5.4)

Abstract

i. Londiwe Simphiwe Mbatha, and Moganavelli Singh (2016). Dendrimer functionalized gold nanoparticles for targeting the folate receptor in vitro. *Human Gene Therapy* 27(11): A92-A93. 140 Huguenot Street, 3rd FL, New Rochelle, NY 10801 USA: Mary Ann Liebert, Inc. (Impact factor = 4.2)

CONFERENCE PRESENTATIONS:

i. 2025: Londiwe Simphiwe Mbatha. The application of nanotechnology-derived nanomaterials in the treatment of genetic disorders and viral infections: are we there yet? Fethiye, Turkey. International Conference on Nanomaterials, Nanofabrication and Nanocharacterization (NANOMACH) (8-14 April 2025). Invited Speaker.

ii. 2016: Londiwe Simphiwe Mbatha, and Moganavelli Singh. Dendrimer functionalized gold nanoparticles for targeting the folate receptor in vitro. South Africa, East London. East London International Conference Centre, Premier Hotel. South African Society of Biochemistry and Molecular Biology SASBMB-201 (10-14 July 2016). Presentation.

iii. 2016: Londiwe Simphiwe Mbatha, and Moganavelli Singh. Dendrimer functionalized gold nanoparticles for targeting the folate receptor in vitro. Italy, Florence. The 24th European Society of Gene and Cell Therapy (ESGCT) Annual Congress (18-21 October 2016). Presentation.

iv. 2015: Londiwe Simphiwe Mbatha, Moganavelli Singh, and Mario Ariatti. Spacer length: a determining factor in the design of glycosylated ligands for receptor-mediated gene delivery. College of Agriculture, Engineering, and Science. Postgraduate Research Day. University of KwaZulu-Natal, South Africa (22 September 2015). Presentation.