

NIOH Research Committee: Saluting female research scientists advancing occupational health in South Africa

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Research in South Africa is critical to filling knowledge gaps and discovering new ways of mitigating occupational health burdens and challenges. According to the World Health Organization (WHO), nearly two million people die from occupational injuries and work-related diseases per year. Research in this sector is therefore vital. In commemoration of this year's Women's Month, we take our hats off to female researchers and scientists in occupational health who are advancing knowledge to promote healthy, safe and sustainable workplaces across South Africa and the world. In the 1960s and 1970s, the occupational health sector was dominated by men. However, young, innovative, high-achieving women currently make up 76% of the Research Committee at the National Institute for Occupational Health (NIOH) – a division of the National Health Laboratory Service (NHLS). The NIOH is a Centre of Excellence and a WHO Collaborating Centre. Research by this team is multi-disciplinary and covers a range of areas, including occupational diseases, epidemiology, exposure assessment, toxicology, occupational hygiene, sickness absence management, workplace and worker wellbeing/health promotion, evaluation of occupational health interventions, and health economics, among others. Their research became even more relevant during the COVID-19 pandemic, which saw many projects on SARS-CoV-2 being expedited to gain new knowledge of the impact of the virus on the health and safety of workers – in both the formal and informal economies. Today, we salute them for their hard work and dedication. Thank you for helping all workers in the quest for decent work.

Dr Natasha Sanabria

Dr Natasha Sanabria is the Head of the Toxicology and Biochemistry Section at the NIOH and the Chair of the Research Committee and has a wealth of experience, specialising in biochemical investigations and genetic analyses of disease-related states. These include gene expression during stress-conditions, 'self/non-self' recognition, innate immunity, cellular signal perception/transduction, and the



assessment of nanomaterial toxicity via molecular biology-based techniques. She is currently the Chair of the Research Committee, an Advisory Board member of the Institute for Nanotechnology and Water Sustainability (iNanoWS), an associate member of the American College of Toxicology, and a member of the international NanoSolveIT Consortium for in silico integrated approach to testing and assessment for the environmental health and safety of nanomaterials. Dr Sanabria holds both an MSc degree (*cum laude*) and a PhD in biochemistry, as well as an MSc degree in bioinformatics and computational molecular biology (*cum laude*). She is the recipient of the NRF Prestigious Award for discovering a new gene (GenBank accession number GU196248), and she received the National Research Foundation (NRF) Innovation Fellowship to complete postdoctoral studies, with training at Cold Spring Harbor Laboratory in New York in 2011.

Dr Nonhlanhla Tlotleng

Dr Nonhlanhla Tlotleng is a senior epidemiologist and is involved in research and surveillance activities within the Epidemiology and Surveillance Section. She is the Deputy Chair of the Research Committee and the Surveillance Lead in the Occupational Health Outbreak Response Task Team (OHORT) within the NIOH. Her areas of interest are respiratory health of workers, environmental exposure to hazardous chemicals, occupation-related cancers, and surveillance of workplace-related diseases. She serves as a member on the Occupational Health Surveillance System (OHSS) Steering Committee and Scientific Committee. She holds an undergraduate degree and an MSc degree in biotechnology from the University of Johannesburg (UJ), as well as a PhD from the School of Pathology and an MSc in Epidemiology and Biostatistics – from the University of the Witwatersrand (Wits). Dr Tlotleng is a research associate at the Department of Environmental Health at UJ, where she is supervising Master of Public Health (MPH) students.



Asanda Jekwa



Asanda Jekwa is a data input clerk in the Epidemiology and Surveillance Section of the NIOH. Her role entails administration and data capturing so that the team can execute their strategic objectives. Ms Jekwa obtained her matric certificate in Hlokoma and thereafter completed a training course in computer skills from Border Technikon. She is the Research Committee Secretary and assists with minute taking, project coordination and record-keeping duties.

Dr Annancietar (Noncy) Gomba



Dr Annancietar (Noncy) Gomba is a senior research scientist in the Immunology and Microbiology Section. She holds a PhD from the University of Pretoria (UP), MSc and BSc degrees from the University of Zimbabwe, and an MBA from Midlands State University, Zimbabwe. Dr Gomba joined the NIOH in 2017, where she has been responsible for the management of the Waterborne Pathogen Laboratory, and is involved in

teaching and training through development and management of training programmes, information dissemination, postgraduate student supervision and mentorship, and examination of master's student dissertations. Dr Gomba's research interests include water/wastewater and environmental microbiology, water reuse, and alternative water sources. She is a member of the Water Institute of Southern Africa, and the Legionella Action Group in South Africa, and serves as a member of reference groups on several Water Research Commission (WRC) research projects.

Zandile Hoyi



Zandile Hoyi is a principal medical scientist and manager in the Ergonomics Unit of the Occupational Medicine Section at the NIOH. In this role, she provides specialised services in ergonomics to the National Health Laboratory Service (NHLS) employees and external clients in both the public and private sectors. Hoyi is also responsible for research activities, and teaching and training on ergonomics. She has a BSc (Hons) degree

and an MSc degree in human kinetics and ergonomics from Rhodes University. She also holds certificates in user experience design and occupational health and safety, with training in incident investigation. Her areas of speciality and research focus are physical ergonomics (in terms of anthropometry – human body dimensions in relation to equipment and workstation design), worker safety and performance, and cognitive ergonomics (with an interest in human information processing in relation to situation awareness, cognitive workload, and function). Her work is aimed at understanding how the physical domain may impact the mental domain (and vice versa) and how that influences worker performance, in general.

Babalwa Jekwa



Babalwa Jekwa is a medical scientist, working in the Information Services Section of the NIOH. She holds an MSc degree in biochemistry from the University of Fort Hare. Her responsibilities include facilitating an efficient advisory service through the management of the NIOH query handling service, by receiving and responding to technical occupational health queries. Ms Jekwa plays a crucial role in the management of the NIOH publications and the

dissemination thereof to stakeholders. In her role in the Research Committee, she coordinates and oversees all current research projects, and records and archives all completed research projects. As a member of the Information Services team, Ms Jekwa contributes towards the training of stakeholders on the various sources of occupational health information that are available. While currently not actively involved in research, she is interested in topics related to emotional intelligence and work-life balance.

Dr Jitcy Joseph



Dr Jitcy Joseph is a medical scientist in the Toxicology and Biochemistry Section. She contributes to the effective running of the laboratory and manages the schedule to ensure that instrument calibrations, verifications, and maintenance are adhered to and are easily accessible. She is also involved in teaching, training, research, document management, quality management, and supervising postgraduate science students. Her areas of expertise are diabetes, obesity, and cancer drug discovery, in addition to occupational health.

Dr Joseph is currently collaborating on different research projects with the University of South Africa (UNISA), UJ, and the University of the Free State (UFS). She holds a PhD in biochemistry from UJ, and an MSc degree in biochemistry from Mahatma Gandhi University in India. Dr Joseph is the recipient of an NRF Thuthuka research grant for the 2022–2024 period.

Dr Boitumelo Kgarebe



Dr Boitumelo Kgarebe is the Head of the Analytical Services Department at the NIOH. As a practising analytical chemist with more than 30 years' experience, Dr Kgarebe has been devoted to contributing to aspects of theory and practice of analytical and measurement sciences in the areas of forensic toxicology, measurement science, analytical methodology, experimental methods, experimental protocols, and technical characterisations and instrumentation (sampling, analysis, electrochemistry, separation sciences, spectroscopy, and data processing, among others). She also supervises research in the Division of Forensic Medicine and Pathology at Wits, and lectures in the School of Chemistry. She holds a BSc (Hons) degree in chemistry, and MSc and PhD degrees in analytical chemistry – all from the University

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of London, UK. She has more than 35 years of university teaching and research experience at both undergraduate and postgraduate levels. For seven years, she worked at the Organization for the Prohibition of Chemical Weapons (OPCW), a multilateral body in The Hague, Netherlands. She holds a Certificate of Recognition for her contribution to the outstanding work of the OPCW, which was awarded the 2013 Nobel Peace Prize for its extensive efforts to eliminate chemical weapons.

Dr Kgarebe is a Fellow of the African Academy of Sciences and a recipient of the Outstanding Woman Scientist (who has served the Academy) award for 2018. She is a member of the American Chemical Society and serves as a high-level expert of the African Union Commission. Dr Kgarebe mentors and supervises young scientists who are at various academic and professional levels in their careers. She serves as a referee for the European Union-funded African Research Initiative for Scientific Excellence (ARISE) Pilot Programme, which awards grants of up to €500 000 to 40 emerging African researchers, across 40 African countries, to start their own independent research teams and projects.

Tebogo Maeteletja



Tebogo Maeteletja is a safety, health and environment (SHE) officer for the Free State/North West region of the NHLS. She is a Southern African Institute for Occupational Hygiene (SAIOH)-registered occupational hygiene technologist with vast experience in coordination of the SHE system. Ms Maeteletja holds a BSc (Hons) degree in physiology and environmental health from the University of Limpopo and an MSc degree in public health from UP.

She has practised as an occupational hygiene technologist in an approved inspection authority (AIA) at the NIOH for eight years. This role has allowed her to assess workplace hazards across various industries. Her research interest is the global green economy, where eco-friendly advancements may introduce new workplace hazards.

Lerato Manamela



Lerato Manamela is a medical scientist in the Analytical Services Section. She is responsible for routine analysis of biological and environmental samples for monitoring exposure of chemical hazards in the workplace and public spaces. She is also tasked with the development, validation and accreditation of analytical methods under the ISO/IEC 17025 and ISO 15189 standards. Teaching and training of students and intern medical scientists

for the attainment of Health Professions Council of South Africa (HPCSA) registration is one of her responsibilities. Her research focuses on the chemical analysis and investigation of hazardous inorganic metals in biological and environmental matrices, and the development and validation of analytical assays using specialised techniques for the detection and quantification of chemicals or contaminants in a variety of matrices. She holds an honours degree in medical science from the University of Limpopo, and is currently studying towards her master's degree in chemistry at Wits.

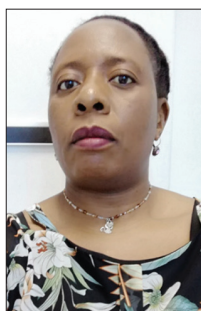
Mantombi Maseme



Mantombi Maseme is a medical scientist at the NHLS National Biobank, housed within the NIOH, and is responsible for research and development, biobanking, and quality management system activities. She holds an MSc degree in bioethics and health law from Wits, a Bachelor of Medical Science (Hons) degree in pharmacology and a Bachelor of Medical Science (Hons) degree in physiology, both from UFS.

She serves on the International Society for Biobanks and Environmental Repositories (ISBER) Education and Training Committee, and was a content contributor to the *ISBER Best Practices: Recommendations for Repositories* (5th edition). Her research interests are diagnostic microbiology (antimicrobial resistance and pharmacogenomics), bioethics (purely normative and ethico-legal studies), and biobanking.

Dr Puleng Matatiele

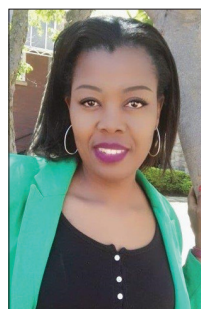


Dr Puleng Matatiele is a principal medical scientist and laboratory supervisor working in the Analytical Services Section's Organic Chemistry Laboratory. She joined the NIOH in 2008, as a senior medical scientist in the Toxicology and Biochemistry Section. In 2016, she joined the Analytical Services Section where she is responsible for conducting tests on biological and environmental specimens for exposure to toxic organic compounds (using HPLC, GC-MS and GC-FID), teaching and training of experiential

students, HPCSA intern scientists and technologists/technicians, and supervising research students at the Division of Forensic Medicine and Pathology at Wits. The Organic Chemistry Laboratory, under Dr Matatiele's supervision, has served as a reference laboratory (hexane exposure analysis) for the German External Quality Assessment Scheme (G-EQUAS) since 2015.

Dr Matatiele holds a PhD in biochemistry from UFS. Her broad research interests are at the interface between toxicology and analytical chemistry, with a focus on biological and environmental monitoring of occupational exposures to hazardous organic chemicals. Her latest work revealed that, due to the COVID-19 pandemic, there has been a shortage of name-brand hand sanitisers, causing some unethical manufacturers to release counterfeit products with toxic ingredients, which can lead to harmful or fatal side effects.

Dikeledi Matuka



Dikeledi Onnicah Matuka is a senior medical scientist, overseeing the Bioaerosol Unit in the Immunology and Microbiology Section at the NIOH. Her areas of speciality are bioaerosols, infection control, hazardous biological agents (HBAs), and microbiological indoor air quality in the workplace. Ms Matuka has 19 years of experience in occupational health and is involved in related research, supervision of medical intern scientists, and training of undergraduates, postgraduates, and other

occupational health professionals. She holds an MSc Med (*cum laude*) degree from Wits, and BSc and BSc (Hons) degrees from Potchefstroom University for Christian Higher Education (PU for CHE), now North-West University (NWU). Ms Matuka is a registered medical scientist (microbiology) with the HPCSA.

Lucia Naddy Mhlongo



Lucia Mhlongo is a medical scientist in the Pathology Division responsible for processing and analysing body tissue (mainly lungs) and bulk samples that may contain asbestos. This is a key function related to compensation for deceased miners, renovations of buildings with asbestos-containing materials, and the compilation of the annual pathology surveillance (PATHAUT) report. Ms Mhlongo is also responsible for research development and support. She has a BSc degree in medical science from the University of Limpopo, a postgraduate diploma in public health from the University of KwaZulu-Natal (UKZN), and an MSc degree in medicine from Sefako Makgatho Health Sciences University. Her area of research is cancer immunology and occupational health.

Ms Mhlongo is also responsible for research development and support. She has a BSc degree in medical science from the University of Limpopo, a postgraduate diploma in public health from the University of KwaZulu-Natal (UKZN), and an MSc degree in medicine from Sefako Makgatho Health Sciences University. Her area of research is cancer immunology and occupational health.

Angel Mzoneli



Angel Mzoneli is the Head of Information Services and Training at the NIOH. She holds a Master of Information Science (MIBL) degree from the University of the Western Cape (UWC), and a certificate in project management from the Cape Peninsula University of Technology (previously Peninsula Technikon). She championed the development of the first NIOH newsletter, *OccuZone*, in 2019 and served as the Chief Editor for two and a half years. She leads the three libraries of the NHLS, which provide essential support to the research function of the organisation. Ms Mzoneli oversees the efficient management of the Institute's research output and provides training on sourcing occupational health information to various stakeholders, including MPH students at Wits and other postgraduate students, and drives the training function of the Institute. She serves on various committees and is a member of the International Labour Organization (ILO) International Occupational Safety and Health Information Centre (CIS), which aims to enhance occupational health and safety knowledge and information networking activities. She has more than 20 years of work experience in the field of information and knowledge management, which includes working in the information services departments of two South African academic institutions.

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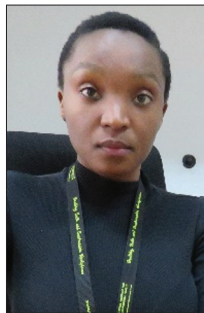
Zethembiso Ngcobo



Zethembiso Ngcobo is a senior medical scientist in the Pathology Division, where she is responsible for co-managing research projects and facilitating the development and validation of new tests. Ngcobo also manages the Electron Microscopy Unit, contributes to the total quality management, carries out laboratory work, and writes reports. She holds Bachelor and Master of Medical Science degrees in medical microbiology (the former, *cum laude*), and a BSc degree in microbiology and biochemistry – all from UKZN.

Ms Ngcobo's current research focus is on occupational and environmental asbestos, and the development of pathological molecular tests. In 2022, she obtained a PhD scholarship from the Institute for Nanotechnology and Water Sustainability (iNanoWS).

Lebogang Ntlailane



Lebogang Ntlailane is an occupational hygienist in the Occupational Hygiene Section. Her role involves conducting occupational health risk assessments and exposure assessments, research, and training various stakeholders, including internal staff, government officials, trade unionists, and occupational health professionals. Her area of research is exposure and control of occupational hazards; she also has interest and experience in nanomaterials.

Ms Ntlailane participates in research activities in the Section, which include the collaborative evaluation of respirable crystalline silica exposure levels in non-mining subsectors in South Africa. She is also currently involved in a pilot study of the applicability of the CytoViva system for the assessment of internal dose of dust particles in mine workers – an interdepartmental collaboration. She has an MSc degree in public health from UP, and BSc undergraduate and honours degrees, both from the University of Limpopo.

Winkie Siebane



Winkie Siebane joined the NIOH as a librarian in the Information Services Section in 2018. She is responsible for promoting the resources and services of the library, using marketing techniques; ensuring that the library collection is current, comprehensive and meets the academic needs of staff and students; and providing research support and reference services to the NHLS community. She is also involved in conducting information literacy training sessions on

using online databases/e-resources (and relevant platforms) to access information. She oversees the library's quality assurance processes, and is involved in the reviewing of existing SOPs/library manuals and writing new ones. Ms Siebane also digitises research output and converts analogue research output into digital format.

She is the Chair of the NIOH Health and Safety Committee, the health and safety representative for the Information Services Section, and a member of the NIOH Operations Committee. She holds a Master of Management degree in governance, a public and development sectors results-based monitoring and evaluation diploma from Wits, and a higher diploma in information science and a BA degree in communication science – both from the University of Limpopo.

Dr Tanusha Singh



Dr Tanusha Singh is the Head of the NIOH Immunology and Microbiology Section, with more than 21 years' experience in occupational health. Her major research interests are hazardous biological agents (occupational allergens, bioaerosols and waterborne pathogens), and their measurement and effects on worker health. Her main research objective is to assess the effectiveness of interventions that reduce biorisks in the workplace. Dr Singh

is revered for pioneering the Bioaerosol Monitoring Unit at the NIOH

(the only one of its kind in South Africa) and the Aspire Laboratory, a unique initiative that does not exist elsewhere in the world, and which serves as a resource for scientists pursuing interests in aerobiological science and research.

Dr Singh was also the Chair of the national ultraviolet germicidal irradiation (UVGI) technical task team and co-authored the South African UVGI guideline 'UVGI disinfection of room air: an evidence-based guideline for design, implementation and maintenance'. She sits on several committees, including the International Commission on Occupational Health (ICOH), the ILO, and the WHO, holds a joint appointment with the Department of Clinical Microbiology and Infectious Diseases at Wits, and actively contributes to undergraduate and postgraduate teaching and supervision in the Faculty of Health Sciences. Dr Singh is also a senior research associate of the Environmental Health Department at UJ. She has a PhD in clinical microbiology and infectious disease and is the recipient of a number of research grants.

Dikeledi Singo



Dikeledi Singo is an occupational hygiene technologist and joined the NIOH in 2015. She is responsible for conducting occupational hygiene exposure surveys and occupational health risk assessments, and participating in capacity building through teaching/training and research activities. Her research interest is asbestos, due to its extensive historical use in the construction industry. She also intends to conduct research related to the knowledge, attitudes

and perceptions on asbestos, specifically within the education sector. Ms Singo is part of a team that is conducting research on health risk assessments in COVID-19 mobile laboratory screening units. She has a BSc (Hons) degree from the University of Limpopo and a postgraduate diploma in public health from UP.

Dr Kerry Wilson



Dr Kerry Wilson is a senior epidemiologist and has worked at the NIOH for 15 years. Her research focus in the Epidemiology and Surveillance Section is on occupational mortality, occupational reproductive health, occupational health surveillance, mental health and staff satisfaction, and information systems in the workplace. She provides epidemiological support to a wide range of occupational health researchers. Dr Wilson is an Honorary Lecturer at Wits, and an

Academic Editor for PLOS one. She supervises postgraduate student research and is currently supervising six students. She obtained an MSc degree in biochemistry, with a toxicology focus, in 2002 from the University of Port Elizabeth, and later obtained her PhD from Wits, her research being based on toxicology and epidemiology.

Photographs: courtesy of NIOH
