

## **PROVISIONAL GRADUATION LIST**

**Graduation Date: 09 December 2024**

**Time: 09:30**

The purpose of the provisional list is for you to check that **all** of your personal and academic details such as your name(s) and the title of your thesis, as well as the record of supervisor(s) is correct. Your names should appear as reflected in your ID or Passport. It is too late to correct these when the final graduation list is published.

## **FACULTY OF HEALTH SCIENCES**

DEAN: PROFESSOR SA MADHI MBBCh MMed PhD (Witwatersrand) FCPaed(SA) MASSAf, RSSAf, TWAS, CBE

### **Doctor of Philosophy**

**ABDALLA**, Yosra Mahjoub Ahmed

*Pharmacy and Pharmacology*

*THESIS:* A thermo-responsive scleral device for the management of ocular tumours

This project involved the exploration of a thermo-responsive hydrogel with pH-responsive nanoparticles for targeted treatment of ocular surface tumours using interferon alpha. The hydrogel and nanoparticles were synthesized and characterized, followed by an assessment of cellular absorption, ocular pharmacokinetics, using a rabbit model. The system demonstrated persistent release of the drug in vivo and no significant inflammatory response in the conjunctivae or sclera, indicating its potential as a therapy option for specific ocular surface tumour sites.

Supervisors: Associate Professor P Kondiah and Dr L Du Toit

**ABDELGADER**, Ahmed Abdalla Bakheit

*Pharmacy and Pharmacology*

*THESIS:* A multi-unit, polymer-based, prolonged-release, intrauterine device for the relief of the genitourinary syndrome of menopause

The genitourinary syndrome of menopause (GSM) is a condition affecting millions of women globally. Despite its occurrence, there is a lack of effective long-term treatments that consider patient safety and compliance. This study addresses this concern through the development of an implantable, multi-unit platform for the site-specific delivery of hormonal drugs. Overall, this system presents a promising solution for GSM treatment, while potentially revolutionising drug delivery in the genitourinary tract through the development of a versatile targeted, controlled release system.

Supervisors: Dr M Govender, Dr P Kumar and Dr Y Choonara

**ATIBA**, Foluso Ayobami

*Anatomical Sciences*

*THESIS:* Effects of aqueous extract of kolanut (*Cola nitida*) on Sprague Dawley dams and exposure on the hippocampus of the progeny

This thesis explored the effects of prenatal kolanut (*Cola nitida*) exposure, on the hippocampus of Sprague Dawley rat progeny. Prenatal kolanut consumption by Sprague Dawley dams adversely affected food intake. The treatment also adversely affected behaviour indices, neuronal morphology, decreased neurogenesis and neuroplasticity in the progeny. It induced oxidative stress and significant downregulation of *cfos*, *cjun*, *creb1*, *dlg3*, and *dlg4*, genes, important for normal synaptic-neuronal development, resulting in dysmorphology of dendrites and spines.

Supervisors: Dr E Mbajorgu and Professor A Ihunwo

**BARNIGHAUSEN**, Kathryn Elizabeth

*THESIS:* Pre-exposure Prophylaxis (PrEP) for HIV prevention in Eswatini: understanding the barriers, facilitators and opportunities for women

This thesis examines findings from the formative qualitative component of the Eswatini Pre-exposure prophylaxis(PrEP) demonstration project. Using 217 semi-structured in-depth interviews with health care workers, stakeholders and PrEP uptake, decline, discontinuation and continuing clients, the thesis describes where  $\downarrow$  along the HIV prevention cascade - gaps in service provision, demand creation, access, and retention in care are visible. The outcomes of the thesis contributed to the national scale up of PrEP in Eswatini and have informed ongoing programmatic and implementation adaptations.

Supervisor: Dr K Kahn

**BLANCHARD**, Charmaine Louise

*THESIS:* Developing an intervention to improve informed decision-making for oncology patients in South Africa

This thesis applies the Intervention Mapping framework to understand the challenges oncology patients face in making informed decisions and utilises theory-based strategies to address behaviour change determinants in developing a suitable decision support program. Findings were that patients have high information needs, however patient-oncologist communication is constrained by language and cultural discordances, and limited consultation time. The resulting oncologist communication and patient coaching program will provide a culturally sensitive patient-centred approach to making informed cancer treatment decisions.

Supervisors: Dr M Patel and Professor S Norris

**BLOCH**, Nerissa Wendy

*THESIS:* Heat shock factor (HSF) expression and its effect on life table parameters in the main malaria vector *Anopheles funestus*

*Anopheles funestus* is a major malaria vector and is understudied due to the species' natural resistance to laboratory colonisation. Temperatures worldwide are rising steadily, which can affect mosquito distribution and behaviour. This study explored heat shock factor (HSF), a transcription factor, which is crucial to these physiological and behavioural processes. It is imperative to understand the role of HSF in *Anopheles funestus* as it is important to advance knowledge in order to understand this main African malaria vector.

Supervisor: Professor L Koekemoer

**BOPAPE**, Malebogo Audrey

*THESIS:* Effects of Dietary supplementation with  $\beta$ -sitosterol on Cobb 500 broiler chicken productivity, health and product quality

In commercial poultry production feeds are fortified with growth promoting synthetic antibiotics which pollute the environment, taint poultry products and cause antibiotic resistance. In pursuit of "green and climate-smart" feed supplements, this study demonstrated that  $\beta$ -sitosterol, a natural phytochemical, can replace synthetic antibiotics in broiler chicken feeds as a growth promoting feed supplement without compromising growth performance, meat yield and quality and bird health.

Supervisors: Dr E Chivandi, Dr B Lembede and Professor K Erlwanger

**CAMPBELL**, Lisa

*THESIS:* The utility of clinical exome sequencing as a first-tier diagnostic tool in critically ill infants in South Africa  
Genetic disorders significantly contribute to infant mortality and morbidity globally; nevertheless, their diagnosis remains challenging. Next Generation Sequencing (NGS)-based testing approaches have proven successful in diagnosing these conditions in infants worldwide; however, previous studies lack representation from low and middle-income countries. This pilot study demonstrated the successful implementation of NGS-based gene panels for the diagnosis and management of ill infants in the South African State healthcare system, achieving a diagnostic yield of 22%, and explored the necessary adaptations from global implementation strategies to address local challenges.

Supervisors: Professor A Krause and Dr N Carstens

**DOWNS, Sarah Leah**

*Clinical Microbiology & Infectious Diseases*

**THESIS:** Temporal changes in *Streptococcus pneumoniae* colonization in children following routine childhood immunization with pneumococcal conjugate vaccine in South Africa

This research developed a high-throughput nanofluidic real-time PCR method for detecting 92 pneumococcal serotypes and 15 bacterial species in nasopharyngeal samples, significantly improving serotype-specific analysis. Applied to South African children in rural and urban settings, the study revealed substantial declines in vaccine-type (VT) pneumococcal colonization eight years post-PCV13 introduction. However, VT 19F prevalence persisted, suggesting limitations in current vaccination effects. These findings offer essential insights into serotype dynamics in South Africa, informing future vaccine impact evaluations in similar settings.

Supervisors: Dr M Nunes and Professor S Madhi

**ENGELBRECHT, Linette**

*Nursing Education*

**THESIS:** The development of a competency-based programme for management of disease outbreaks

Disease outbreaks significantly impact global health, leading to millions of deaths and straining healthcare systems, particularly in African nations. There is a notable absence of specialised programs aimed at equipping healthcare professionals to effectively manage these outbreaks. This study employed an exploratory sequential mixed-methods approach, grounded in Critical Realism, to create and validate a tailored program for South African nurses. The final curriculum consists of ten modules designed to equip nurses with essential skills and knowledge for effective management of disease outbreaks.

Supervisors: Dr L Crous and Dr S Schmollgruber

**ESSA, Divesha**

*Pharmacy and Pharmacology*

**THESIS:** Design of a smart, stealth nano-system for targeted drug delivery in prostate cancer treatment

This research describes the design and development of an antibody-conjugated polymeric Nano-system for receptor targeted delivery of docetaxel for prostate cancer treatment. The work outlined the experimental optimisation of the Nano-system and highlighted its ability to specifically target prostate cancer in 2D and 3D in-vitro models. The results demonstrated the higher efficacy and selectivity of the targeted nano-system compared to the free drug, suggesting its potential for application in targeted prostate cancer therapy.

Supervisor: M Kaur and Associate Professor P Kondiah

**GBANDE, Sulleh**

*Nursing Education*

**THESIS:** A Nurse-led palliative care programme for women receiving palliative chemotherapy for breast cancer in Ghana

The researcher conducted a sequential multi-method study directed in four phases. The purpose was to develop, validate and pilot test a palliative nursing care programme for women receiving palliative chemotherapy for breast cancer in Ghana. The Wilcoxon rank signed-rank test showed that before the intervention severity of pain among patients was high with a mean score  $m=9.34$  ( $SD\pm 1.04$ ). However, after the intervention the severity of pain among breast cancer patients reduced, with a low mean score  $m=2.75$  ( $SD\pm 0.00$ ), with a significance of  $p$ -value  $\leq 0.05$ .

Supervisor: Mrs O Obiora

**GEEL, Jennifer Ann**

*Paediatrics and Child Health*

**THESIS:** The feasibility of introducing a harmonised treatment regimen comparing affordable blood tests and PET CT scans to improve two-year survival rates in children, adolescents and young adults with Hodgkin lymphoma in South Africa

This study aimed to improve survival of children and adolescents with classical Hodgkin lymphoma in South Africa through a harmonised treatment guideline. The retrospective component established baseline survival rates and prognostic factors. The prospective phase incorporated all state and most private paediatric oncology units, documenting higher survival with risk-stratified, response-adapted regimens. Machine learning was used to prove that low-cost blood tests could predict chemosensitivity, reducing the need for radiotherapy. Overall survival was markedly improved, especially for patients with HIV.

Supervisors: Professor D Ballot and Mr M Metzger

**GOVENDER, Melanie Ann**

*Human Genetics*

**THESIS:** Determining the risk profile for chronic kidney disease (CKD) in rural South Africans using genetic risk scores and protein markers

This thesis investigated genetic risk models for kidney disease and evaluated the proteomic profile of hypertension-associated albuminuria in black South Africans. Polygenic scores developed from different ancestries showed poor predictability in Africans, emphasising the need for large African research cohorts. Urinary proteomic data with a machine learning approach was able to classify disease status and identify proteins and pathways associated with hypertension-associated albuminuria. This research addresses the gap of omics research in resident African populations.

Supervisors: Dr J Brandenburg, Dr J Fabian and Professor M Ramsay

**GUMEDE, Siphamandla Bonga Ziphazonke**

*Internal Medicine*

**THESIS:** Strengthening understanding of effective adherence strategies for first-line and second-line antiretroviral therapy (ART) in selected rural and urban communities in South Africa

This thesis assessed the barriers and facilitators to adherence for patients receiving first-line and second-line antiretroviral therapy (ART) and evaluated adherence strategies utilised in rural and urban communities in South Africa. This study adapted the socio-ecological framework to conceptualise the complex interplay of individual-, relationships-, community- and policy-level factors that influence adherence to ART. The evidence presented in this thesis enabled the candidate to make recommendations for comprehensive, and appropriate intervention strategies to improve treatment adherence.

Supervisor: Dr S Lalla-Edward

**HLABANGANA, Linda Tebogo**

*Diagnostic Radiology*

**THESIS:** The use of social media platforms in implementing quality improvement initiatives for quality assurance of paediatric chest radiographs in radiological departments of varying radiographer expertise

The research involved detailed quality evaluation of paediatric chest radiographs before and after remote quality improvement interventions, at three geographically separated hospitals, using social media as the quality improvement tool. Although social media have demonstrated an impact in education and communication, the usage by radiographers in South Africa was limited, primarily by network costs. The study highlighted the need for novel interventions to make social networking sites into effective quality assessment and quality intervention tools in paediatric radiography.

Supervisors: Mrs I Maré and Professor S Andronikou

**HOLLHUMER, Roland**

*Ophthalmology*

**THESIS:** Ocular surface squamous neoplasia: Risk factors, diagnosis, management and outcomes at a tertiary Eye Hospital in South Africa

This study showed that Ocular Surface Squamous Neoplasia (OSSN) presents in younger patients with an equal gender distribution, when compared to high income countries. HIV was the leading risk factor. The study showed that optical coherence tomography performed the best as a non-invasive diagnostic investigation, followed by liquid-based cytology. The study examined the outcomes of a standardised management algorithm that combined surgery with topical chemotherapy and reported a low recurrence rate of 1.8%.

Supervisors: Dr P Michelow and Dr S Williams

**IBRAHIM, Ranya Mohammed Mukhtar**

*Pharmacy and Pharmacology*

**THESIS:** Development of a biocompatible hydrogel platform for wound healing and skin regeneration

This study investigated the potential of secretome derived from rat dermal fibroblast cells, incorporated into an alginate-soy lecithin hydrogel, to accelerate cutaneous wound healing both in vitro and in vivo. The hydrogel exhibited enhanced wound healing capabilities, which were attributed to the sustained release of growth factors and cytokines from the secretome. This resulted in the improved cell-to-cell communication and promoted tissue remodeling. The developed hydrogel showed promise as an effective treatment for cutaneous wounds.

Supervisors: Dr H Mndlovu, Dr P Kumar and Dr Y Choonara

**JACOBS, Jolandi**

*Physiotherapy*

**THESIS:** Bowling biomechanics, physical profiles, and injuries among female cricket players

The professional development of women's cricket has created an urgent need for injury prevention and performance research tailored to female players. This thesis addresses this need through four studies focused on female cricket: a comprehensive review of 158 sports science and sports medicine studies, an analysis of physical profiles, an investigation into injury rates, and a comparative study on sex-specific bowling biomechanics. Findings offer critical insights for clinicians and coaches, supporting tailored interventions and guiding future research in women's cricket.

Supervisors: Dr B Olivier and Dr C Brandt

**KUMALA, Justin**

*Virology*

**THESIS:** The effect of insecticide resistance on Malaria vector control in Chikwawa, Southern Malawi

Malaria remains a major public health problem in Malawi, with around 6 million cases annually. Insecticides are pivotal in controlling the mosquitoes that transmit the disease, but resistance has increased over the years. This study investigated the impact of insecticide resistance on malaria vector control in Chikwawa, a high-transmission area in southern Malawi. Findings offered an early warning of reduced control efficacy, informing the local vector control policy to prevent program failures and better protect communities from malaria.

Supervisor: Professor M Coetzee

**LOPES, Tiago Ferrao**

*Physiology*

**THESIS:** Cognitive, cardiovascular and muscular stress imposed by a Twenty20 batting simulation

Elite sporting performance is not achieved through physical prowess alone; athletes must also generate fast, accurate reactions to stimuli. This thesis pioneers methods for investigating the exercise-cognition interaction in batters during a Twenty20 innings. Results suggest that amateur batters can complete an innings with little decline in physical performance; however, cognitive performance may be compromised at higher run-scoring rates. These findings provide novel coaching paradigms to prepare batters for competition and tools to further research their skills.

Supervisors: Dr B Olivier and Miss S Kerr

**LUBEYA, Mwansa Ketty**

*Public Health*

**THESIS:** A mixed-methods analysis of the implementation and uptake of the human papillomavirus vaccination of adolescent girls in Lusaka, Zambia

This thesis explores the Human Papillomavirus (HPV) vaccination of adolescent girls from the perspective of diverse stakeholders in Zambia, specifically examining key factors that influence vaccine implementation by providers and acceptance by adolescent girls. Applying behavioural and implementation science frameworks, the study provides insights into strategies for improving HPV vaccine uptake by addressing socio-cultural, behavioural, and implementation barriers. This work contributes to the broader goal of cervical cancer prevention and serves as a foundation for strategic health interventions to enhance HPV vaccine coverage in Zambia and other low resource settings.

Supervisor: Dr M Kawonga

**MAKWERO, Martha Thokozani**

*Public Health*

**THESIS:** The Assessment of Patient-centered Care among diabetic patients in Southern Malawi

This work proposes an operational framework for patient-centred care (PCC), a quality-of-care concept in the context of chronic care medical encounters; ensuring that its functional elements are expressible and measurable through the development and validation of a measurement tool. The study confirms that PCC interactions mediate better patient experiences and outcomes yet its practice among providers especially shared decision-making is low in Malawi. Therefore, the study makes an advocacy case to promote and incentivize PCC in quality appraisal frameworks and medical education.

Supervisors: Dr A Muula and Mr J Igumbor

**MANJATIKA**, Arthur Tsalani

*Anatomical Sciences*

**THESIS:** Examination of the metatarsal diaphyseal nutrient foramina: implications for forensic analysis and morpho-functional adaptations in 19th and 20th century individuals

The role of metatarsal nutrient foramina (NF) in both clinical fracture development and management, as well as for human identification in forensic settings, was previously unclear. NF are small openings for blood vessels through bones. Using skeletal remains from the three major South African population groups, this thesis provides a comprehensive description of the topographical, morphological and trabecular microstructural variations around the NF and also demonstrates that the metatarsal NFs are applicable for forensic sex estimation in South Africans.

Supervisors: Dr J Davimes and Dr P Mazengenya

**MAPUNDU**, Michael Tonderai

*Public Health*

**THESIS:** Computational approaches to characterizing morbidity and mortality patterns in rural South Africa

This thesis explores computational techniques in analysing large-scale verbal autopsy (VA) data to characterise morbidity and mortality patterns. By leveraging machine learning (ML) and deep learning (DL), it accurately identifies prevalent diseases, mortality trends, and health disparities, providing insights into risk factors and socio-economic correlations. The study emphasises the integration of these models into the cause-of-death pipeline with human annotation, reducing VA processes, diagnosis turnaround times, and costs. Additionally, the intrinsic lack of model transparency is addressed, fostering trust and enhancing the acceptance of machine diagnoses in public health strategies.

Supervisors: T Celik, Dr C Kabudula and Mr E Musenge

**MASEKO**, Lebogang Johanna

*Occupational Therapy*

**THESIS:** Integrating rehabilitation services at primary healthcare level in Johannesburg, South Africa

This study evaluated the integration of rehabilitation into South Africa's primary health care (PHC) to advance universal health coverage. Using a multi-phase, mixed-methods approach, it highlighted integration challenges in low- and middle-income settings. Although service delivery shows adaptations, full integration remains limited due to inefficient referrals, resource constraints, and inconsistent policy application. Nevertheless, proactive rehabilitation staff, strong interprofessional collaboration, and a multidisciplinary approach suggest potential for a more cohesive model. The study proposes a patient-centred PHC rehabilitation framework emphasizing governance, teamwork, and community empowerment to enhance accessibility and accountability.

Supervisors: Dr F Adams and Dr H Myezwa

**MATUVHUNYE**, Takudzwa

*Clinical Microbiology and Infectious Diseases*

**THESIS:** Molecular characterisation of Group B Streptococcus (GBS) and its association with vaginal microbiome among pregnant women from low-middle income countries

The study investigated the genetic diversity of Group B streptococcus (GBS) in pregnant women from six sub-Saharan African and two Southeast Asian countries. The results showed differences in the prevalence of sequence types and clonal complexes between regions, with the hypervirulent GBS adhesin being prevalent in African region but absent in Southeast Asia countries. Analysis of the vaginal microbiome suggest that interventions targeting the vaginal microbiome could reduce the risk of invasive GBS disease in pregnant women and their newborns.

Supervisors: Dr G Kwatra and Professor S Madhi

**MBARUSHIMANA**, Valens

*Public Health*

**THESIS:** Early adolescents' knowledge, beliefs and behaviors regarding gender and sexuality in Rwanda: implications for their sexual experiences and health outcomes

This thesis explores how early adolescents (12-14 years) in Rwanda acquire knowledge and attitudes to promote their sexual and reproductive health and rights (SRHR). It further investigates the context and the association between this knowledge, sexual experiences and health outcomes. Early adolescents are minimally represented in policies, are taught little about recommended topics, have low SRHR knowledge, and yet they have started engaging in friendship and sexual experiences. Promoting early adolescents' sexual health requires considering all aspects of their environment.

Supervisors: Dr S Goldstein and Ms D Conco

**MLANDU**, Chenai

*Public Health*

**THESIS:** Maternal, newborn and child healthcare services utilisation in three sub-Saharan African countries (DRC, Kenya and Tanzania) using Demographic Health Surveys data from 2007-2016: Application of Generalised Structural Equation and Machine Learning Models

Maternal, newborn, and child healthcare (MNCH) is key in improving neonatal survival. The study assessed the utilisation of MNCH services and associations with neonatal mortality using Generalised Structural Equation and Machine Learning models in the DRC, Kenya and Tanzania. Antenatal, delivery and postnatal care uptake was suboptimal, inequitable and linked with neonatal mortality. Machine Learning models demonstrated high prediction accuracy of uptake of these services. Interventions like health financing, improved service delivery and mass media investments could enhance MNCH uptake, with Machine Learning application potentially improving intervention design.

Supervisors: Dr Z Matsena Zingoni and Mr E Musenge

**MNQIWU**, Khumblani

*Material Science*

**THESIS:** Design, synthesis, and bioactivity of hydroxybenzoic acid derivatives and their polymer nanocomposites  
The study explores the potential antimicrobial and anticancer properties of these designed compounds through computational modelling and experimental validation. Particularly, the research highlights the variation between in-silico predictions and experimental results, emphasising the critical importance of empirical testing. Additionally, the work investigates the use of polymer nanoparticles as a drug delivery system, demonstrating that loading the synthesised compounds onto nanoparticles significantly enhances their efficacy.

Supervisors: Dr M Patel and Dr S Moeno

**MOODLEY**, Mishalan

*Haematology and Molecular Medicine*

**THESIS:** Integrated methylome and transcriptome analysis of esophageal squamous cell carcinoma in the South African cohort

Esophageal squamous cell carcinoma (ESCC) is a highly prevalent and deadly cancer in South Africa. This study investigated DNA methylation and gene expression changes in Black South African ESCC patients. We discovered significant DNA methylation alterations that aligned with changes in gene expression for key genes: KRT13, Cdc42EP3, TNC, and COL6A3, involved in extracellular matrix (ECM) remodelling. These epigenetic changes may contribute to tumour invasion and metastasis. Our findings underscore the potential of targeting ECM pathways for novel ESCC therapies.

Supervisors: Dr P Willem and Professor C Mathew

**MOOSA**, Fahima

*Clinical Microbiology and Infectious Diseases*

**THESIS:** Prevalence and molecular epidemiology of Bordetella pertussis infection in South Africa

Pertussis remains a public health concern in South Africa, evidenced by rising case numbers and outbreaks in recent years. This study focused on describing the incidence, transmission dynamics, serological attack rates, and molecular epidemiology of Bordetella pertussis in South Africa from 2015 to 2019. The study outcomes highlight that the increase in cases is unlikely attributed to genetic changes in the pathogen but rather suggests declining population immunity following routine use of acellular vaccines or gaps in population immunity as potential causes.

Supervisors: Dr A Von Gottberg, Dr M Du Plessis and Mrs N Wolter

**MOSHOETTE**, Tumelo

*Haematology and Molecular Medicine*

**THESIS:** Engineering bispecific antibodies targeting HIV-1 subtype C

In this thesis, the researcher describes the engineering of two novel bispecific antibodies that comprise of a host-targeting antibody, ibalizumab, and the anti-HIV-1 antibodies CAP256 and N6. The resultant bispecific antibodies, iMab-CAP256 and iMab-N6 exhibited increased neutralisation coverage against HIV-1 in comparison to their parental antibodies with iMab-CAP256 exhibiting enhanced potency. Moreover, iMab-CAP256 compared favourably to previously published bispecific antibodies, 10E08-iMab and PG9-iMab. Subject to further preclinical development, these bispecific antibodies are ideal candidates for developing immunotherapy and immunoprophylaxis strategies against HIV-1.

Supervisors: Professor M Papathanasopoulos and Dr M Killick

**MUHAYIMANA, Alice**

*Nursing Education*

**THESIS:** Development of strategies for Health Care Providers to sustain respectful maternity care to women in labour

Respectful Maternity Care (RMC) is a fundamental human right. This Thesis points to development of strategies to sustain RMC. Advancing the scientific discourse with evidence to promote a global culture of RMC. Using an Appreciative Inquiry method, positive childbirth experiences of women and best practices of healthcare providers, emerged. A mixed methods approach, expert national and international reviews, led to predictors of elevated RMC for strategy development. The end product inform how standardised RMC practices for Rwanda can be defined in the broader health system and integrated collaboratively by the relevant stakeholders.

Supervisor: Mrs I Kearns

**MURTALA, Muhammad Dandare**

**THESIS:** Effect of Haloperidol on stress hormones and quality of sleep in Intensive Care Unit patients with delirium ICU patients often face challenges related to delirium and sleep. This study evaluated the effect of haloperidol on managing acute stress in ICU patients, specifically its impact on sleep quality, cortisol, and melatonin levels. Both hormones were reduced in the haloperidol treated group compared to the untreated group, with sleep quality adversely affected. A validated HPLC method was developed to monitor plasma levels of haloperidol and tramadol. Alternative treatment to haloperidol is needed to optimise care of ICU patients with acute stress.

Supervisors: Dr A Van Eyk and Dr S Schmollgruber

**MWANGALA, Patrick Nzivo**

*Public Health*

**THESIS:** Ageing with HIV: Psychological wellbeing and its biopsychosocial determinants at the Kenyan coast

The ageing of the HIV population has created a subgroup of vulnerable older adults living with HIV, thus demanding a prompt response in research, policy, and practice. This thesis examined the psychological and functional wellbeing of these adults in a low-literacy Kenyan setting using a mixed methods study. Findings suggest that these adults are at risk of mental ill-health, frailty and cognitive impairments in selected domains. Many of the observed determinants of these outcomes are psychosocial factors and potentially modifiable.

Supervisors: Dr R Wagner and Professor C Newton

**NEOPHYTOU, Natalia**

*Therapeutic Sciences*

**THESIS:** A model of care which includes motor proficiency and physical activity levels for children with Autism Spectrum Disorder

This thesis developed a comprehensive model of care for children with autism spectrum disorder (ASD). The model provides a novel framework for addressing physical inactivity and reduced motor proficiency and emphasizes the need to integrate motor-related aspects into standard ASD care. The model identifies key stakeholders who should be involved in the process, and highlights the need for multidisciplinary, and individualised management. The model includes guidance regarding appropriate education and awareness, individualised assessment, integrated feedback, intervention development and efficacy monitoring relating to the motor skill profiles of children on the spectrum.

Supervisor: Dr G Torres

**NEVONDWE, Patracia Livhuhani**

*Human Genetics*

**THESIS:** Designing and evaluating the utility of a panel of de novo mutation (DNM) enriched genes for diagnosing South African patients with developmental delay

Developmental disorders are diverse and life-altering conditions, with approximately half having a genetic basis. However, many patients remain undiagnosed due to limitations in current testing methods, resulting in significant health burdens in resource-constrained settings, such as the South African State healthcare system. This thesis presents a cost-effective screening approach that employs a panel of de novo mutation-enriched genes, offering a practical solution for diagnosing developmental disorders. This approach serves as a starting point for developing cost-effective diagnostic strategies in resource-constrained settings, ultimately enhancing patient outcomes.

Supervisors: Dr N Carstens and Professor A Krause

**OLADEJO**, Temitope Seun

*Physiotherapy*

**THESIS:** HIV-related disability: development of a contextualised physical activity program

The study explored the interplay between disability, health perceptions and physical activity among people living with HIV (PLWH) in Nigeria using a mixed-methods research design. The majority of participants did not meet WHO-recommended physical activity guidelines and barriers included fatigue, lack of time and an unsupportive environment. This study aimed to bridge these gaps. Through scoping reviews, interviews of PLWH and an expert panel, an intervention program was developed to empower PLWH to engage in regular physical activity.

Supervisors: Dr A Ajidahun, Dr H Myezwa and Dr S Ibeneme

**PADARATH**, Kiyasha

*Internal Medicine*

**THESIS:** Comparison of the proteome of Huh-7 cells transfected with different (sub)genotypes of Hepatitis B Virus prevailing in sub-Saharan Africa

Hepatitis B virus prevails in sub-Saharan Africa and is a major cause of liver cancer. For the first time, the study showed that African strains of HBV can affect protein expression of liver cells in tissue culture. The disturbance of pathways by the virus can play a role in the development of liver cancer.

Supervisors: Dr A Deroubaix and Professor A Kramvis

**PHAKOAGO**, Makabudi Valery

*Physiology*

**THESIS:** Myrmecophagous mammals in a changing world: the ecology of aardvarks and Temminck's pangolins in the Kalahari

Many mammals are facing increasing heat loads together with reduced water and food availability as a result of climate change. The candidate explored the physiological ecology of the aardvark and the ground pangolin, two elusive species that we know very little about, by investigating how their diet, food availability and behaviour change with changes in the climate. This thesis has provided crucial information on how these mammals will cope in a changing world, and how best to conserve them.

Supervisors: Dr A Fuller and Professor S Maloney

**SEKOME**, Kganetso

*Public Health*

**THESIS:** Feasibility and acceptability of a contextualized physical activity and diet intervention for hypertension control in a rural adult population of South Africa

Adults in rural South African settings have high levels of uncontrolled hypertension. This thesis sought to develop, implement and assess the feasibility and acceptability of an intervention to adjust routine physical activity and diet for hypertension control in adults aged 40 years and over. 100% of targeted participants were recruited, 93% were retained and 93% provided complete data. The intervention presented high levels of feasibility, acceptability, and fidelity with all four measures of fidelity showing that the intervention was delivered as planned.

Supervisors: Dr F Gomez-Olive Casas and Dr H Myezwa

**SHABAN**, Siham Ibrahim Ahmad

*Clinical Microbiology and Infectious Diseases*

**THESIS:** Antifungal activity of synthetic peptides targeting apoptosis in candida auris

This thesis investigated the therapeutic potential of antimicrobial peptides (AMPs) as a novel approach to combat the multidrug-resistant pathogen *Candida auris*. *C. auris* is an emerging global healthcare threat, particularly among immunocompromised individuals. This study demonstrated the effectiveness of AMPs against *C. auris* by targeting multiple mechanisms, including membrane disruption, apoptosis induction, inhibition of virulence factors and efflux pumps and synergized with conventional antifungals. These findings highlight AMPs as promising candidates for developing novel therapeutic agents against *C. auris* infections.

Supervisors: Dr A Ahmad and Dr M Patel

**SIMAMANE**, Mandisa Jewel

*Biokinetics*

**THESIS:** Physical activity intervention plan for hypertensive patients of Umlazi township, KwaZulu-Natal

The global rise in hypertension, driven by aging, sedentary lifestyles, and obesity, increases cardiovascular risks. The study investigated the implementation of a physical activity intervention plan, coupled with family member involvement within the primary healthcare sector, would contribute to the effective management of hypertension among hypertensive patients residing in the community of Umlazi township, KwaZulu-Natal. The findings reaffirm the synergy of pharmacological and lifestyle interventions, advocating for clinical integration of physical activity and family support in hypertension management.

Supervisor/s:

**SINGH, Ashmika**

*Virology*

**THESIS:** Characterisation of the dynamic gut microbiota of members of the *An. gambiae* complex. Malaria is transmitted by *Anopheles* mosquitoes, which are increasingly challenging to control through conventional insecticide-based methods. Therefore, alternative control methods are necessary. Ideally, these should avoid chemical interventions. The gut microbiota of mosquitoes plays a crucial role in shaping their life history, making microbiome manipulation a promising biocontrol strategy. This study characterised the gut microbiome of the *Anopheles gambiae* complex, along with examining how changes in the larval environment, through exposure to heavy metals and salt, impact the adult gut microbiota.

Supervisor: Dr S Oliver

**SMITH, Tiffany Shenay**

*Haematology and Molecular Medicine*

**THESIS:** Inactivating hepatitis B virus replication using obligate heterodimeric TALEN-encoding mRNA. The study explored a novel approach to treating chronic hepatitis B virus (HBV) infection. Each year, this infection causes over 1 million deaths because current vaccines and treatments do not effectively counter the virus. Research reported in the thesis focused on using mRNA to encode engineered gene editors, called TALENs, that disable HBV permanently. Preclinical evaluation showed significantly reduced viral replication without harmful side effects. The study marks the first successful use of TALEN-encoding mRNA to inactivate HBV.

Supervisors: Dr A Ely and Professor P Arbuthnot

**STAMP, Gabriella Elisabeth**

*Physiology*

**THESIS:** The association between adult attachment style and pain perception in a South African cohort. This thesis involved two studies that aimed to investigate the complex association between adult attachment style and pain in a South African population. The large nationwide survey found that insecure (compared to secure) attachment styles were associated with higher chronic pain prevalence. However, it found no association between attachment style and pain perception in the second study using a controlled experimental setting, suggesting complex factors at play in chronic pain that may not be replicable in controlled experiments.

Supervisors: Miss S Iacovides and Mrs A Wadley

**SUBRAMONEY, Kathleen**

*Virology*

**THESIS:** Molecular epidemiology and characteristics of immune adaptations across the SARS-CoV-2 spike glycoproteins from Gauteng, South Africa, 2020 to 2022

This study described and analysed lineages during 2020 to 2022 among 2381 SARS-CoV-2 genomes sequenced. Despite dominance of variants of concern, other lineages with continued circulation at lower frequencies harboured similar mutations of significance. Heterogeneous infections detected in 9% of individuals may explain the diverse SARS-CoV-2 lineages; and contribute to the virus's ability to rapidly evolve and escape neutralising antibodies. A novel spike construct, wherein cytotoxic T cell epitopes were maximised through accounting for SARS-CoV-2 diversity, was successfully generated.

Supervisors: Dr F Treurnicht and Professor B Fielding

**TOMMY, Kimberleigh Ashley**

*Anatomical Sciences*

**THESIS:** A comparative study of trabecular structure of the patellofemoral joint: Evolutionary and Biomechanical perspectives

This thesis analysed trabecular bone structure of several primate patellofemoral joints using high-resolution MicroCT scans. Significant differences in structure among extant primates and fossil hominins were found, likely stemming from species-specific locomotor behaviours. In humans, variations in trabecular structure were associated with different activity levels and degrees of osteoarthritis. The results highlight the complexity of knee joint loading and emphasise the need for further studies to better understand primate knee biomechanics.

Supervisors: L Schepartz, Dr B Zipfel and Dr K Carlson

**WAGNER, Fezile Sthembile**

*Public Health*

**THESIS:** A nexus of student food (in)security, common mental disorders, and academic success in the midst of the COVID-19 pandemic

This thesis investigates the impact of COVID-19 on food insecurity and mental distress among first-year students at a large urban South African university, using a mixed methods research design. Results show that, despite lower failure rates, dropout rates increased during the pandemic. While food security improved, mental distress also rose. The study links heightened dropout rates to food insecurity and mental distress, emphasising the critical need for psycho-social support in higher education, especially in times of disruption.

Supervisor: Dr F Gomez-Olive Casas

**WEINBERG**, Micaela Darielle

*Physiotherapy*

*THESIS:* An assessment framework of the shoulder girdle in participants with temporomandibular disorders  
A rise in prevalence and chronicity of temporomandibular disorders motivated the need for an expansion in the knowledge on other connecting areas of the temporomandibular joint, such as the shoulder girdle. This thesis consisted of four phases to achieve a consensus on an assessment framework of the shoulder girdle in participants with temporomandibular disorders. It provided an in-depth assessment of the connections between the temporomandibular joint and shoulder girdle expanding the current body of evidence of these two areas.  
Supervisors: Dr B Olivier and Mr S Kunene