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# **FACULTIES OF COMMERCE, ENGINEERING AND THE BUILT ENVIRONMENT, HEALTH SCIENCES, HUMANITIES, LAW AND SCIENCE**

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## **ORDER OF PROCEEDINGS**

Academic Procession.

*(The congregation is requested to stand as the procession enters the hall)*

The Presiding Officer will constitute the congregation.

The National Anthem.

Musical Item.

Welcome by the Master of Ceremonies.

The Orator will present Ms J Cole, Mr T Mbambisa, Dr C Solomon, and  
Ms V Williams to the Presiding Officer for the award of an honorary degree.

The graduands will be presented to the Presiding Officer by the Deans of the faculties.

The Presiding Officer will congratulate the new graduates.

The Master of Ceremonies will make closing announcements and invite the congregation to stand.

The Presiding Officer will dissolve the congregation.

The procession, including the new graduates, will leave the hall.

*(The congregation is requested to remain standing until the procession has left the hall.)*

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# NATIONAL ANTHEM

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Nkosi sikelel' iAfrika  
Maluphakanyisw' uphondolwayo,  
Yizwa imithandazo yethu,  
Nkosi sikelela, thina lusapho lwayo.

Morena boloka etjhaba sa heso,  
O fedise dintwa la matshwenyeho,  
O se boloke,  
O se boloke setjhaba sa heso,  
Setjhaba sa South Afrika – South Afrika.

Uit die blou van onse hemel,  
Uit die diepte van ons see,  
Oor ons ewige gebergtes,  
Waar die kranse antwoord gee,

Sounds the call to come together,  
And united we shall stand,  
Let us live and strive for freedom,  
In South Africa our land.

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## HONORARY DEGREE

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**Josette Cole**

**Doctor of Social Science (*honoris causa*)**

Ms Cole exemplifies both exceptional scholarship and a remarkable contribution to public service and knowledge creation. This is demonstrated in her dedication to documenting, foregrounding, and honouring the lived experiences and stories of marginalised communities in the Western Cape. Most importantly, she had documented and analysed the anti-apartheid struggle, particularly during the important period of transitioning to democracy.

Having played a leadership role in key organisations, Ms Cole's current work focused on promoting heritage by bringing to the fore aspects of the history and culture of Cape Town. She had published extensively, and although she held a master's degree cum laude, she had not been able to complete a PhD due to the nature and extent of her work. This did not target academic journals and an academic audience but focused on providing analysis and insight into community and organisational challenges and struggles.

Ms Cole was presently working on promoting heritage, bringing to the fore previously hidden or unattended aspects of the history of Cape Town and the Western Cape. This involved reaching out to and inviting into heritage discussions people who may once have been excluded from these. Overall, this was very much in line with UCTs Vision 2030.

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# HONORARY DEGREE

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**Tete Mbambisa**

**Doctor of Music (*honoris causa*)**

Tat'uMbambisa is a well-known South African composer and pianist who has significantly influenced jazz scholarship. He has contributed to national and international academic institutions throughout his career through mentorship, workshops, and performances. What stands out is not only his national reputation but also international publications foregrounding Tat'uMbambisa's thinking. As a pianist, Mr Mbambisa's contribution, on record, can be traced as early as the 1960s in the seminal recording of Inhlupheko with The Soul Jazzmen showcasing Mr Mbambisa's piano skills and intense musicality, at a time where such was rare in South Africa. His compositional techniques match those of the post-bop eras in the US, a style that can be traced in the musical journey of Art Blakey's Jazz Messengers.

Mr Mbambisa and his peers in the 60s did not go through any 'formal' university program to play this music. Similarly, in the early years, there was no exposure to all the musical transcription technologies available today that make studying this music much easier. It is also significant to mention the socio-political contexts under which this music was created, from the Sharpeville Massacre of the 1960s to the Soweto Uprising of 1976. In Mbambisa's case, these disturbances and catastrophes were experienced first-hand and responded to via the sonic. Traces of these musical responses can be found, for instance, in 'Black Heroes' a piece written a few months before the June 16th Soweto Uprising as a retaliation to the social injustices of the apartheid regime.

The features of Mbambisa's pianism, compositional rigor, and innovation live 'mainly' in the realm of the 'informal' such as jazz jam sessions and recordings by other artists but often not acknowledged in academia through curriculum or even histories. Although Mbambisa has visited various institutions such as the University of Fort Hare, University of KwaZulu Natal, Stellenbosch University and York University among others where he has rendered performance workshops, his work has not received thorough academic engagement. In this sense, Mbambisa's contributions still live in the peripheries of the informal positioned in the townships by the colonial regime.

There is then a kind of decolonial shift that an acknowledgement of Mbambisa's life and works, in an institution such as UCT, stands an opportunity to facilitate. This honour is important both culturally and politically and is long overdue considering Tat'uMbambisa's long-standing contribution to South African arts and culture, and is one that will mark UCT as an institution that is alive to the varied modalities of artistic, intellectual, and political excellence available to citizens of Tat'uMbambisa's generation.

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## HONORARY DEGREE

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**Dr Colette Solomon**

**Doctor of Social Science (*honoris causa*)**

Dr Solomon is a Director for the Women on Farms Project (WFP) a feminist South African non-governmental organisation which works with women farm workers and dwellers to capacitate and support them to know, claim and realise their rights. WFP's Labour Rights Programme focuses on challenging and addressing farmwomen's labour rights violations. She is a social justice activist who could have chosen a different life if she wanted – either as an academic (with a cum laude Masters, a PhD and a base in the UK) or as an international consultant (e.g., Save the Children UK, Concern Worldwide, ILO, UN-OCHA, SIDA, UNICEF, etc). Her achievements go beyond any awards or distinctions. But she chose a vastly different and much harder route – to come back to a low resourced NGO servicing a very marginalised population (farm workers in SA) without any other reason than wanting to make a difference in South Africa.

Dr Solomon's activism has focused at advancing gender and racial equity. Through her activism, studies and work experience she has honed her expertise in the areas of rural development and women's rights. Colette has had an incredible impact on people's lives. Her activism has allowed people to be seen and heard and feel like there is someone who fights in their corner. Under Colette's leadership, WFP won the Institute for Justice and Reconciliation 2015 Reconciliation Award for 20 years of shaping reconciliation by strengthening the capacity of women who live and work on farms. In 2018 WFP received the Action for Equity Award that aimed to extend the reach and impact of the Atlantic Fellows for Social and Economic Equity programme.

Dr Solomon is described as a social change agent who can navigate multiple environments with ease. She is said to have an incredible ability to translate content into strategy. She has committed her life to improving the lives of the poor and marginalized and has used research to inform policy advocacy to giving a voice to women. Her courage and bravery do not only offer policy papers and positions and speak the talk, but she is also willing to put her own life in harm's way to advocate and speak out for the voiceless.

Dr Colette Solomon epitomises the Vision 2030 ethos of unleashing human potential and contributing to Africa's challenges by Africans.

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# HONORARY DEGREE

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**Veronica Williams**

**Doctor of Music (*honoris causa*)**

**Awarded Posthumously**

Ms Williams' journey in dance began when she was two years old. Her father would place her on top of a paraffin tin, or the piano and she would be dancing while he played. After her father's passing, she lived with her adoptive parents from 1946 in the diverse and vibrant community of District Six in Cape Town. She joined the Eoan Group, a cultural organisation founded by Ms Helen Southern - Holt in 1933, offered ballet classes and so, the second part of my dance journey began.

In 1955, the Nationalist Party Apartheid government, implemented the Group Areas Act, forcibly and unjustly relocating families. A rich, socially and culturally generative, strongly bonded community was destroyed. Her family was re-located 25km away to Bridgetown, a Cape Flats township for working class people classified Non-European. Her parents could not afford the travelling costs, and she was forced to stop classes at the Eoan Group, but the love she had for dance never left her.

The third stage of her dance journey began in 1968 as she married and started a family in Kensington. Like most townships for oppressed people during Apartheid, this was another austere and psycho-socially harsh environment. Given her own enriching experiences with dance, she wanted to offer the experience to young children and the youth as an antidote to the deprivation suffered in townships. With the help of family, friends and community members, she founded The Wilvan Ballet School, a non-profit organisation. Given the socio-economic and political era, she adopted an anti-apartheid stance, and the school was bound by the principles, of non-racialism, non-sexism, and non-sectarianism.

They attained the necessary Classical Ballet qualifications by attending evening classes at the University of Cape Town Ballet School. The principal, Dr Dulcie Howes, then invited Ms Williams to do the Teacher's Certificate Course. As part of this course, she completed an Introduction to Spanish Dance focussing on Regional, Classical and Flamenco Dancing. Ms Williams has received the Mercedes Molina Award in 1985 and again in 1989, for being the best examination candidate in the Cape Province for both my Segundo Ano Estudiante and later the Tercer Ano Estudiante final dance examinations.

Unfortunately, in 2010, due to ill-health, she had to stop all teaching and examining. However, she maintained constant contact with Wilvan teachers and dancers, and they will keep the torch of flamenco burning for many decades. Veronica Williams, passed away on the 15th of October 2022 due to ill health and the Honorary Degrees Committee recommended the conferral of the degree posthumously in her honour as these were exceptional circumstances.

## NAMES OF GRADUANDS

The symbol † indicates that the qualification is awarded posthumously

### 1. FACULTY OF COMMERCE

*Dean: Professor S Goodman*

#### DEGREE OF DOCTOR OF PHILOSOPHY

Cornelis Johannes Botha

Thesis Title: *Exploring the disharmony between the temporary and permanent organising forms in a parastatal*

Cornelis Botha has been a project management professional for 40 years. He holds an MSc in Management of Technology and Innovation and began his doctoral studies in 2014.

Cornelis Botha's research explores the tensions between temporary and permanent organising forms when projects are executed, with a parastatal as the research setting. The research reports that disharmony exists between these two organising forms, culminating in a dichotomous paradox where the firm is polarised in its internal administration. This results in significant challenges for the successful execution of temporary initiatives. Applying the Actor Network Theory as the theoretical lens, and specifically the key tenets of the Sociology of Translation, enabled the development of a Framework of Temporal Fluidity. The framework is useful as a basis for the rational design of organisational maturity determinations and cohesive business execution models.

*Supervisor: A/Professor S Gossell*  
(Graduate School of Business)

*Co-supervisor: Dr D Krüger*

Nqobile Umenathi Bundwini

Thesis Title: *Destigmatising the recreational cannabis industry*

Nqobile Bundwini completed her BCom and BCom(Hons) qualifications at the University of Pretoria and her MCom at UCT. She began full-time doctoral studies in 2019.

Nqobile Bundwini's thesis reports on the destigmatisation landscape of the recreational cannabis industry in South Africa. The thesis investigates destigmatisation processes and strategies employable by cannabis organisations through three separate but interconnected studies. First, she conducted a systematic literature review of organisational destigmatisation and established a practitioner-driven research agenda. Second the study depicted the destigmatisation landscape of South African recreational cannabis organisations through a mixed methods content analysis. Third, the research explored the influence of destigmatisation strategies on attitudes towards cannabis. These findings inform the adoption of the nascent cannabis industry as it becomes legalised in South Africa.

*Supervisor: Dr J Lappeman* (UCT  
Unilever Institute of Marketing)

Joel Mugove Chigada

Thesis Title: *Towards an aligned South African National Cybersecurity Policy Framework*

Joel Chigada completed his MBL and PhD qualifications at the University of South Africa and began part-time study towards his PhD at UCT in 2017.

Joel Chigada's thesis measures the degree of alignment of factors contributing to the South Africa's National Cybersecurity Policy Framework (SA-NCPF). The influencing factors interact with each other continuously, producing complex relationships which are difficult to measure using linear approaches. Therefore, it was necessary to consider and measure these relationships as Gestalts. The study proposes that the stronger the coherence among the influencing factors, the more aligned the SA-NCPF. Joel develops an integrative

theoretical framework to provide a comprehensive overview of the South African law-making process. He uses the integrative theoretical framework and a Gestalts approach to develop a conceptual model of alignment, which is validated through Bayesian statistics and cluster analysis to confirm the degree of influence of factors to the misalignment of the SA-NCPF.

*Supervisor: Professor M Kyobe*  
(Information Systems)

Tendani Mulanga Chimboza

Thesis Title: *ICT organisations' minimal compliance with affirmative action regulations: the case of Broad-Based Black Economic Empowerment (B-BBEE) ICT Sector Code in South Africa*

Tendani Mulanga Chimboza holds a BSocSci from the University of Fort Hare, and a MA from the University of the Western Cape. She joined the Department of Information Systems at UCT in 2017 to commence her doctoral studies.

Tendani Chimboza's thesis focuses on ICT organisations' limited compliance with the affirmative action policy called the Broad Based Black Economic Empowerment (B-BBEE) ICT Sector Code. She investigates how contextual factors affect low levels of compliance with the B-BBEE ICT Sector Code. She finds that organisational logics of action, policy implementation context, and organisational legitimisation are factors that affect compliance with the code. She argues that ICT organisations leverage regulatory loopholes (e.g., point-system compliance) in the B-BBEE ICT Sector Code to comply with it in a manner that does not add value for the economic transformation process. Her findings show that quantifying Black people's involvement in ICT organisations to increase B-BBEE points has resulted in tokenism and commoditisation of gender and race, making the beneficiaries the means to a desirable end.

*Supervisor: Professor W Chigona*  
(Information Systems)

Mamorena Lucia Matsoso

Thesis Title: *Linking entrepreneurial motivation, attitude, behaviour and sustainable supply chain performance measurement in South African manufacturing small and medium enterprises*

Mamorena Matsoso completed her degree in Cost and Management Accounting at the Central University of Technology, and her Higher Diploma in Higher Education and Master's degree at the Cape Peninsula University of Technology. She joined UCT for her doctoral studies in 2018.

Mamorena Matsoso's thesis investigates motivations, attitudes, and behaviours and their link to sustainable supply chain performance measurement adopted by three types of entrepreneurs in small-to-medium scale enterprises, namely necessity, goal-oriented, and legacy entrepreneurs. Necessity entrepreneurs focus on survival, goal-oriented entrepreneurs are inspired by a long-term vision, while legacy entrepreneurs focus on protecting their family name and sustaining generational wealth. The findings reveal that goal-oriented entrepreneurs' motives, attitudes, and behaviour positively impact the adoption of sustainable supply chain performance measurement. Necessity entrepreneurs on the other hand are less predisposed to its adoption. Finally, legacy entrepreneurs have a lukewarm interest in adopting sustainable supply chain performance measurement. In her findings, institutional normative and mimetic pressures and resources play a central role in the adoption of sustainable supply chain performance measurement, while coercive pressure from government policies have a weak influence on the adoption of such performance measurement by small-to-medium scale entrepreneurs.

*Supervisor:* A/Professor R Chivaka (Graduate School of Business)

*Co-supervisor:* Professor M Samuelsson (Graduate School of Business)

Obrian Ndhlovu

Thesis Title: *Climate-change adaptation among smallholder farmers in Zambia*

Obrian Ndhlovu holds a BA in Economics from the University of Zambia and MSc in Economics for Development from the University of Oxford. He joined the School of Economics at UCT in 2019 for his doctoral studies. He has previously taught Economics at the University of Zambia.

Obrian Ndhlovu's thesis investigates the strategies smallholder farmers use to adapt to climate change, the impact of policy reforms on the adoption of climate-smart farming practices, and whether farmers find these practices, particularly conservation farming, beneficial. He uses the two-wave Rural Agricultural Livelihood Surveys, and primary in-depth interviews with agricultural extension workers. He finds that adoption levels remain low, with evidence of adoption reversal. He attributes this to the low usage of complementary practices such as the use of herbicides and the practice of open grazing, as well as the lack of structured input and output markets for crops besides maize. Policy reforms have influenced the adoption of crop diversification and crop rotation, but this influence is limited by the general inertia in the private markets to support other crops. He also finds that the adoption of conservation farming does improve crop performance but only in low rainfall settings.

*Supervisor:* Professor E Muchapondwa (Economics)

Leigh Neethling

Thesis Title: *Beyond enrolment: academic incentives, outcomes and performance in higher education*

Leigh Neethling holds BCom and MCom (Economics) qualifications from UCT where she currently teaches Economics.

Leigh Neethling's thesis investigates academic outcomes at UCT. She first explores the impacts of academic incentives (such as the deans' merit lists), finding them to be unexpectedly negative. It then examines patterns of academic achievement exhibited by

different groups of students, finding that gender and racial differences explain the divergent academic trajectories seen after enrolment. She next investigates the probability of degree switching, and again finds that gender and race are the most relevant predictors, while degree switching fails to improve outcomes. Finally, she investigates exit outcomes for students in higher education, observing that male students are more likely to be academically excluded. The analysis suggests that, despite the appeal of interventions to close the racial attainment gap at UCT, care must be taken if these are not to prove counter-productive.

*Supervisor:* Emeritus A/Professor T Leiman (Environmental Policy Research Unit)

Musawenkosi Nxele

Thesis Title: *Not about rules, but about good deals: the political economy of securing inclusive capital investment and transformation in South African mining*

Musa Nxele holds an MRes in Economics from the University of Paris 1 Sorbonne and an MCom from UCT. He commenced his doctoral studies in 2018. Before joining UCT, he worked in development consulting in both the private sector and in higher education.

Musa Nxele's thesis focuses on the political economy of deals and investment in the mining sector of South Africa, and on the economic impact of industrial mines on local community poverty and employment. First, his thesis explores interactions between the objective of spurring the growth of capital investment in mining, and the objective of transforming the racial composition of South Africa's mining elites. Second, he evaluates how mining fixed investment eventually impacts mining hosting communities. In relation to the political economy of elite bargains, Musa's study finds compelling evidence that 'deals are the basis of credible commitment' to securing investment. On mining and local community welfare, Musa finds that the opening of mines alleviates poverty and creates employment, while the closure of

mines exacerbates poverty and reduces employment. His research contributes to the literatures on the resource curse and on the political economy of capital investment.

*Supervisor:* Professor B Levy  
(Development Policy and Practice)  
*Co-supervisor:* Professor R Bazillier  
(Economics)

Emma Jean Whitelaw  
Thesis Title: *Post-school education in an unequal society*

Emma Whitelaw holds a BSocSci in Economics and Xhosa Communication, and an MA in African Languages and Literatures from UCT. After completing her MSc in Economics and Public Policy at the University of York, she returned to UCT to enrol for her PhD in 2020.

Emma Whitelaw's thesis explores socioeconomic inequalities in post-school education in South Africa. In particular, she analyses inequalities in access, success, and graduate realities. Concerning access, she uses the concept of economic vulnerability to differentiate the socioeconomic circumstances of households in South Africa and locate them within the context of the current post-school funding policy. Regarding success, using data on UCT undergraduates, she shows that household inequalities appear to be playing out in student academic performance differentials at the institution to a greater extent since COVID-19. Lastly, the extent to which post-school education promotes upward mobility can be hampered by inequalities in graduate realities. In this regard, empirical evidence suggests that for Black Africans, the probability of remitting is higher for graduates, over and above income and employment status. An overarching impression from her findings is therefore the layered complexities of post-schooling-related inequalities both within the system and within society more broadly.

*Supervisor:* Dr N Branson (Southern Africa Labour and Development Research Unit)  
*Co-supervisor:* Professor M Leibbrandt (Southern Africa Labour and Development Research Unit)

## 2. FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

*Dean:* Professor A Lewis

### DEGREE OF DOCTOR OF PHILOSOPHY

Emmanuel Yahli Ali  
Thesis Title: *Visual localisation of electricity pylons for power line inspection*

Emmanuel Ali holds a BEng from the Federal University of Technology, Nigeria and a MSc from the University of Sheffield. He enrolled for full-time doctoral studies in the Department of Electrical Engineering at UCT in 2017.

Emmanuel Ali's thesis focuses on developing localisation algorithms for electricity pylons that will aid in the inspection of power line infrastructure. The localisation provides the position and orientation of a camera, mounted on a robot, relative to the pylon. This can guide the inspection of components on or around the pylon. He used a convolutional neural network to find unique points on the pylon, a model-based search technique to establish correspondence and solve for the localisation, and a filtering method to track the incremental movement of the camera. The work can be used for navigation and control of an inspection robot.

*Supervisor:* A/Professor F Nicolls  
(Electrical Engineering)

Kehinde Hassan Babalola  
Thesis Title: *Assessing land administration systems and their legal frameworks: the case of peri-urban land in Ekiti State, Nigeria*

Kehinde Babalola completed his MSc in Geomatics specialising in land administration and cadastral system research at UCT in 2018. He commenced his doctoral studies in 2019. He is a Nigerian professional land surveyor and in 2022 became a South African professional engineering surveyor.

To reduce potential conflicts

and improve land tenure security in peri-urban areas of Nigeria, Kehinde Babalola's thesis assesses land administration systems (LASs) and associated legal frameworks through three case studies in Southwest Nigeria. He examines the extent of deep and weak legal pluralism in LASs using soft system methodology, and two analytical frameworks based on responsible land management and fit-for-purpose land administration. He also uses institutional isomorphism theory to examine pressures exerted on the customary legal system. His findings show that human rights, the rule of law, and legal pluralism are required in the constitution to achieve sustainable and significant LASs and their legal frameworks. He further develops a legal pluralism model that will ensure tenure security of peri-urban dwellers using three pillars of jurisdiction, legitimacy, and collaboration.

*Supervisor:* Dr S Hull (Geomatics)  
*Co-supervisor:* Professor J Whittall (Geomatics)

Alice Titus Bakera  
Thesis Title: *Biogenic acid corrosion of sewer concretes with different binders: in-situ and model studies, with advancement of the life factor prediction method*

Alice Titus Bakera obtained her BSc in 2015 at the University of Dar es Salaam, Tanzania, and her MSc(Eng) at UCT in 2018. She then began her doctoral studies in the Department of Civil Engineering.

Alice Bakera's thesis emphasises the longevity of sewer concrete structures, with structural failure due to acid corrosion having catastrophic implications. Her work considers biogenic acid corrosion, which is caused by acid generated in concrete sewers, and which corrodes sewer concrete. Her research focuses on understanding the overall material deterioration mechanisms, and re-thinking and improving a preferred prediction model, the Life Factor Method. This allows for the design of sewer concrete to cover a broad range of binder systems and aggregate types when exposed to different sewer conditions.

The findings provide engineers with a convenient and effective tool for predicting the corrosion rate of sewer concretes, with recommendations for selecting the most durable mix designs.

*Supervisor:* Emeritus Professor MG Alexander (Civil Engineering)  
*Co-supervisor:* Professor H Beushausen (Civil Engineering)

Luis Humberto Raul Beiza Lazcano  
Thesis Title: *Studies on the hindered dissolution of chalcopyrite in chloride heap leach environments*

Luis Beiza Lazcano is a lecturer in Metallurgical Engineering and holds a BSc and MSc in Metallurgy from the Universidad Catolica del Norte, Chile. He joined the Department of Chemical Engineering at UCT in 2017 to commence his doctoral studies.

Luis Beiza's thesis focuses on the dissolution of the copper mineral chalcopyrite in acidic solutions at high chloride concentrations, investigating the effect of different solution conditions, redox potentials, and physical accessibility of the mineral. Studies were conducted with chalcopyrite grains on a free surface as well as occluded inside an artificial pore and within a coarse particle typical of heap leaching. He found that the dissolution of the occluded mineral is more limited. The presence of chloride and cupric ions increases matrix porosity which improves copper extraction; at the same time, low potentials inside the pores lead to the reduction of chalcopyrite to other sulfide minerals that inhibit its dissolution. Operating at elevated temperature both increased porosity and copper extraction, potentially due to a galvanic effect. Low iron extraction suggests that it is either precipitated or that there is a preferential dissolution of copper over iron from the mineral.

*Supervisor:* Professor J Petersen (Chemical Engineering)  
*Co-supervisor:* A/Professor L Velásquez-Yévenes (University of Santiago)

Lucia Dzinza  
Thesis Title: *An electrochemical investigation on the mechanisms of interfacial interactions of a xanthate collector on PGM surfaces in the presence of ions*

Lucia Dzinza holds a BSc(Hons) in Chemical Technology from Midlands State University, Zimbabwe. She joined UCT in 2018 and obtained a MSc in Chemical Engineering with a specialisation in Mineral Processing (Flotation Chemistry).

Lucia Dzinza's thesis focuses on the impact of water quality on Platinum Group Minerals (PGMs) in mineral processing. The use of recycled process water in mining has become a common practice owing to the scarcity of water resources. Lucia, therefore, examined the effects of specific ions found in recycled process water on the adsorption of xanthate collectors on PGM surfaces. Her research brings an understanding of the mechanisms involved when xanthates interact with PGMs in the presence of electrolytes. This will act as a diagnostic tool for developing flotation strategies, in maximising mineral recoveries by alleviating flotation problems related to water quality, in the mining industry. Her findings will also help the mining sector to improve on profits.

*Supervisor:* A/Professor K Corin (Chemical Engineering)  
*Co-supervisor:* Dr M Tadie (Stellenbosch University)

Danielle Grace Hill  
Thesis Title: *The role of professional urban planners in understanding and managing the dynamism of informal settlements*

Danielle Grace Hill began her doctoral studies at UCT's African Centre for Cities in 2018, after completing a PGDip in African Studies in 2012 and an Honours in City and Regional Planning in 2013, both at UCT. She obtained a Masters in Town and Regional Planning from the University of Pretoria in 2016.

Danielle Hill's thesis critically explores the Upgrading of an Informal Settlement Programme (UISP) in

Thembaletu, George, Western Cape. Innovatively, the research explores the mindset of planners during the implementation process, instead of assuming they are disembodied professionals that simply implement norms and procedures. The study demonstrates that, despite limited official 'power,' planners play a crucial role in providing spatial direction and balance in a setting of contradictory and competing development imperatives. However, the planners were unable to re-imagine informal settlements due to their inability to hold ambivalence within the planning process. The thesis identifies management styles and the kind of leadership necessary for sensitive and contextual upgrading programmes. Theoretical significance resides in moving to an African and de-colonial turn in planning, and a learning-driven planning approach. The findings point to the need for greater alignment between housing and planning legislation and policies.

*Supervisor:* Professor E Pieterse (Architecture, Planning and Geomatics)

Kankindi Conchita Kamanzi  
Thesis title: *Characterising the potential health risks associated with coal dust*

Conchita Kamanzi holds a BSc in Earth Science as well as a BSc(Hons) in Applied Geology from Stellenbosch University. She initially registered for a MSc at UCT in the Department of Chemical Engineering in 2018 and upgraded to a PhD in 2019.

Conchita Kamanzi's thesis investigates the complex relationships between the physicochemical and mineralogical characteristics of coal dust and their toxic effect on lung cells *in vitro*. Through her research, she develops a protocol to comprehensively characterise coal particulates using a consortium of analysis techniques including automated scanning electron microscopy. She further demonstrates a systematic application of a partial least squares regression to relate *in vitro* responses to an array of 72 particle characteristics. Her findings identified the presence of multiple concurrent

mechanistic pathways leading to toxicity and cell stress, which provide a means of explaining and linking the variability between sample characteristics and their cellular responses. Finally, she develops a protocol to translate the modelled outcomes to information that is easily interpretable for decision makers, contributing to developing a knowledge base for data-driven decision making in the context of mitigating the effects of mine dust and protecting respiratory health.

*Supervisor:* A/Professor J Broadhurst (Chemical Engineering)  
*Co-supervisors:* A/Professor M Becker (Chemical Engineering), Dr J Von Holdt (Environmental and Geographical Sciences), and Professor M Jacobs (Immunology)

Mogamat Yaaseen Martin  
 Thesis Title: *Investigating the use of ray tracing for signal-level radar simulation in space monitoring applications — a comparison of radio propagation models*

Yaaseen Martin obtained a BSc(Eng) from UCT in 2018. He began full-time study towards his MSc(Eng) in 2019, and upgraded to a PhD in 2020, at which point he also started working as a teaching assistant in the university.

Yaaseen Martin's thesis presents the design and development of an open-source, ray-traced, signal-level radar simulator for space debris monitoring. The topic of space debris represents a major concern to astronomers as the threat of orbital overpopulation looms – particularly with the lack of effective mitigation techniques as well as the limitations of modern space-monitoring sensors in tracking small debris. His work investigates and develops simulation tools for training, testing, and research, to aid further study in the field. The thesis models the interactions between spaceborne targets and terrestrial sensor systems. Keplerian mechanics and optics-based ray tracing are utilised, enhancing the accuracy and reliability of the simulated return signals relative to more conventional point-modelling

methods. The developed algorithms were also verified against systems theory and an existing commercial and well-established radar simulator, and they are expected to be useful in the analysis and design of prospective space-oriented systems.

*Supervisor:* A/Professor SL Winberg (Electrical Engineering)  
*Co-supervisor:* Dr MY Abdul Gaffar (Electrical Engineering)

Michael Dumisane Odidi  
 Thesis Title: *Comparison of non-reactive solute transport models for the evaluation of fluid flow in leaching beds*

Michael Odidi completed his BSc(Eng) in Chemical Engineering at the University of the Witwatersrand. He began studies towards an MSc(Eng) at UCT in 2015 and upgraded a PhD in 2018.

Michael Odidi's research seeks to understand the fundamental principles affecting fluid flow and solute transport in irrigated packed beds, with applicability to heap (bio)leaching systems. Different packing materials with unique inherent characteristics and size distributions were utilized along with irrigation solutions of varying viscosities, representative of the solid and fluid ranges typically encountered in heaps. This allowed identification of the crucial material and fluid properties affecting capillary forces within the tested beds, and linkage of these to preferential flow, a phenomenon that currently plagues the heap leaching process. Eight existing solute transport models, along with an additional novel model formulation, were used to simulate steady-state flow profiles of the experimental systems. The best performing models were identified along with the essential model parameters needed to describe flow characteristics within the beds. The insights provide a better understanding of heap leaching construction and irrigation requirements as well as performance modelling.

*Supervisor:* Professor STL Harrison (Chemical Engineering)  
*Co-supervisor:* Dr MA Fagan-Endres (Chemical Engineering)

Sunday Olarinre Oladokun  
 Thesis Title: *Property valuation under uncertain market conditions: a case of the Lagos property market*

Sunday Oladokun completed his BSc(Hons) and MSc qualifications at Obafemi Awolowo University, Nigeria and began full-time doctoral studies at UCT in 2017.

Sunday Oladokun's thesis focuses on the challenges that uncertain conditions in the Lagos property market pose to valuers, and how valuers manage these challenges. He employs an exploratory sequential mixed methods research approach, applying the theoretical lens of Transaction Cost Economics (TCE) to investigate understanding the behaviour of valuers. He finds that the Lagos property market is characterised by features that directly affect the valuation practice. He identifies the peculiar challenges of the market and various coping strategies among valuers. He discovers that while some coping strategies of valuers are logical and expected, others are counterintuitive and unprofessional. This demonstrates that, while some valuers' coping strategies reduce valuation uncertainty, others increase it. He also finds that valuers' academic training does not reflect the actual market experience. Sunday concludes that TCE provides a better explanation for valuers' behaviour in an uncertain market. These findings provide explanations for heuristic behaviour among valuers.

*Supervisor:* A/Professor MM Mooya (Construction Economics and Management)

### 3. FACULTY OF HEALTH SCIENCES

Dean: A/Professor L Green-Thompson

#### DEGREE OF DOCTOR OF PHILOSOPHY

Abdelmonim Ali Abdelrahman

Thesis Title: *Describing the use of social media as a point-of-care tool in facility-based emergency care in Africa*

Abdelmonim Abdelrahman completed his medical and emergency physician specialist training prior to beginning his doctoral studies in 2016.

Despite privacy and legal concerns, social media is used to provide real-time clinical support to emergency care providers. It can be particularly beneficial for those in Africa, who might lack adequate training or access to information. Abdelmonim Abdelrahman's thesis aims to describe the use of social media as a point-of-care telemedicine tool in facility-based emergency care in Africa, to further inform its use. A scoping review was conducted to map available literature on use, benefits, and risks associated with social media as a point-of-care platform. A mixed methods approach was then taken using a cross-sectional survey and semi-structured interviews to obtain a comprehensive description of the use of social media as a point-of-care tool in facility-based emergency care in Africa.

*Supervisor:* Dr C Saunders (Surgery)

*Co-supervisors:* Professor L Wallis (Emergency Medicine, Western Cape Government), A/Professor S Bruijns (Surgery), and Professor H Wahabi (King Saud University)

Abid Ali

Thesis Title: *The molecular mechanisms regulating the oncogenic functions of TBX2 in breast cancer*

Abid Ali holds a BS(Hons) in Zoology from Islamia College, Peshawar and an MPhil in Parasitology from the Quaid-i-Azam University, Islamabad. He commenced his doctoral studies in the Department of Human Biology at UCT in 2018.

Abid Ali's thesis aims to identify novel drug targets for the treatment of breast cancer, which is the most common cancer among women globally. He focuses on the TBX2 protein which plays critical roles in the development of several breast cancer types. Specifically, he seeks to identify molecules responsible for activating TBX2 as well as proteins that TBX2 partners with to achieve its cancer-promoting role in breast cancer. Using different experimental techniques, Abid's work reveals novel contributors of breast cancer that may be druggable targets to treat this disease.

*Supervisor:* Professor S Prince (Human Biology)

Madeha Mohamed Alkelani

Thesis Title: *Molecular and biochemical characterisation of hair follicle stem cells in frontal fibrosing alopecia and lichen planopilaris*

Madeha Alkelani holds an MSc in Medical Biosciences from the University of the Western Cape. She commenced her doctoral studies in the Hair and Skin Research Laboratory in the Division of Dermatology at UCT in 2018.

Madeha Alkelani's thesis focuses on investigating molecular and biochemical characteristics of hair follicle stem cells in lymphocytic primary scarring alopecias (PSA), using Fourier-transform infrared spectroscopy and immunohistochemistry. She further investigates the stem cells proteomic profile of lymphocytic PSA and biphasic traction alopecia, using mass spectrometry imaging techniques. *In silico* approaches were employed for identification of stem cell related protein signatures in frontal fibrosing alopecia, lichen planopilaris and traction alopecia.

Despite the basic understanding that the hair follicle is the target in PSA, the role of stem cells and their changes during disease progression is still poorly characterised. Her work, which identified differences in stem cell proteins between various subtypes of lymphocytic PSA, has shed more light on the molecular proteomic and biochemical profile of stem cells in lymphocytic PSA. These findings might help to better understand the role of stem cells in progression of alopecia.

*Supervisor:* A/Professor H Adeola (Medicine)

*Co-supervisors:* Professor N Khumalo (Medicine) and Dr R Halley-Stott (Medicine)

Olukayode Olasunkanmi Aremu

Thesis Title: *Characterisation of phenotypes of inflammation, fibrosis and remodeling in chronic rheumatic heart disease using multiparametric cardiovascular magnetic resonance and autophagy markers*

Olukayode Aremu completed his BSc(Hons) and MSc qualifications in Walter Sisulu University in 2016, and commenced his doctoral studies at UCT in 2017.

Olukayode Aremu's thesis reports the characteristic phenotypes of inflammation, fibrosis and remodeling in patients diagnosed with rheumatic heart disease (RHD), using multiparametric cardiovascular magnetic resonance and autophagy markers, to better understand the inflammatory pathway in the autoimmune involvement in the pathogenesis of RHD. He observed evidence of myocardial fibrosis in all RHD patients and observed differences in left ventricular functional parameters between patients and controls. The mitral valve was most commonly involved and systolic function impaired in RHD patients. He also observed ongoing inflammation in the pathogenesis of RHD based on presence of moderate to strong staining of autophagy markers.

*Supervisor:* Professor N Ntusi (Medicine)

*Co-supervisor:* Professor S Skatulla (CERECAM Civil Engineering)

Richard Gray Court

Thesis Title: *A pharmacometric approach to optimal use of second line drugs for multidrug-resistant tuberculosis*

Richard Court is a medical doctor who qualified as a specialist physician in 2015, at which time he began his doctoral studies. Richard has major research interests in clinical pharmacology, particularly dose optimisation of the drugs used to treat multidrug-resistant tuberculosis (MDR-TB), a disease which has, historically, had unacceptably poor outcomes.

Richard Court's thesis aimed to address gaps in knowledge of MDR-TB drug concentrations in plasma, including the relationship of these drug levels with treatment-related side effects. The TB drug terizidone was evaluated, which was recently upgraded by the World Health Organisation to be a priority drug for inclusion in MDR-TB treatment guidelines. He analysed the plasma levels of terizidone in a cohort of MDR-TB patients in Cape Town, and subsequently explored the relationship of terizidone exposure with specific neuropsychiatric side effects. Other aims include investigating whether the addition of a local anaesthetic reduce the pain caused by the intramuscular injection of kanamycin for the treatment of MDR-TB, and exploring whether tablet crushing, a practice performed by some treatment centres for patients unable to swallow whole tablets, affects the plasma levels of MDR-TB drugs. Richard Court's thesis comprises four peer-reviewed publications, each making a pragmatic contribution to the management of MDR-TB.

*Supervisor:* Professor H McIlleron (Medicine)

*Co-supervisor:* Emeritus Professor G Maartens (Medicine)

Alina Izabela Esterhuizen

Thesis Title: *Delineation of the genetic causes of complex epilepsies in South African paediatric patients*

Alina Esterhuizen holds a MSc from UCT. She joined the Division of Human Genetics in 2007 and was subsequently appointed jointly by the NHLS and UCT to conduct translational research and head the molecular diagnostic service. Before joining UCT, she worked in a technical capacity for the infectious diseases service of the NHLS.

Alina Esterhuizen's thesis investigates the genetic architecture of early-onset epilepsies in South African children, with an emphasis on translation and developing diagnostic genetic testing for epilepsy in resource-limited settings. She performed next generation sequencing and chromosomal microarray analysis on 234 South African children clinically diagnosed with developmental and epileptic encephalopathies (DEE). Of the 41/234 9 (18%) children with identified disease-causing mutations, 26/234 (11%) had variants supporting precision therapy. She then employed multivariate regression modelling to highlight neonatal/infantile-onset seizures with movement abnormalities and attention difficulties as predictive of a positive genetic finding. Based on this and coupled with an emphasis on precision medicine outcomes, she proposes the 'Think-Genetics' decision tree for early recognition of a possible genetic aetiology, appropriate interim management and pragmatic genetic testing for the DEEs in resource-constrained settings.

*Supervisor:* Professor R Ramesar (Pathology)

*Co-supervisors:* Professor J Wilmshurst (Paediatrics and Child Health) and Assistant Professor G Carvill (Northwestern University)

Tarin Adrienne Europa

Thesis Title: *Treatment-resistant ophthalmoplegia in myasthenia gravis: clinical, molecular and functional studies of patient-derived orbital tissues*

Tarin Europa completed her MBChB at UCT in 2011 and worked in clinical medicine until she commenced her doctoral studies in 2017. She currently works as a registrar in the Division of Neurology.

Tarin Europa's thesis reports clinical and lab-based research investigating the molecular-genetic pathogenesis of a rare subphenotype of the autoimmune neuromuscular disorder myasthenia gravis, in which individuals develop treatment-resistant paralysis of their extraocular muscles resulting in significant visual impairment. Although most cases of myasthenia gravis respond well to immune therapies, a proportion of cases develop severe ocular muscle weakness that does not respond to standard treatment, and for which effective treatments do not exist. Triangulation of data from clinical observations, review of muscle histopathology in myasthenia gravis as well as genetic and bioenergetic studies in patient-derived orbital tissues, has suggested that the pathogenetic mechanisms underlying treatment-resistant ophthalmoplegia in myasthenia gravis may involve aberrant regulation of muscle atrophy, contractility, and mitochondrial homeostasis pathways, triggered in the context of myasthenia gravis. The gene expression work identified several microRNAs which may in future research have potential as biomarkers or targets for novel therapeutic strategies.

*Supervisor:* Professor JM Heckmann (Medicine)

*Co-supervisor:* Dr M Nel (Medicine)

Arash Iranzadeh

Thesis Title: *A pan-genome wide association study to identify genes associated with invasive streptococcus pneumoniae*

Arash Iranzadeh completed his BSc(Hons) in Bioinformatics in 2018 and thereafter commenced full-time doctoral studies.

Arash Iranzadeh's thesis reports the difference between non-invasive and invasive strains of the *streptococcus pneumoniae*, a commensal human pathogen that colonizes the human nasopharynx harmlessly but can cause severe diseases when it enters the normally sterile sites in the human body such as lungs, blood, and cerebrospinal fluid. Using a dataset of whole genome sequences from 1477 pneumococcal samples obtained from carriers and patients, he compared the two groups of samples obtained from carriers and patients using a pan-genome approach. He developed and applied a computational pipeline to successfully identify the most invasive pneumococcal strains and characterize their genomes structure with the set of specific gene gain and loss profiles. These findings will be useful in future drug design and vaccine development against invasive pneumococcal infection as one the critical health concerns.

*Supervisor:* Professor N Mulder (Integrative Biomedical Sciences)  
*Co-supervisor:* Professor D Everett (Khalifa University)

Roxanne Jacobs

Thesis Title: *Elder abuse in South Africa: measurement, prevalence and risk*

Roxanne Jacobs completed her Masters in Research Psychology and has a background in public mental health and research methodology. She is a full-time research officer at the Alan J. Flisher Centre for Public Mental Health at UCT and commenced her doctoral studies in 2019.

Roxanne Jacobs' thesis contributes evidence on cross-cultural measurement, estimating prevalence, and understanding risk for older adults and people living with dementia in South

Africa. Her thesis presents prevalence, predictor, and risk estimates from a randomised household survey of 490 older adults and household informant dyads across two provinces in South Africa (nested within the STRiDE project). The experience of elder abuse, and the risk of perpetrating abuse were found to be high in South Africa. Her thesis makes a global contribution as one of the first studies that explore the relationship between dementia, functional impairment, and elder abuse at community level, and to use a verification strategy in the screening of elder abuse to standardise understanding of abuse at local and global levels. Her thesis is significant in providing South Africa with more reliable data on the prevalence, culturally appropriate measurement, risk for, perpetrators of, and predictors of elder abuse.

*Supervisor:* Emeritus A/Professor M Schneider (Alan J. Flisher Centre for Public Mental Health)  
*Co-supervisor:* A/Professor N Farina (University of Plymouth)

André Jacobus Joubert

Thesis Title: *The development, validation, and evaluation of quantitative assays for determining adherence of heart failure patients to carvedilol, enalapril and perindopril*

André Joubert completed his Bachelor's and Master's degrees in Chemical Engineering at Stellenbosch University. He joined UCT's Division of Clinical Pharmacology in 2018 to commence his doctoral studies. Before joining UCT, he worked in the pulp and paper and energy industries.

Carvedilol, enalapril, and perindopril are commonly prescribed for the treatment of heart failure. André Joubert's thesis focuses on developing assays to quantify carvedilol and the metabolites of enalapril and perindopril, enalaprilat and perindoprilat, respectively, in patient plasma and dried blood spot samples. The assays developed allowed the quantifying of the analytes in the dried blood spot and plasma samples of patients taking part in a pharmacokinetic study. He uses the data from the pharmacokinetic study to

evaluate the assays' potential to determine the adherence of heart failure patients to taking the carvedilol, enalapril and perindopril they have been prescribed. The assays are found to be useful tools in assisting clinicians determine patient medication adherence. The assays will help generate adherence data of heart failure patients in Africa, which is a critical step to better understanding the high mortality rate of heart failure patients in the region.

*Supervisor:* A/Professor L Wiesner (Medicine)  
*Co-supervisor:* Emeritus Professor G Maartens (Medicine)

Saif Feroz Khan

Thesis Title: *The status and role of the T-box transcription factor TBX3 in cervical cancer*

Saif Khan holds a BSc in Biochemistry and Genetics and a BMedSc(Hons) in Medical Cell Biology from UCT. In 2018 he joined the Department of Human Biology for his MSc, which was upgraded to a PhD in 2019.

Cervical cancer is the leading cause of cancer-related deaths amongst South African women and Saif Khan's thesis aims to determine the role of the TBX3 protein in cervical cancer and its relationship with the Human papillomavirus (HPV), the key causative agent of cervical cancer. Using various experimental techniques in two- and three-dimensions, he shows that TBX3 is overexpressed in cervical cancer patients and that it drives cervical cancer cell growth and migration by interacting and co-operating with the HPV proteins, E6 and E7. In addition, he investigates the potential of treating cervical cancer with commercial non-cancer drugs that inhibit TBX3. He identifies three promising drug candidates, initially approved for the treatment of pinworms, tapeworms, and dandruff, and he goes on to characterize the mechanism(s) by which these drugs kill cervical cancer cells. Saif Khan's work reveals cheap drugs that have the potential to treat poor women suffering from cervical cancer.

*Supervisor:* Professor S Prince (Human Biology)

Mmamapudi Kujane

Thesis Title: *Modelling the South African tuberculosis epidemic: the effect of HIV, sex differences, and the impact of interventions*

Mmamapudi Kujane obtained a BSc and BSc(Hons) in Mathematics, and a MPH in Epidemiology and Biostatistics at UCT. She commenced her doctoral studies in 2016.

Mmamapudi Kujane's thesis focuses on understanding the South African adult tuberculosis epidemic using a mathematical model fitted to various national data including prevalence survey data, treatment initiations, vital registry mortality, and routine microbiological testing. Her thesis quantifies the tuberculosis incidence and mortality attributable to HIV and the impact of South African programmatic interventions on tuberculosis incidence and mortality between 1990 and 2019. Her results show that antiretroviral therapy and intensified tuberculosis screening explained most declines in the tuberculosis trends. She further investigates drivers of sex differences in tuberculosis and shows that lower HIV testing rates and antiretroviral initiations in men, and the higher prevalence of smoking and alcohol abuse in men, partly explain the higher burden of tuberculosis in men than women. Finally, she projects the future impact of existing interventions and suggests that identifying active tuberculosis individuals would be critical, but more innovative interventions are needed.

*Supervisor:* A/Professor L Johnson (Public Health and Family Medicine)

*Co-supervisor:* Professor A Boulle (Public Health and Family Medicine)

Joanah Shamiso Madzime

Thesis Title: *Functional and structural analyses of the central auditory pathway in children exposed to and living with HIV*

Joanah Madzime holds a BSc(Hons) in Medical Biosciences from the University of the Western Cape and an MSc in Neurosciences from UCT. She began her doctoral studies in 2019.

Joanah Madzime's thesis focuses on the effect of HIV infection and exposure on the central auditory system of adolescents. She uses neuroimaging techniques to investigate the structural and functional properties of brain areas and networks involved in and relating to auditory function. She further identifies the contribution of HIV-related brain imaging abnormalities to language abilities. In children exposed to HIV, she reports functional differences in brain areas that integrate with the auditory system. Her thesis reports associations between altered microstructure and Sequential Processing, a neurocognitive score that integrates the auditory-visual systems. In summary, her thesis establishes the influence of HIV and exposure on the central auditory system and links microstructural alterations to neurocognitive function in children living with HIV.

*Supervisor:* Dr M Holmes (Human Biology)

*Co-supervisor:* Dr M Jankiewicz (Human Biology)

Thokozile Rosemary Malaba

Thesis Title: *Methodological considerations related to the epidemiologic study of birth outcomes: maternal ART use and adverse birth outcomes*

Thokozile Malaba holds an MPH in Epidemiology and Biostatistics from UCT. She is currently a Master's in Public Health course convenor and Research Officer working on maternal and child health research studies in the Division of Epidemiology and Biostatistics at UCT.

Thokozile Malaba's thesis investigates the association between maternal antiretroviral therapy (ART) use and adverse birth outcomes (preterm delivery and small-for-gestational age infants). She explores the role of methodological factors inherent in observational research, possibly contributing to previous inconsistent findings of this association. Thokozile Malaba combined data from two large cohorts of pregnant women accessing antenatal care services in Gugulethu, Cape Town, with routinely collected

electronic health data for the same cohorts and all pregnant women in the province during the same period. She used these data to evaluate the impact of different methods of gestational age and blood pressure assessment on the magnitude of bias introduced. Using novel approaches for this association, she addressed the factors leading to biased measures and accurately quantified associations between maternal ART use and adverse birth outcomes. Based on this work, thesis presents recommendations for future investigations of adverse birth outcomes and maternal ART use.

*Supervisor:* Professor L Myer (Public Health and Family Medicine)

*Co-supervisor:* Emeritus Professor M-L Newell (University of Southampton)

Nonkululeko Gugulethu Mkwanazi  
Thesis Title: *The role of seminal fluid in cervical squamous carcinoma progression: impact on cell proliferation, EMT, motility and gene expression*

Nonkululeko Mkwanazi completed her BSc(Hons) and MSc at UCT, and commenced doctoral studies in 2018.

Nonkululeko Mkwanazi's thesis aims to investigate the effect of seminal fluid on cell proliferation, epithelial mesenchymal transition (EMT), motility and gene expression in cervical cancer cells. Seminal fluid was previously found to induce cell proliferation, inflammation, and angiogenesis in cervical adenocarcinoma cells. Since the majority of cervical cancer cases are squamous cell carcinoma, her study used two squamous carcinoma cell lines as a model system. Her research showed that seminal fluid enhanced cell proliferation, induced actin cytoskeleton rearrangement, activated EMT-inducing transcription factors and induced directional migration and invasion. Furthermore, she showed that the induction of EMT inducing transcription factors Snail, Twist and ZEB1 by seminal fluid occurs via the EP4 receptor, ERK1/2 and COX signaling pathways. Seminal fluid also induced the expression of inflammatory

and angiogenic genes. She showed that a small molecule inhibitor of nuclear import, INI-43, inhibited seminal fluid-induced gene expression and this was associated with inhibiting NF- $\kappa$ B nuclear translocation. Employing ectocervical tissue biopsies, she further showed that seminal fluid caused the upregulation of EMT transcription factors, MMPs and inflammatory genes. Taken together, this study suggests that repeated exposure of neoplastic cervical epithelial cells to seminal fluid in sexually active women with cervical cancer could exacerbate cervical cancer progression.

*Supervisor:* Emeritus Professor A Katz (Integrative Biomedical Sciences)  
*Co-supervisor:* Professor VD Leaner (Integrative Biomedical Sciences)

Kubendhren Moodley  
 Thesis Title: *Development of a framework to guide community engagement in paramedic education and training in the Western Cape*

Kubendhren Moodley holds a Bachelor's degree in Emergency Medical Care and a Master's degree in Health Sciences. In 2018, he commenced his doctoral studies at UCT. He is currently employed at the College of Emergency Care as a Principal.

Kubendhren Moodley's thesis explores university-community partnerships for mutually beneficial relationships to improve health care in marginalised communities. He interviewed academics experienced in community engagement, paramedic lecturers, students, and community partners. The research findings revealed a lack of understanding and implementation of community engagement in paramedic education. The data provided inputs for a structured and systematic approach to community engagement, which guided the development of the framework. The framework's key components are conceptualization, processes, and contextual community engagement projects designed to strengthen paramedic students' meaningful learning experiences with mutual benefits to communities. The developed framework serves as a guide for community engagement implementors, policymakers, and leaders in emergency medical care education in

an effort to infuse paramedic curricula with community engagement practices and activities for the development of socially responsive paramedic graduates to improve healthcare in marginalised communities.

*Supervisor:* Dr C Saunders (Surgery)  
*Co-supervisors:* Professor L Wallis (Emergency Medicine, Western Cape Government) and Professor R Bhagwan (Durban University of Technology)

Muhammed Shiraz Moosa  
 Thesis Title: *A randomised controlled trial of N-acetylcysteine in the management of anti-tuberculosis drug-induced liver injury*

Muhammed Moosa completed his MBChB at the University of KwaZulu-Natal in 1990 and Fellowship of the College of Physicians in 2007. He commenced part-time doctoral studies in 2014 while working as a full-time physician at New Somerset Hospital, Cape Town.

Muhammed Moosa's thesis focuses on the management of liver injury caused by anti-tuberculosis drugs. In a double-blind placebo-controlled trial of N-acetylcysteine in 102 participants with anti-tuberculosis drug-induced liver injury (AT-DILI) in a high HIV prevalence setting, he found that N-acetylcysteine did not hasten biochemical liver recovery or reduce mortality, but significantly reduced length of hospital stay. Amongst participants who were rechallenged with anti-tuberculosis drugs following recovery from AT-DILI, he found that pyrazinamide rechallenge was more likely to cause liver injury recurrence than rechallenge with rifampicin or isoniazid. He found that concentrations of microRNA-122, a liver-specific biomarker for liver injury, were markedly elevated in patients with AT-DILI compared to concentrations observed in individuals without liver injury in previous studies. MicroRNA-122 concentrations had high inter- and intra-individual variability, and no effect of N-acetylcysteine on concentrations was detected.

*Supervisor:* A/Professor K Cohen (Medicine)  
*Co-supervisor:* Emeritus Professor G Maartens (Medicine)

Adele Delysia Munsami  
 Thesis Title: *Integrating HIV-associated neurocognitive impairment screening and health services within primary healthcare facilities in South Africa*

Adele Munsami obtained a BSocSci in Psychology at the University of KwaZulu-Natal, BA(Hons) at the University of South Africa, and a MSocSci in Research Psychology at the University of KwaZulu-Natal.

Adele Munsami's thesis examines the feasibility of integrating HIV-associated neurocognitive impairment screening at a primary healthcare level, where the majority people living with HIV access care in South Africa. Due to the paucity in healthcare professionals with appropriate knowledge and skills to screen for HIV-associated neurocognitive impairment in low- and middle-income countries, it was important to explore task-sharing of these healthcare services from specialists to non-specialist cadres. She went on to investigate knowledge of HIV-associated neurocognitive impairment among frontline HIV healthcare workers and explored current screening practices. She also investigated healthcare workers desire to screen for HIV-associated neurocognitive impairment in busy, overburdened, and under-resourced clinics. This allowed her to develop a work-integrated HIV-associated neurocognitive impairment training programme, targeting primary healthcare workers. The findings will be useful for future training targeting primary healthcare workers with a view toward task-sharing of HIV-associated neurocognitive impairment screening from specialists to primary healthcare workers.

*Supervisor:* Professor JA Joska (Psychiatry and Mental Health)  
*Co-supervisors:* A/Professor H Gouse (Psychiatry and Mental Health) and A/Professor S Nightingale (Psychiatry and Mental Health)

Noncayana Tracey Dawn Naledi

Thesis Title: *A novel cash-plus intervention to safeguard sexual reproductive health and HIV vulnerabilities in young women in Cape Town, South Africa*

Noncayana Naledi holds an MBChB from UCT and is a Public Health Specialist with a FCPHM(SA) from the Colleges of Medicine in South Africa. Since 2005, she has practiced in the public sector as a senior manager translating evidence into policy and practice. She commenced her doctoral studies in 2018.

Unemployment is a structural determinant of HIV vulnerability in young women in South Africa. Noncayana Naledi's thesis shows the effects of the Women of Worth empowerment programme coupled with a cash incentive amongst young urban, low income, out of school women in Cape Town. When cash was combined with a sexual reproductive health and HIV prevention programme and youth friendly health services, engagement was sustained with optimal exposure to the intervention. Once exposed to the intervention, employment was increased and sustained more than a year after removing the intervention. Self-determination for safer sexual behaviours and seeking livelihoods was also attained. Findings on sexual reproductive health behaviours were, however, mixed and when found, were not durable. With increased employment and self-determination, it is still feasible that the effects on HIV and sexual reproductive health behaviours could be shown after longer follow-up. The findings contribute to better understanding of adolescent health challenges.

*Supervisor:* Professor L-G Bekker (Medicine)

*Co-supervisor:* Professor L London (Public Health and Family Medicine)

Arinao Trymore Ndadza

Thesis Title: *Pharmacogenomics of warfarin: comprehensive evaluation of important warfarin genomic response factors*

Arinao Ndadza completed a BSc in Medical Sciences at the University of Limpopo in 2014. She joined the Pharmacogenomics and Drug Metabolism Research Group in the Division of Human Genetics at UCT for an MSc (Med) in 2017, which was upgraded to a PhD in 2019.

Arinao Ndadza's thesis reports on pharmacogenomic profiles important for the prediction of suitable warfarin doses among individuals of an African ancestry specifically populations in Southern Africa. The study enrolled 509 individuals that were undergoing warfarin therapy in Cape Town, South Africa and Harare, Zimbabwe. The individuals' DNA was utilised for genetic characterisation targeting over 70 single nucleotide polymorphisms (SNPs) in various genes encoding enzymes involved in the warfarin pathway. The targeted SNPs were further tested for their influence on warfarin response measured by the warfarin weekly maintenance dose by employing various statistical tests. A cumulative effect of the genetic and non-genetic factors significantly affecting warfarin dose variability was measured through a regression multivariable model. The study findings serve as recommendation for the development of warfarin dosing algorithms tailored specifically for individuals with an African ancestry.

*Supervisor:* Professor C Dandara (Pathology)

*Co-supervisors:* Professor M Ntsekhe (Medicine) and Professor A Wonkam (Pathology)

Mthawelanga Ndengane

Thesis Title: *The immunological role of cell wall components from diverse Mycobacterium tuberculosis clinical isolates in regulating HIV-1 replication in human macrophages*

Mthawelanga Ndengane holds a BSc in Biotechnology from the University of the Western Cape and a MSc in Biochemistry from the University of Pretoria. He joined UCT in 2017 to commence his doctoral studies within the Wellcome Centre for Infectious Diseases Research in Africa.

Mthawelanga Ndengane's thesis investigates how genetic differences between strains of *Mycobacterium tuberculosis (Mtb)*, the bacterium that causes TB, affect the human immune response to *Mtb* infection, and how this influences the response to HIV-1 during coinfection with both pathogens. He specifically investigates how different *Mtb* strains isolated from TB patients with and without HIV-1 coinfection, living in Khayelitsha, South Africa, influence the replication of HIV-1 in immune cells called macrophages. The *Mtb* strains contained small differences within their genomes, which he hypothesised would change the type of lipids found in the bacterial cell wall. Using genetic engineering, he modified these small genome differences and investigated how this altered the response of human macrophages when he infected them with *Mtb* and HIV-1. His research demonstrates that small changes in the genome of *Mtb* can impact the immune response to *Mtb*, and consequently, how HIV-1 replicates in human macrophages during coinfection.

*Supervisor:* Honorary A/Professor AK Coussens (Pathology)

*Co-supervisors:* Dr A Koch (Pathology), Honorary Professor RJ Wilkinson (Medicine), Dr N Peton (Pathology), and Dr JC Evans (Pathology)

Bokani Nleya

Thesis Title: *Investigating the susceptibility of foreskin myeloid cells to ex vivo HIV infection*

Bokani Nleya holds a BSc(Hons) in Biology and Biochemistry and an MSc in Microbiology and Biotechnology from the National University of Science and Technology, Zimbabwe. Prior to commencing her doctoral studies at UCT in 2018, she taught Biology in Zimbabwe.

Bokani Nleya's thesis identifies the diverse breadth of innate immune cells from the cis- male genital tract. She characterises specific myeloid cells including subsets of previously elucidated Langerhans and macrophages and identifies novel cell states. Using computational multiparameter flow cytometry data analysis she identified novel myeloid subsets and showed their differential susceptibility to HIV infection. Bokani Nleya developed an *ex-vivo* HIV infection model to assess the permissibility of these cells to HIV infection and interrogated the interaction of these cells with various HIV-1 clades which revealed higher susceptibility of foreskin macrophages and Langerhans cells to viruses responsible for initial HIV infection whilst being restrictive to an engineered laboratory HIV strain. These infection dynamics offer opportunities for the design and implementation of novel and better targeted HIV prevention and cure interventions.

*Supervisor:* Dr N Chigorimbo-Tsikiwa (Pathology)

*Co-supervisors:* Emeritus Professor C Gray (Pathology) and Dr S Dzanibe (Pathology)

Ponsiano Kabakyenga Nuwagaba

Thesis Title: *The mixed experiences of pregnant women with physical disabilities in accessing and utilising antenatal care services in rural south-western Uganda*

Ponsiano Nuwagaba holds a Diploma in Clinical Medicine and Community Health, a BA in Social Work and Community Development and a Master of Public Health. He is a lecturer in the Department of Community

and Disability Studies at Kyambogo University, Uganda. He joined UCT for his doctoral studies in 2019.

Ponsiano Nuwagaba's thesis reports the environmental factors influencing access to antenatal care (ANC) services, which are a critical entry point for pregnant women to receive quality maternity care services. His study investigates the experiences of women with physical disabilities in accessing and utilising ANC services and suggests strategies for improving rural service delivery. An interpretive qualitative study using a multiple case study design was conducted. Twelve women with physical disabilities and six midwives from three health facilities in the Sheema district were selected. An integrated framework for disability inclusive family- and community-focused ANC services for rural communities is proposed. Women's spirituality was found to be integral to their wellbeing. The spirit of *Ubuntu* facilitated women's participation and functioning at family, community, and health facility levels. Justice, equity, and respect for their human dignity need to be underscored in ANC policy, health systems and infrastructure planning, and midwifery education and practice.

*Supervisor:* A/Professor S Clow (Health and Rehabilitation Sciences)

*Co-supervisor:* Professor T Lorenzo (Health and Rehabilitation Sciences)

Ikechukwu Joseph Nwanze

Thesis Title: *How do students and staff at the University of Cape Town understand equitable access to the curriculum for students with VIs?*

Ikechukwu Nwanze completed his BSc and BSc(Hons) at Monash University and commenced full-time doctoral studies in 2017.

Ikechukwu Nwanze's thesis explores the complexity surrounding participation of students with visual impairment at UCT. He uses data from students and staff at UCT to capture understanding of equitable access to the curriculum. Using this data, he explores the effect of the hidden curriculum on the enacted curriculum. He further explores access to opportunities to acquire digital literacies, identifying

facilitators and barriers to curriculum participation through universal design for learning (UDL) framework. He finds that curriculum accessibility is a right but too much work for academics. The right to education for students with visual impairment is evident but fragmented due to lack of understanding of the complexity involved. He proposes an asset view approach for curriculum development using UDL, an operational model that thinks of accessibility from the start both for curriculum development and support services to guarantee right to education for students with visual impairment.

*Supervisor:* Professor J McKenzie (Health and Rehabilitation Sciences)

*Co-supervisor:* Dr K Murfitt (Deakin University)

Richard Osei-Yeboah

Thesis Title: *An in-depth analysis of comorbidities and patient outcomes in the context of HIV burden, in a cohort of patients seeking health care at Khayelitsha facilities in 2016-2017*

Richard Osei-Yeboah holds BSc in Medical Laboratory Sciences and a Master of Public Health from the University of Ghana. He joined the Department of Integrative Biomedical Sciences at UCT in 2019 to commence his doctoral studies.

Richard Osei-Yeboah's thesis explores the use of longitudinal routine health data from the Provincial Health Data Centre at the Western Cape Department of Health to better understand the epidemiology and health service access of health care clients visiting government health care facilities in the Khayelitsha sub-district of the Western Cape. His research explores the multimorbidity profiles and dynamics for these health care clients, comparing the characteristics of people living with Human Immunodeficiency virus (HIV) and those without diagnosed HIV. The work presents an additional focus on the population living with chronic kidney disease, exploring the multivariate associations between renal function, HIV status, age and comorbidity profiles. Richard Osei-Yeboah's research demonstrates the feasibility of using routine health data to better understand

multimorbidity, health care access and the relationship between HIV, other comorbidities and patient outcomes.

*Supervisor:* Honorary Professor N Tiffin (Integrative Biomedical Sciences and the University of the Western Cape)

Victoria Alexandra Patten

*Thesis Title: The analysis of genetic aberrations in South African oesophageal squamous cell carcinoma patients*

Victoria Patten completed her BSc at the Nelson Mandela Metropolitan University in Port Elizabeth before obtaining her Honours and Master's qualifications from Stellenbosch University in early 2018. In April of 2018 she joined the Division of Medical Biochemistry at UCT to pursue full time doctoral studies.

Victoria Patten's thesis investigates genetic aberrations in South African patients with oesophageal squamous cell carcinoma (OSCC). DNA from 35 paired tumour-normal samples were subjected to whole genome sequencing followed by bioinformatics analysis of both DNA and RNA-seq data to assess the role of viral insertions, Human Endogenous Retroviruses (HERVs) and somatic mutations of interest. The novel virus insertions proved inconclusive, and no links were identified between HERVs and somatic mutations. The *MUC3A* gene, a gene not previously associated with OSCC, displayed numerous mutations. However, it is likely these are spurious due to the complexity of the gene sequence. RNA-seq analysis showed that expression of *MUC3A* was significantly upregulated, and immunohistochemistry staining indicated that *MUC3A* protein is not present in 10 out of 13 patient samples. These findings suggest that *MUC3A* might be involved in OSCC tumour development or progression, but further investigations are needed.

*Supervisor:* Professor MI Parker (Integrative Biomedical Sciences)

*Co-supervisors:* A/Professor D Hendricks (Integrative Biomedical Sciences and Dr H Bendou (University of the Western Cape, South African National Bioinformatics Institute)

Lucretia Petersen

*Thesis Title: Distortion product otoacoustic emissions: towards reliable and valid early identification and monitoring of hearing in adults receiving ototoxic medication*

Lucretia Petersen holds a Bachelor's in Speech Therapy and Audiology from Stellenbosch University, and an MSc in Audiology from UCT.

Patients with multidrug-resistant tuberculosis may often receive medication that is ototoxic and can cause permanent damage to the ear. If the use of these drugs is not preventable, early detection of cochlear damage becomes crucial to minimise the impact thereof on an individual's life. Lucretia Petersen's thesis sought to refine an existing test, distortion product otoacoustic emissions, to detect cochlear damage sooner than is currently possible through a sequential study design. A variety of different stimulus parameters were examined to determine which combinations would yield the best results. It was found that stimulus parameters of  $L_1/L_2 = 65/55$  dB SPL and an  $f_2/f_1$  ratio of 1.18 detected changes in cochlear function best and can potentially identify ototoxic damage sooner than when using the current default parameters.

*Supervisor:* Professor H Kathard (Health and Rehabilitation Sciences)

*Co-supervisor:* Professor W Wilson (University of Queensland)

Tasleem Ras

*Thesis Title: Re-imagining doctor-patient relationships in an African context: a transformative educational perspective*

Tasleem Ras completed his MBChB in 1998 and Masters in Family Medicine in 2009, both at UCT. He obtained his Fellowship of the College of Family Physicians in 2007 and commenced doctoral studies in 2017.

Tasleem Ras' thesis, using a conceptual framework of Ubuntu and power, explores clinical encounters between doctors who are postgraduate students (PGS) and patients in primary health care facilities from the

perspectives of three cohorts: patients, PGS and educators. He starts by direct observations of the clinical encounters between PGS and patients in several health facilities across urban Cape Town, which are followed by interviews with twenty-five patients involved in these encounters. Data from focus group discussions and reflective writings demonstrated the importance of context, intersubjectivity, critical consciousness and social discourse in student learning about their relationships with patients. When this pedagogical framework foregrounds the PGS' vulnerability to existential challenges inherent to health care professionals, their relationships with patients, inspired by humanistic ideals, redeem them. Ubuntu is proposed as a source of humanistic epistemology and liberatory pedagogy that is contextually relevant to the South African context. [145 words]

*Supervisor:* Professor S Reid

(Primary Health Care Directorate)

*Co-supervisor:* Professor S Levine (Social Anthropology)

Rita Sianga

*Thesis Title: Analysis of the impact on phylogenetic inference of non-reversible nucleotide substitution models*

Rita Sianga holds a BSc in Statistics from Mulungushi University in Zambia, and an MSc in Mathematical Sciences from the African Institute for Mathematical sciences. She joined UCT in 2018 for her Master's in Bioinformatics, which was upgraded to a PhD in 2019.

Rita Sianga's thesis reports the testing of genomic data from 141 viral species to assess how well various evolutionary models describe the evolution of viruses. She discovers that widely disregarded "non-reversible" substitution models describe viral evolution substantially better than more commonly used reversible models. She goes on to show that despite model misspecification being rampant in the virus evolution literature, this has likely had only a marginal impact on the evolutionary inferences that have been drawn using inappropriate reversible models. Finally, she presents a web

application that, in conjunction with more commonly used methods that disregard the non-reversibility of virus mutation processes, can be used to infer the direction of evolution during virus evolution to identify the most recent common ancestral sequences of any given group of viruses.

*Supervisor:* Professor D Martin  
(Integrative Biomedical Sciences)

Tsaone Tamuhla

*Thesis Title: Exploring new methodologies to identify disease-associated variants in African populations through the integration of patient genotype data and clinical phenotypes derived from routine health data: a case study for type 2 diabetes mellitus in patients in the Western Cape Province, South Africa*

Tsaone Tamuhla holds a BSc in Microbiology and Biotechnology and an Honour's degree in Molecular Biology, both from UCT, as well as a MSc in Molecular Biology from Stellenbosch University. She joined the department of Integrative Biomedical Sciences at UCT in 2019 to commence her doctoral studies.

Tsaone Tamuhla's thesis presents the analysis of complex clinical phenotypes using routine health data, with case studies describing the impact of HIV, Tuberculosis and COVID-19 on Type 2 Diabetes Mellitus (T2DM) outcomes, and T2DM treatment adherence and persistence in healthcare clients in the Western Cape. With appropriate informed consent from study participants, these longitudinal routine health data are also successfully linked to DNA genotype information generated from buccal swabs. The pilot study illustrates the efficacy of this approach for building an African virtual genotyped cohort and demonstrates that the approach is flexible, agile, disease-agnostic, well-suited to low-resourced environments, and can incorporate DNA samples from consenting participants from other studies. Both hypothesis-generating and hypothesis-testing analyses are undertaken using the pilot dataset, showing how the cohort dataset can support studies on

the genetic contributors to T2DM and severe COVID-19. This work creates a solid basis for future expansion of the multimorbidity cohort.

*Supervisor:* Honorary Professor N Tiffin  
(Integrative Biomedical Sciences and South African National Bioinformatics Institute)

*Co-supervisor:* Professor N Mulder  
(Integrative Biomedical Sciences)

Dada Oluwaseyi Temilola

*Thesis Title: Cell-free DNA and tumor exosome cargo as diagnostic and prognostic marker for prostate cancer*

Dada Temilola holds an MSc (Dent) degree in Oral Medicine from the University of the Western Cape.

Dada Temilola's thesis investigates the role of tumor exosome cargo and cell-free DNA as liquid biopsy in South Africa prostate cancer patients. He reports the role of exosome size and number in distinguishing prostate cancer from benign prostatic hyperplasia by using transmission electron microscope. He went further to investigate tumor exosome cargo by sequencing and identifying microRNAs, which can be used as biomarkers to classify of prostate cancer into low and high aggressive cancer. He also found through whole exome sequencing of cell-free DNA mutated genes in South Africa prostate cancer patients. These findings will be useful in the diagnosis and management of prostate cancer patients in South African population and Africa at large.

*Supervisor:* A/Professor LF Zerbini  
(Integrative Biomedical Sciences)

Babalwa Pearl Tyabashe-Phume

*Thesis Title: Development of a conceptual framework to inform self-advocacy for social and health-related policy priorities of adults with intellectual disability*

Babalwa Tyabashe-Phume holds a bachelor's degree in Social Work from the University of Johannesburg and a Master's in Child and Family Studies from the University of the Western

Cape. She has seven years' experience as social worker in intellectual and developmental disability services.

Babalwa Tyabashe-Phume's thesis focuses on the development of a conceptual framework to inform self-advocacy for social and health-related policy priorities of adults with intellectual disability. She explored the views of different stakeholders on opportunities for and barriers to self-advocacy to develop the conceptual framework. Empowerment theory integrated with the concept of *Ubuntu* provided the theoretical frame for this study. Data collected through a scoping review, semi-structured interviews and focus groups were analysed thematically and triangulated to identify three key focal points for the conceptual framework, namely, a) personal development, b) creating a supportive environment; and c) improved policy participation opportunities. This research provides knowledge about how to best support people with intellectual disability to participate in public policy development and implementation and increases public policy makers understanding of what reasonable accommodations may be needed to improve policy participation by people with intellectual disability [142 words].

*Supervisor:* Professor S Kleintjes  
(Psychiatry and Mental Health)

Robyn Waters

*Thesis Title: Improving the diagnosis of spinal tuberculosis and our understanding of its pathophysiology and interaction with HIV-1 co-infection*

Robyn Waters completed her BSc, Honour's and Master's qualifications at UCT, in the Department of Molecular and Cell Biology, and began full-time study towards her PhD in 2019, in the Orthopaedic Research Unit at the Division of Orthopaedic Surgery in collaboration with the Centre for Infectious Diseases Research in Africa (CIDRI-Africa), in UCT's Institute of Infectious Disease and Molecular Medicine.

Robyn Waters' thesis focuses on evaluating novel molecular methods for improving the rapid diagnosis of

spinal tuberculosis and understanding the pathophysiology of the disease. In addition, her research aimed to evaluate the potential impact of HIV-1 co-infection on the diagnosis and pathology of spinal tuberculosis. She further quantified the amount of both *Mycobacterium tuberculosis* and HIV-1 DNA in spinal biopsy tissue from co-infected patients and assessed soluble immunological proteins in peripheral blood as potential biomarkers for initial screening and diagnosis of spinal tuberculosis. These findings may help guide the diagnostic process and tailored therapeutic development.

*Supervisor:* Professor M Held  
(Orthopaedic Surgery)

*Co-supervisors:* Honorary A/Professor  
AK Coussens (Pathology) and Dr M-R  
Abrahams (Pathology)

Sarah Nicole Whitehead

*Thesis Title: Proposing clinician  
competency guidelines for the inclusion  
of disability in the undergraduate  
medical curriculum of South Africa -  
an exploratory study*

Graduating as a medical doctor in 2010, Sarah Whitehead registered for MPhil degree in 2016, which was upgraded to PhD in 2019. She is currently the Executive Director of an amputee rehabilitation non-profit organisation – ZIMELE: a Zulu word which means *to be independent and to stand on one's own feet*.

Sarah Whitehead's thesis focuses on generating competencies for inclusion in the undergraduate medical curriculum which could help medical doctors to practice disability inclusive medicine. An important feature of her research was the inclusion of Persons with disability as research participants in keeping with the Disability Rights slogan, "nothing about us, without us!" These findings are a steppingstone in the process of curriculum transformation and disability inclusion.

*Supervisor:* Professor H Kathard  
(Health and Rehabilitation Sciences)

*Co-supervisor:* Professor T Lorenzo  
(Health and Rehabilitation Sciences)

Eleanor Beth Whyte

*Thesis Title: Health systems and social  
values: the case of the South African  
health system*

Eleanor Whyte holds a BA (Hons) and an MA in Philosophy from the University of the Witwatersrand, and an MPH in Health Systems from UCT. Alongside her PhD research, she has worked and taught in the Health Policy and Systems Division at UCT since 2015.

Eleanor Whyte's thesis explores the complex relationship between health systems and social values. In response to the absence of theoretical and empirical work on the topic, her study develops an explanatory framework for the social value of health systems, and then applies and tests these ideas through an empirical study of the South African National Health Insurance policy process. She demonstrates that health systems are not only shaped by social values, but also can generate social cohesion and build public trust in the state. In addition, the analysis highlights how social values can constrain health system reform efforts. Eleanor Whyte also develops improved approaches for research into social values in health systems, and recommendations for policy-analysts and policy-makers to support health system reform strategies.

*Supervisor:* A/Professor J Olivier  
(Public Health and Family Medicine)

Kimberley Clare Williams

*Thesis Title: Investigating  
cortical arousal and cognition in  
schizophrenia and methamphetamine-  
induced psychotic disorder: an  
electroencephalography and cytokine  
study*

Kimberley Clare Williams completed her BSc, BSc (Hons) and MSc qualifications at the University of the Western Cape, and began full-time study towards her PhD in 2019.

Kimberley Williams' thesis reports key differences in brain electrical activity on electroencephalography (EEG) between schizophrenia (SCZ) and methamphetamine-induced psychotic disorder (MPD). These differences were identified by investigating brain

electrical activity while at rest and while completing tasks which assess cognitive function such as attention. Kimberley found cognitive functioning, including reduced attention and cognitive control to be impaired in both SCZ and MPD, in one of the first studies to have directly compared the two disorders. Different resting state functional networks are altered in SCZ and MPD. Moreover, preliminary results show that specific (neuro)immune markers are distinctly associated with brain electrical activity and cognition. These findings point to differences and an overlap between SCZ and MPD, a conclusion consistent with other work that may serve to improve our neurobiological understanding of the presentation of SCZ and MPD.

*Supervisor:* Dr P Naude (Psychiatry and  
Mental Health)

*Co-supervisor:* A/Professor F Howells  
(Psychiatry and Mental Health)

#### 4. FACULTY OF HUMANITIES

*Dean:* Professor S Kessi

##### DEGREE OF DOCTOR OF PHILOSOPHY

Malvina Lucie Béatrice Brunet

*Thesis Title: Social contact, prejudice,  
within-group variability, and the own-  
group recognition bias*

Malvina Brunet completed her Master's in Psychology at the University of Toulouse Jean-Jaurès, France. She commenced her doctoral studies in France in 2018 and after obtaining funding from the French National Research Agency, she joined UCT in 2021 under a co-badging programme.

Malvina Brunet's thesis addresses different social and cognitive components impacting face recognition and, more specifically, own-group recognition bias (OGRB). Through two empirical studies and a systematic review of the literature, her work investigates the impact of social contact, prejudice, interaction anxiety, visual strategies, and within-group phenotypic variability

in face recognition. In particular, she demonstrates the existence of OGRB in a white French population towards individuals of African and North African origin. Her results also illustrate the limitations of the effect of social interaction patterns and prejudice on OGRB. Finally, her work on the effect of phenotypic variability within the ethnic groups studied raises the importance of considering this factor more extensively in the intergroup face recognition study area.

*Supervisor:* Professor CG Tredoux  
(Psychology)  
*Co-supervisor:* Professor J Py  
(Université de Toulouse)

Tamuka Chekero

Thesis Title: *Mobility, Space and urbanism: a study of practices and relationships among migrants from African countries in Cape Town, South Africa*

Tamuka Chekero holds a BSocSci(Hons) in Social Anthropology from Great Zimbabwe University and a Masters in Anthropology from UCT. His broader research interests include migration, mobility, social networks, conviviality, and urban livelihoods.

Tamuka Chekero's thesis investigates how migrants' diverse experiences in Cape Town are mediated by their mobility, movement, and circulation of necessary livelihood objects and ideas. He investigates how migrants' daily interactions, encounters, experiences, and social dynamics in the city individually and collectively create and co-create what he calls social formations. His research demonstrates that the label 'migrant' creates and reinforces specific challenges and difficulties that limit and restrict migrants' mobility potential, their access to space, and their livelihood opportunities. Migrants nonetheless cope and adapt to these challenges by forming connections with diverse people and embracing diverse social networks that play an important role in assisting them to gain access to employment opportunities and to develop sociality. Tamuka

Chekero employs ethnography with an anthropological perspective to illuminate these dynamics and complexities.

*Supervisor:* Professor FB Nyamnjoh  
(Anthropology)  
*Co-supervisor:* Professor FC Ross  
(Anthropology)

Moshumee Teena Dewoo

Thesis Title: *The 'Nasyon': a critical exploration of the 'Nasyon's' persisting dissociation from political power in Mauritius*

Moshumee Teena Dewoo holds a BSocSc, BSocSc(Hons), and a MSocSc in African Studies, all from UCT.

Moshumee Teena Dewoo's thesis explores the intersections between power, livelihood, culture, and identity and it brings into conversation insights from anthropology, sociology, history, philosophy, psychology, communication, and technology. She does that to critically examine the persisting dissociation of the 'Nasyon,' persons of (imagined, claimed and proclaimed unmixed) black African ancestry, from political power in Mauritius. Her study runs from a view taken through the prism of historical ethnography and straddles the lines between Western knowledge systems and African spirituality in order to make scientific sense of the case of the 'Nasyon' from an African perspective. She concludes that the 'Nasyon' suffer persistent marginalisation and dissociation from political power in Mauritius and that that derives from their lowly position in the socio-ethnic configuration of citizenship and belonging in that country. Working from within a framework of the universality of incompleteness in which everything and everyone is unfinished and a permanent work in progress, she argues for socio-political recognition and representation for the 'Nasyon' in Mauritius.

*Supervisor:* Professor FB Nyamnjoh  
(Anthropology)  
*Co-supervisor:* Emeritus Professor L Ntsebeza (African Studies)

Anele Gobodwana

Thesis Title: *The use of translanguaging in assisting educators to teach African languages: a case study of Tshwane South Education District, Pretoria*

Anele Gobodwana holds a BA from the University of Fort Hare and a PGCE and MA from UCT. He commenced his doctoral studies in 2019. He has served as an educator for the Western Cape Education Department and as a university lecturer.

Anele Gobodwana's experiences as an educator motivated him to study the concept of multilingualism-translanguaging. His thesis reports on the practice of translanguaging in a multilingual classroom in Pretoria in Gauteng Province, South Africa. Using data generated through application of a qualitative research method, he concentrates on how educators find translanguaging useful during teaching and learning, especially in contexts where translanguaging is common. He finds that teachers employed within the Department of Basic Education, across all basic education phases, utilise translanguaging. He also finds that some are aware of their doing so, others do it unconsciously. Anele Gobodwana argues that translanguaging is useful as it makes lessons easily accessible to all students, but that its use is limited and problematic in contexts where the teacher is neither bilingual nor multilingual, particularly when learners are.

*Supervisor:* Dr R Possa-Mogoera  
(Languages and Literature)

Timothy John Gordon

Thesis Title: *Opening pandora's box? Desegregation and transformation in six elite public schools in the Western Cape province of South Africa*

Tim Gordon holds a BA from the University of Pretoria, a BA(Hons) and Education Diploma from the University of South Africa, and an MA from Rhodes University. He has headed five schools serving diverse communities, held posts in two provincial Education Departments, and was Chief Executive of South Africa's Governing Body Foundation.

Tim Gordon's research

explores desegregation of elite Western Cape public schools. He postulates that, despite historical and geographic commonalities, school desegregation follows divergent transformational trajectories whilst striving to develop new school cultures. He considers issues of assimilation, preservation of ethos and tradition, and the modulation of race as a segregationist criterion. He also examines the pressures of #Falloism. Recognising an increasing effect of social class, he considers the marketisation of education and schooling's emergence as a 'purchasable' commodity for those with financial, social, or performative capital. Tim Gordon's findings reveal that school transformation is influenced by urban landscape, feeder zone and feeder-school demographics, and elite schools' 'aura.' He also shows that a measure of racial discrimination remains manifest in some desegregated schools, although many provide spaces where unresolved tensions play out safely and enable black and white children to engage daily across demographic divides without retreating into racial comfort zones.

*Supervisor:* Professor U Hoadley (Education)  
*Co-supervisor:* Emeritus Professor J Muller (Education)

Beverly Mwenya Kabwe  
 Thesis Title: *Theatres of migritude: towards a dramaturgy of African futures*

Beverly Mwenya Kabwe completed her BA in Theatre at Northeastern University, United States of America where she minored in African Studies and Psychology. She obtained her Master's degree from UCT and returned for her doctoral studies in 2017.

Beverly Mwenya Kabwe's thesis offers a contribution from performance practice to the genre of black migrant cultural production called migritude, developed largely in African diasporic literary circles and tracing its evolution from the Négritude movement. Her thesis mobilises Shailja Patel's significant work to shape a *new* migritude that stands in continuation and in contestation with the older version

of this artistic project. Kabwe's work explores an approach to thinking about how a relationship between migration and African futurism can be put towards a dramaturgical practice mobilised in the direction of possibility, potential and a hopeful future. Kabwe conducts an analysis of five performance texts in order to develop a pliable dramaturgical framework which leverages the aesthetic features of migritude artistic work, towards a proposal for an African migrant focused dramaturgy.

*Supervisor:* Professor M Fleishman (Theatre, Dance, and Performance Studies)

Maria Barbara Kingwill  
 Thesis Title: *The manifestation and potential of constructive journalism in South African digital news*

Maria Barbara Kingwill holds an Honours degree in Journalism and an MPhil in Management Coaching from Stellenbosch University, where she researched the role of language in human change processes. A former Nieman Fellow at Harvard, she joined UCT to commence her doctoral studies in 2020.

Maria Barbara Kingwill's thesis investigates the manifestation of constructive journalism and journalists' and editors' views of the form's potential in South African digital news. Constructive journalism aims for a realistic balance of progress and problem reporting in the overall news cycle. She investigates the presence of constructive journalism in 134 articles on 'evictions' (all written during South Africa's first COVID-19 lockdown in 2020) from news outlets with varying editorial approaches. Based on interviews with journalists and editors involved in writing and editorial decisions regarding those articles, she finds that constructive journalism was largely absent in the articles. Yet by 2022, journalists showed acute awareness of the effects of relentless negative news on audiences and had shifted to support the introduction of constructive journalism. Her study enriches understanding of constructive journalism's applicability in

developing democracies and shows that the form can add nuance and complexity to current practices of watchdog journalism dominating South African news-reporting.

*Supervisor:* Professor H Wasserman (Stellenbosch University)

Gustav Nyambe Mbeha  
 Thesis Title: *Dialect variation in a cross-border language: a sociolinguistic study of Silozi in Zambia and Namibia*

Gustav Mbeha holds a BA and BA (Hons) in English and Linguistics from the Polytechnic of Namibia. He joined UCT in 2016 for his MA, which he completed in 2018.

Gustav Mbeha's thesis draws on language change, variation, and migration theories to discuss dialectology in Silozi, a cross-border language spoken predominantly in Katima Mulilo, Namibia and Mongu, Zambia. He focuses on data from over 70 hours of interviews with participants in the two countries to investigate variation in the language's lexicons and morphosyntactic structures. A significant finding is that the role of intra-Bantu contributions to the Silozi dialects differs between the two towns, with the Katima Mulilo variety of Silozi containing more lexical and structural influences from neighbouring Bantu languages than the Mongu variety. Gustav Mbeha also shows that lexical borrowings from English and Afrikaans are prominent in both towns, and that that is a reflection of global and local influences in language. The findings in Gustav Mbeha's thesis show that language contact and migration are significant factors in long term language change.

*Supervisor:* Emeritus Professor R Mesthrie (African Studies and Linguistics)  
*Co-supervisor:* Professor L Marten (SOAS University of London)

† Zayd Minty

Thesis Title: *Urban cultural governance and the South African City: the case of Johannesburg's Newtown cultural precinct*

Zayd Minty holds a BA(Hons) in Legal Studies, Drama, Culture, and Media Studies from the University of KwaZulu-Natal. He joined UCT in 2007 to commence his doctoral studies. A renowned cultural practitioner, he founded *Creative City South* and has worked in museums and local governments across South Africa.

Zayd Minty's thesis examines South Africa's longest-running cultural precinct, Newtown, in inner-city Johannesburg. It maps the area's rise and fall from the 1970s to the present, analysing its emergence as a cultural hub and the political rationalities and governmental logics that first supported and then led to its demise. By identifying distinct governance phases and tracing the different values placed on culture over more than four decades, Zayd Minty's thesis helps understand how differing governmental logics directly affect hard and soft cultural infrastructure. It highlights the importance of balancing economic development and cultural preservation, as well as ensuring that cultural and creative initiatives are inclusive and equitable for all members of society. His thesis demonstrates that local governments can and must become increasingly responsive to the needs and interests of their citizens and need to support the growth of meaningful and inclusive cultural initiatives that serve the public good.

*Supervisor:* Professor S Oldfield  
(Environmental and Geographical Science)

*Co-Supervisor:* Dr L Nkula-Wenz  
(African Centre for Cities)

Cletus Muluh Momasoh

Thesis Title: *International migration and social inclusion of migrants in South Africa: the case of Cameroonian migrants in the Western Cape*

Momasoh Cletus Muluh completed a BSc at the University of Buea, Cameroon, and Honours and Master's degrees at the University of the Western Cape. He began full-time doctoral studies at UCT in 2015.

Momasoh Cletus's thesis focuses on the agency exercised by Cameroonian migrants and on understanding the strategies they use in their integration process within their host communities in South Africa. In the research leading to his thesis, he hypothesised that the interplay between links to the home country and the receptivity of the local culture depends on whether migrants choose one of several cultural strategies as modes of social integration: acculturation, transculturation, or a transnational existence. Based on an ethnographic study that included structured interviews, he finds that the migrants amongst whom he undertook research cling to their historical past by laying claims of social belonging in their host country and also by retaining their home citizenship. He argues that, amidst all the challenges these migrants encounter in their host communities, they defensively combine to be able to survive even in a very hostile environment.

*Supervisor:* Emeritus Professor A Sitas  
(Sociology)

Angelika Mate Mukoya

Thesis Title: *A critical analysis of the strategies of terminology creation in the context of a multilingual Namibia: the case of ruManyo*

Angelika Mate Mukoya holds a BA and an MA in African Languages and Applied Linguistics from UCT. She commenced her doctoral studies in 2018.

Angelika Mate Mukoya's thesis examines the sufficiency and potential of terminology-creation strategies as a mechanism for promoting growth and development of ruManyo.

She uses qualitative data-collection tools to identify the most frequently used terminology-creation strategies in ruManyo. She hypothesises that the two means for terminology creation, that is language's internal word-formation processes and a language's external resources, are also reflected by the ruManyo language practitioners' strategies to create terminologies in a variety of domains. Her analysis reveals that ruManyo language practitioners advocate the use of multifaceted strategies to ensure that terminologies that are developed across indigenous African languages are created with meticulous attention towards preserving and ensuring universality as well as clarity of meaning. Angelika Mate Mukoya's findings may be useful in future for designing a new model for terminology-creation strategies.

*Supervisor:* Dr R Possa-Mogoera  
(Languages and Literature)

Lena Nyahodza

Thesis Title: *A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship*

Lena Nyahodza completed her BA in Education in 2002 at Solusi University, Zimbabwe. She obtained a PGDip in Library and Information Science in 2012 and a Master's in Library and Information Science in 2016, both at UCT.

Lena Nyahodza's thesis, located in a transformative paradigm and using a critical epistemological lens, inquires into UCT research community's participation in open scholarship with a special focus on UCT academics and researchers' engagement in knowledge sharing through open access, open educational resources and open data to contribute to the openness movement as a social good, and to UCT's social justice agenda of sharing scholarship to support development on the African continent. Her thesis critically engages the open scholarship practices and publishing culture of UCT academics and researchers who participated

in the study; the factors motivating participation in those practices at UCT, including the availability of resources to support openness practices; and the challenges encountered by those at UCT who participate in open scholarship. Based on her main findings, she proposes a strategy that could be adapted by research communities with similar experiences to those of UCT academics and researchers in order to enhance open scholarship.

*Supervisor:* Professor J Raju  
(Knowledge and Information Stewardship)

Nteboheng Phakisi  
Thesis Title: *The impact of industrial agrarian policies on soils: experiences of small-scale farmers in the rural Eastern Cape*

Nteboheng Phakisi holds an undergraduate degree from the Tshwane University of Technology and an MSc from Palacky University, Czech Republic. She began full-time doctoral studies at UCT in 2018.

Nteboheng Phakisi's thesis focuses on the impact of current agrarian policies that compel small-scale farmers to switch from their old and trusted indigenous knowledge systems in order to join 'modernised' state-funded agricultural programmes. Post-apartheid, the South African government has focused on 'modernising' farming in the rural landscape by introducing technocratic solutions, including genetic engineering. Her thesis describes the many challenges encountered by small-scale rural farmers when state sponsored decision makers understand technocratic solutions to be the only means to introduce agrarian reforms. Providing evidence from on-the-ground practices in the Eastern Cape, she highlights the importance of farmers' knowledge systems in soil management practices to show how technology and local knowledge can be combined to improve small-scale farmers' soil management practices, and overall farming activities. Her thesis's contribution is to demonstrate that, while 'modern' technology may be used to assist rural

farmers, doing so at the expense of local knowledge of farming and soil health is counterproductive.

*Supervisor:* Professor LF Green  
(Anthropology)

Nashilongweshipwe Jacobs Jacks Sakaria  
Thesis Title: *Oudano as praxis: archives, audiotopias and movements*

Nashilongweshipwe Jacobs Jacks Sakaria completed his BA in Media Studies and Performing Arts and MA in Performing Arts at the University of Namibia. He obtained a MA in Applied Theatre at the University of the Witwatersrand. He commenced full-time doctoral studies at UCT in 2018.

Nashilongweshipwe Jacobs Jacks Sakaria's thesis reports on Oudano, an indigenous Oshiwambo and Rukwangali concept that animates various practices of postcolonial cultural production and resistance in Namibia. Taking Oudano seriously as a performative concept and method of critical address, his research shows how Oudano demands that we approach colonial archives, sites and practices of memory queerly, offering an important challenge to official practices of national remembering. To achieve this, he brings together a diverse range of objects of analysis in his study. These range from contemporary performance to musical and visual arts. He thereby demonstrates Oudano's generative refusal of institutional, epistemological, cultural, and political boundaries and, in so doing, he underlines its capacity to speak back to and radically re-imagine the afterlife of colonialism.

*Supervisor:* Dr MN Mtshali (Theatre, Dance, and Performance Studies)  
*Co-supervisor:* Professor C Hamilton  
(Historical Studies)

Tammy Vanessa Wilks  
Thesis Title: *Dwelling in diversity: religion and belonging in Kibera, a neighbourhood in Nairobi*

Tammy Wilks holds a BSocSci, BA(Hons) and a MSocSci, all from UCT. She commenced her doctoral studies in 2018.

Tammy Wilks's thesis examines how religious communities in Kibera, a neighbourhood in Nairobi, Kenya, construct a sense of belonging to each other and to their place of residence amid change, uncertainty, and intense competition for scarce resources such as land, government recognition and citizenship goods. She uses archives, oral and life histories, and participant observation data to demonstrate how religiously plural communities – past and present – generate and perform their myths and practices to manage and challenge change and uncertainty in the rapidly changing city of Nairobi. Using theories of religion as crossing, dwelling and flux, she focuses on the claims, counterclaims, and conflicts between religious communities about who should belong. Her research findings illustrate that the shifting precarities and conditions of African urban cities like Nairobi create profound effects on religious experience, conflict, and coexistence; and that religious communities can invent resourceful and innovative ways to manage and make sense of these changes. Wilks's research contributes to the 'neighbourhood turn' in studies of the relationship between religion and the city in Africa and elsewhere.

*Supervisor:* Professor A Ukah  
(The Study of Religions)

Alice Frances Womersley  
Thesis Title: *Imagining space and place: the representation of Africa through image and text in Andrew Lang's Fairy Books (1889-1910)*

Alice Womersley holds a BA and MA in Fine Art, and a PGCE, all from UCT.

Alice Womersley's thesis examines the representation of Africa and Africans in Andrew Lang's *Fairy Books* (1889-1910), volumes considered to be the first global fairy tales anthologies.

Published during the British Empire's heyday for a readership of that time, they represented Africa and Europe alongside each other. Through interrogating the books' representations of Africa from outside of Africa, the thesis reveals how slippage between images and text, in this colonial project of 'fairy tale,' created both a complex and contradictory single narrative of Africa and Africans. From this assessment of Andrew Lang's *Fairy Books* (1889-1910), Alice Womersley formulates an argument about the cartographic imagination as fairy tale. She does this by comparing both the image and textual components of fairy stories with cartographic language. In addition, she examines how the books were used in the Victorian era to socialise African people into being 'productive' colonised people. Alice Womersley's thesis models new approaches – cartographic imagination as fairy tale and the image-text relationship – to reinvestigate Victorian representations of Africa and to bring a nuanced understanding and fresh perspective to this area of scholarship.

*Supervisor:* Professor B Martinez-Ruiz (Harvard University)  
*Co-supervisor:* A/Professor J Bam-Hutchison (African Studies)

Ellen Farisayi Zvobgo  
 Thesis Title: *An exploration of the meaning of social justice for survivors of domestic violence in Zimbabwe*

Ellen Farisayi Zvobgo is a gender activist working in Zimbabwe, with research interests in social justice, human rights, and gender-based violence. She holds BPrimEd, Master's in Educational Psychology, and Master's of Educational Administration from the University of Zimbabwe and a MA in Gender Studies from Makerere University, Uganda.

Ellen Farisayi Zvobgo's thesis explores the meaning of social justice for survivors of domestic violence in Zimbabwe. She investigates how the provision of shelter space to survivors (for which provision is made in Zimbabwe's Domestic Violence Act) can be theorized as a form of social justice. Working with one particular shelter,

Musasa, in Gweru, Zimbabwe, she explored the experiences of those who had worked with the shelter in multiple ways. Her study demonstrates that sheltering brings to life a form of social justice through capability development. She describes how survivors of domestic violence who initially indicated that they had experienced a number of social injustices because of domestic violence experienced a shelter as playing a critical role in restoring their dignity as human beings. On this basis she argues that a shelter is a platform for justice provision beyond the law.

*Supervisor:* A/Professor J Bennett (African Feminist Studies)

## 5. FACULTY OF LAW

*Dean:* Professor D Chirwa

### DEGREE OF DOCTOR OF PHILOSOPHY

Maame Efua Addadzi-Koom  
 Thesis Title: *The use of court-connected mediation in domestic violence contexts in Ghana: a call for model screening protocols*

Maame Addadzi-Koom holds an LLB from Kwame Nkrumah University of Science and Technology, Ghana, an LLM from Fordham University, United States of America and a BL from the Ghana School of Law. She joined the Faculty of Law at UCT in 2019 to commence her doctoral studies.

Maame Addadzi-Koom's thesis examines how domestic violence cases are mediated through court-connected mediation (CCM) in Ghana. It assesses how the process influences safety, fairness, and positive outcomes for female victims. She uses data from interviews with judges, mediators and female victims of domestic violence who have participated in CCM, and other documents, to conduct her studies. She finds that few of the domestic violence cases that are filed in court are referred to CCM. She further finds that there are no documented screening guidelines to facilitate referrals of

domestic violence cases to CCM. She makes various recommendations based on her findings and theoretical analysis, including developing a model screening protocol aided by specialised court forms consistent with international trends. Her findings will be helpful to the government, judicial service, Alternative Dispute Resolution directorate, and policymakers in Ghana in future steps to ensure effective court-connected mediation of domestic violence cases.

*Supervisor:* Professor M Paleker (Private Law)

William Russell Harding  
 Thesis Title: *Hydroecological connectivity as a normative framework for aquatic ecosystem regulation: lessons from the USA*

William Harding completed his BSc and BSc(Hons) at Rhodes University. He obtained a MSc and PhD in Zoology, as well as a MPhil in Public Law, all at UCT.

William Harding's thesis analyses the value of a regulatory approach which provides an assurance that, at watershed level, all components of an aquatic ecosystem remain functionally and integrally connected. To encompass all of the dimensions and forms of connectivity, he coins the term 'hydroecological connectivity.' To enfold property rights issues associated with his proposed approach, he analyses and deploys the principles of the Public Trust Doctrine. From this he derives a principled protocol that affixes guiding sidewalls to administrative discretion in decisions regarding the beneficial use of water resources. He places this within the historico-legal context of the trust principles in South African law, inclusive of interviewing those members of the Water Law Reform drafting team who dealt with the inclusion of the public trust in the National Water Act of 1998. The outcome is a novel and bold translational and transdisciplinary product, which operationalises a complex scientific concept within a principled and normative instrument of environmental water law.

*Supervisor:* Professor L Feris (University of Pretoria)

Ferdinand Heinrich Hermann Kehrhahn  
 Thesis Title: *Fire the hired gun: eliminating expert bias in the accusatorial-adversarial civil justice system*

Ferdinand Kehrhahn completed his LLB and LLM at the University of Pretoria and holds a PGDipa in HIV and Aids Management from Stellenbosch University. He commenced part-time doctoral studies at UCT in 2019.

Ferdinand Kehrhahn's thesis identifies expert bias as a troubling issue in the South African adversarial legal system. The thesis, in seeking a solution to this problem, considers the root causes of adversarial expert bias. It considers the advantages and disadvantages of mainstream and conventional proposals as responses to adversarial expert bias. He concludes that although these conventional responses contain valuable attributes, they are not viable given the South African economic, political, legal and social milieu. The thesis, in proposing law reform, argues that the only viable solution to the expert-bias-problem is to appoint an extra judicial and administrative independent-expert-tribunal, to find facts of an expert nature which must be binding on a court. Although by no means perfect, this intervention should address and eliminate most root causes of hired gun adversarial expert's bias.

*Supervisor:* Professor PJ Schwikkard (Public Law)

Mahlatse Innocent Maake-Malatji  
 Thesis Title: *The role of collective bargaining in business sustainability and the future of work: a South African perspective*

Mahlatse Maake-Malatji holds an LLB from the University of Limpopo and an LLM from UCT. She commenced her doctoral studies in 2018.

Mahlatse Maake-Malatji's thesis focuses on the role of collective bargaining in business sustainability and the future of work in South Africa, particularly in the context of the fourth industrial revolution. She contends

that applying good faith principles, and recognising and reconciling various parties' interests, assist in business sustainability. Her thesis investigates how collective bargaining can support the viability of corporations and secure employment in the contemporarily changing world of work. Recognising collective bargaining as a way of easing the movement of skills development in a world of work where partnerships between humans and machines are increasingly inevitable, she extends her research to consider the role of collective bargaining in circumstances where the growing adoption of artificial intelligence is shaping the future of work. By proposing ways that can be used to develop new policies relevant to that changing world, Mahlatse Maake-Malatji's thesis informs how collective bargaining can continue to serve a purpose in the changing world of work.

*Supervisor:* Emeritus Professor E Kalula (Commercial Law)  
*Co-supervisor:* Professor A Ordor (Commercial Law)

Gaopalelwe Lesley Mathiba  
 Thesis Title: *Towards a meaningful engagement approach to mining-induced displacements in South Africa: a legal comparative perspective*

Gaopalelwe Mathiba holds an LLB from North-West University and LLM from the University of the Western Cape. Having been a lecturer at Rhodes University and the University of South Africa, he is now a senior lecturer in UCT's Faculty of Law.

Gaopalelwe Mathiba's thesis considers the risks and pressing challenges besetting mine communities in and beyond South Africa. Among these are displacements of these communities by extractive companies – sometimes with state aid – to make way for mining developments, and where intense conflicts often arise. The thesis investigates whether, and to what extent, application of meaningful engagement (an adjudicative strategy in eviction disputes) can be extended to deal with mining-induced displacements. Drawing from the main findings of a comparison

between South Africa and Ghana, the thesis concludes that although South Africa's prevailing legal framework provides few safeguards to mine communities it is in a better state than that in Ghana. The thesis asserts that South Africa needs more law reform initiatives to achieve comprehensive protection of vulnerable mine communities against abrupt displacements by powerful and well-resourced mining companies. The thesis also justifies a general need for law reform and proffers specific policy aspects that should guide such reforms in each examined jurisdiction.

*Supervisor:* Professor H Mostert (Private Law)  
*Co-supervisor:* Dr L van Schalkwyk (Construction Economics and Management)

Hermanus Johannes Moolman  
 Thesis Title: *The development of a Bachelor of Laws (LLB) curriculum change management model for South African universities*

Hermanus Moolman completed his BCom in Law, BLur, LLB, LLM, and PhD in Higher Education Studies at the University of the Free State (UFS), the last for a thesis entitled 'Competence directives for enhancing the employability of hospitality management students. He is currently a senior lecturer in the Faculty of Law at UFS.

Hermanus Moolman's thesis focuses on developing a curriculum change management model (CCMM) for facilitating comprehensive LLB curriculum change at universities in South Africa. Based on a literature review, a draft LLB CCMM comprising 61 prescriptive outlines (POs) is developed. The importance of the POs of this CCMM is evaluated by 28 questionnaire participants who previously participated in the UFS LLB curriculum change process. They also rate the compliance of the UFS curriculum change process with mentioned POs. The quantitative and qualitative feedback from questionnaire participants, a focus group discussion with nine participants, and a critical reflective appraisal by the researcher guided the development of a final LLB CCMM comprising

52 POs and recommended practices for complying with these POs. The study contributes towards curriculum change theory building. The proposed CCMM breaks down the challenging, multifaceted and complex nature of comprehensive curriculum change into manageable processes, functions, POs, and recommended practices.

*Supervisor:* Emeritus A/Professor L Greenbaum (Private Law)

Jameelah Omar

*Thesis Title: Improving participation for rape complainants: a critical engagement with the challenge of South Africa's adversarial criminal justice system*

Jameelah Omar holds a LLB and LLM in Criminal Justice from UCT. She is an associate professor the Department of Public Law at UCT, where she lectures and publishes in the area of sexual offences and criminal law and procedure.

Jameelah Omar's thesis provides a theoretical analysis of the opportunities for participation of rape complainants in South Africa's adversarial criminal justice system. In developing a deeper theory of victim participation that takes account of the theoretical limits imposed by South Africa's legal system, the thesis draws out a range of active and passive possibilities for participation at all stages of the criminal process. The components of information, support, protective measures, and opportunities to influence decision-making, are argued to be fundamental to the provision of comprehensive participatory opportunities for complainants. The focus on rape complainants acknowledges that rape is a crime of violence and power and that rape complainants disproportionately experience secondary victimisation through the process. The thesis provides a theoretical justification for advancing measures to South Africa's legislative framework and makes a novel contribution to global and domestic scholarship that has sought to advocate for the strengthening of complainant participation.

*Supervisor:* Professor D Smythe (Public Law)

Benjamim Pequeno

*Thesis Title: Public private partnership contracts in Mozambique and South Africa: managing risks and ensuring sustainability*

Benjamim Pequeno holds an MLL in Public Law from the Eduardo Mondlane University, Mozambique, an MSc in Governance from Birmingham University, United Kingdom, and an MBA from Huron University, London. He is an advisor to the Vice-President of the Mozambican Parliament.

Benjamim Pequeno's thesis focusses on Public-Private Partnership (PPP) contracts in Mozambique and South Africa with emphasis on risk management to ensure sustainability. He argues that although from the 2000s onward PPPs have been emulated as a mechanism to obviate financial constraints faced by governments in the development of public infrastructures, PPPs are not a cure-all remedy. PPPs often have tended to be more expensive than their public procurement alternative, and in a number of instances they have failed to deliver the envisaged gains. Poor regulation, institutional weakness, lack of transparency, and corruption have compromised the success of PPPs. To resolve the above challenges, the author proposes a host of reforms including streamlining regulatory systems, developing public sector capacity, improving stakeholder engagement, improving transparency and accountability, and curbing corruption.

*Supervisor:* Professor A Hutchison (Commercial Law)

*Co-supervisor:* Professor A Ordo (Commercial Law)

Bongani Moses Sayidini

*Thesis Title: Shale gas and hydraulic fracturing in South Africa: towards a petroleum legal framework that provides for innovative technologies that support energy security of supply and mitigate climate change*

Bongani Sayidini holds a Bachelor's degree in Chemical Engineering, an MSc in Petroleum Engineering from the Imperial College London, England, an LLM in Petroleum Law and Policy from the University of Dundee, Scotland, and an MBA from UCT.

Bongani Sayidini's thesis investigates whether South Africa's petroleum legal framework provides for the protection of the environment against the risks arising from shale gas development. He employs a comparative legal research methodology and uses the prevention principle (avoidance), precautionary principle (mitigation), and polluter-pays principle (remediation) as comparative themes. He compares the petroleum legal frameworks of South Africa with those of the United Kingdom and Canada which have relatively advanced legal frameworks for petroleum extraction. His findings are that South Africa does not have an effective petroleum legal framework to regulate shale gas development. He further finds that the environmental principles of avoidance, mitigation and remediation are already embedded in the South African environmental legal framework. Therefore, he argues, the appropriate petroleum legal framework to guide shale gas development in South Africa would be one that provides for rigorous application of these principles, in an integrated and complementary manner, with close monitoring and enforcement.

*Supervisor:* Professor H Mostert (Private Law)

Hendrik Cornelus Schmidt

Thesis Title: *The legal meaning of state custodianship in the context of the Mineral and Petroleum Resources Development Act 28 of 2002*

Hendrik Schmidt completed his BLuris and LLB at the University of South Africa, LLM at the Rand Afrikaans University and MPhil at the University of Johannesburg. He commenced his doctoral studies at UCT in 2017.

Hendrik Schmidt's thesis focusses on determining the legal content of the concept of state custodianship introduced by South Africa's primary legislation in mineral law, the Mineral and Petroleum Resources Development Act (MPRDA). He discusses the background to and the impact of the introduction of the notion of state custodianship by the MPRDA. The principles of state custodianship, although a novel concept in South African mineral law, are akin to the principles of the public trust doctrine and public trusteeship found in other countries without introducing these concepts into South African law. The state's increased control over the redistribution and allocation of rights to access to mineral resources ensures equal access to mineral resources, a transformed and sustainable mineral rights regime and economic prosperity.

*Supervisor:* Professor H Mostert  
(Private law)

Thapelo Teele

Thesis Title: *The law's authority to implicitly inscribe the rhetoric of forgiveness through creatures of statute tasked with truth recovery, justice, peace and reconciliation in post-conflict contexts of South Africa and Rwanda*

Thapelo Teele holds an LLB from UCT. Through the generous grant of two fully funded scholarships from the Andrew W. Mellon Foundation, in 2020 he commenced his Master of Laws in Rhetoric Studies, which was upgraded to a PhD in 2021.

Thapelo Teele's thesis presents a socio-legal approach to the rhetoric of law and forgiveness in bodies legally mandated with reconciliation in the post-

conflict democratic contexts of South Africa and Rwanda. He engages critically in several sources from legally decided cases to the theories of philosophers from ancient Greece. He investigates the characteristics of reconciliation to ascertain whether the process towards reconciliation necessarily allows the law to grant forgiveness to perpetrators on behalf of victims. He investigates the tenets of contemporary democracy rooted in ancient Greek democracy, proceeding to discuss the oldest surviving democratic states and their conception of citizenship, the state, the nation, and sovereignty in order to ascertain the scope of the law's authority in respect of forgiveness. He ascribes the law's authority to grant forgiveness to perpetrators on behalf of victims in post-conflict democratic contexts as being derived from the social field on which the law's authority rests.

*Supervisor:* Distinguished Professor P-J Salazar (Private Law)

## 6. FACULTY OF SCIENCE

*Interim Dean: Professor P Woudt*

### DEGREE OF DOCTOR OF PHILOSOPHY

Raphael Taiwo Aruleba

Thesis Title: *Identification of metabolomic signatures to detect active disease and treatment outcome in visceral leishmaniasis in mice*

Raphael Aruleba holds a BSc and MSc in Biochemistry from the University of Zululand. He joined the Department of Molecular and Cell Biology at UCT in 2019 to commence his doctoral studies.

Raphael Taiwo Aruleba's thesis focuses on the identification of host metabolites that could potentially improve diagnosis and management of visceral leishmaniasis. Visceral leishmaniasis is a parasitic disease that ranks high on the World Health Organisation (WHO) list of neglected tropical diseases. Using an untargeted metabolomics approach combined with

zaydimmunological technique in a mouse model of visceral leishmaniasis, he sought to identify signature host metabolites in mouse sera that could predict active disease during the course of infection. Using similar methods, his work also identifies signature metabolites that could predict successful treatment with sodium stibogluconate loaded into non-ionic surfactant vesicles during infection. Raphael Aruleba's research findings provide a new avenue for developing specific and sensitive diagnostics, based on host metabolites, for this disease, which is particularly useful in low-resource settings, where early diagnosis and successful treatment of visceral leishmaniasis are critical.

*Supervisor:* Dr R Hurdal  
(Molecular and Cell Biology)  
*Co-supervisor:* Professor F Brombacher  
(Pathology)

Jessica Mary Burger

Thesis Title: *Drivers of spatial and temporal variability in sources and cycling of inorganic aerosols from the remote marine atmosphere of the Southern Ocean*

Jessica Burger completed her BSc, BSc(Hons), and MSc at UCT, and began full-time doctoral studies in 2019.

Jessica Burger's thesis focuses on the sources, composition, and chemistry of natural aerosols in the atmosphere above the Southern Ocean. She explores the seasonally varying impacts of sea ice, surface ocean biology, and meteorology on aerosol concentration and chemistry. Her analysis involves samples and data collected from over 200 days spent at-sea in the Southern Ocean. She finds evidence that oceanic and sea-ice emissions play an important role in nitrogen cycling and oxidation chemistry of the remote atmosphere. Her work also provides an isotopic tracer useful for identifying oceanic nitrogen emissions in any marine region. Her winter and springtime data are some of the first collected in the Southern Ocean and overall, her dataset and the insights generated therefrom are a unique and valuable contribution to climate science.

*Supervisor:* Dr K Altieri  
(Oceanography)

James Andrew de Haast

Thesis Title: *Using biological traits analysis to investigate ecological functioning of cold-water coral reefs*

James de Haast joined UCT in 2012, obtaining his BSc in 2014. Focusing on Marine Biology, he completed a BSc(Hons) in 2016 and an MSc in 2019, commencing full-time doctoral studies in the same year.

James de Haast's thesis focuses on ecological functioning of cold-water coral reefs. Using video data from sites off Norway, he shows that differences in taxonomic assemblages among the reefs are partially accounted for by their geographic positions, but also by bottom type and depth. His research generalises the attributes of taxa found on the reefs to identify universal traits affecting ecosystem functioning. Using literature sources, he builds a detailed database of biological traits, and investigates the relationships between organisms exhibiting different traits and environmental factors on the reefs. He shows the most important association is between animals living in burrows and muddy and pebbly bottom types, negatively associating these with living and dead coral. His research suggests that available data need to be highly resolved to detect functionality. Cold-water coral reefs tend to be inhabited by local species attracted to the habitat, rather than housing species with specialised traits.

*Supervisor:* A/Professor C Moloney (Biological Sciences)

*Co-supervisors:* Dr N Karenyi (Biological Sciences) and

Dr L Buhl-Mortensen (Institute of Marine Research, Norway)

Laique Merlin Djeutchouang

Thesis Title: *Sampling scale sensitivities in surface ocean pCO<sub>2</sub> reconstructions in the Southern Ocean*

Laique Djeutchouang holds a BSc in Mathematics and an MSc in Statistics from the University of Yaoundé I, Cameroon. He joined the Department of Oceanography at UCT in 2018 to commence his doctoral studies. Before joining UCT, he

worked at the African Institute for Mathematical Sciences, Tanzania and the London Mathematical Laboratory.

Laique Djeutchouang's thesis focused on advancing our understanding of sampling scale sensitivities of surface ocean carbon dioxide reconstructions from machine learning. He used a series of observing system simulation experiments applied to a mesoscale-resolving ocean model. He investigated the sampling scales of the autonomous sampling platforms, such as Floats, WaveGliders and Saildrones, on CO<sub>2</sub> reconstructions. His research found that two sampling scales, which Saildrones are able to address, are required to improve CO<sub>2</sub> estimates using machine-learning techniques: resolving the seasonal cycle of the meridional gradients and the intra-seasonal variability. Based on the impacts of these two sampling scales on errors, he found that resolving the seasonal cycle of the meridional gradient is the first-order requirement. He then proposed a scale-sensitive sampling strategy for the whole Southern Ocean by integrating Saildrones with underway ships on winter lines.

*Supervisor:* Professor M Vichi (Oceanography)

*Co-supervisor:* Dr P Monteiro (University of Stellenbosch)

Brian Du Preez

Thesis Title: *Biogeography, evolution and taxonomic revision of the genus Indigofera L., with a focus on the Greater Cape Floristic Region*

Brian Du Preez completed his National Diploma and BTech in Nature Conservation at Nelson Mandela University, before completing a BSc(Hons) in Biodiversity and Ecology, and a MSc in Botany from Stellenbosch University. He began full-time doctoral studies at UCT 2019.

*Indigofera* is a diverse plant genus in the winter-rainfall area of Southern Africa, but its taxonomy has not been revised for 160 years. Extensive field-sampling campaign yielded specimens representing over 140 species from the region. Using molecular data from *Indigofera* across the world, Brian

Du Preez was able to determine that the genus evolved and initially diversified in Africa, before dispersing across the globe during the Miocene, including multiple trans-oceanic dispersals to South America and Australia. Most species in the winter-rainfall area belong to single lineage, the Cape Clade, originating in the Namib desert, before dispersing to, and diversifying in, the Cape as the region shifted to a winter-rainfall, arid-summer climate, resulting in the retreat of tropical biomes. Using morphological and molecular data, a new infrageneric classification for the Cape Clade was proposed. A total of 50 undescribed *Indigofera* have been recognized, among which nine will be described based on this thesis.

*Supervisor:* Professor A Muasya (Biological Sciences)

*Co-supervisors:* Professor L Dreyer (Stellenbosch University)

Stephanus Francois du Toit

Thesis Title: *Dry and back again: characterisation of desiccation-associated differentiation of leaf tissues in Craterostigma pumilum Hochst*

Francois du Toit obtained a BSc and BSc(Hons) at UCT. The MSc registration was upgraded to a PhD in 2020. A portion of their doctoral studies was completed at the Weizmann Institute of Science in Israel, with the Reich Research Group.

Francois du Toit's thesis aimed to provide a detailed characterisation of the desiccation-associated differentiation of leaf tissues in the resurrection plant *Craterostigma pumilum*. They made use of physiological techniques such as pulse-amplitude modulated chlorophyll fluorometry and fluorescent marker tracking, to identify approximate initiation and realisation windows for this phenomenon in the *C. pumilum* water-deficit stress response cycle. Francois du Toit further made use of transcriptomic techniques to identify candidate processes which may be involved in the progression of tissue differentiation.

*Supervisor:* Professor J Farrant (Molecular and Cell Biology)

*Co-supervisor:* Professor Z Reich (Weizmann Institute of Science)

Kelby Farrell English

Thesis Title: *Investigating hypotheses for the establishment discrepancy of *Dicomada rufa*, a biological control agent for *Hakea sericea* in South Africa*

Kelby English completed her BSc, BSc(Hons) and MSc in Entomology at the University of KwaZulu-Natal. She joined the Department of Biological Sciences at UCT in 2016 to commence her doctoral studies.

Kelby English's thesis investigates the reasons for the limited effectiveness of a flower feeding weevil, *Dicomada rufa*, which is being used in South Africa for the biological control of an invasive alien plant, *Hakea sericea*, native to Australia. Her study confirms that the weevil is having minimal impact on its target. Possible reasons for the failure which were explored include: inadequate physiological thermal tolerances of the adult weevils; possible climate-mismatches between Australia and South Africa; the influence of differences in soil composition in different regions of South Africa; variability in *H. sericea* volatile organic compound (scent) profiles in different regions; and differences in the genomic sequences between *H. sericea* populations. The findings confirm that *D. rufa* is unlikely to ever succeed as a biological control agent of *H. sericea* in South Africa and that efforts to enhance its performance should be discontinued.

*Supervisor:* Emeritus A/Professor

J Hoffmann (Biological Sciences)

*Co-supervisors:* Dr C Lyons

(Agricultural Research Council-Plant Health and Protection) and Dr E Phiri (Stellenbosch University)

Michael Sipho Hlabathe

Thesis Title: *Reverberation mapping of active galactic nuclei*

Michael Hlabathe holds a BSc in Mathematics and Physics from the University of Venda. He further holds BSc(Hons) and MSc in Astrophysics and Space Science from the National Astrophysics and Space Science Programme at UCT. He commenced his doctoral studies in 2016, based at the South African Astronomical Observatory.

Michael Hlabathe's thesis

focuses on using reverberation technique to measure masses of black holes at the centers of active galactic nuclei. This technique measures the light-travel time delay between the variations of the accretion disk surrounding the black hole, and those of broad emission lines, emitted by gas orbiting the black hole. This delay provides the distance from the accretion disk to the gas, which, combined with the rotational velocity, gives the black hole mass. These challenging measurements required superb data collected over several years. He made use of the Southern African Large Telescope, together with smaller telescopes around the world. The resulting black hole masses are a few tens of millions times the mass of the sun. The results have already led to one publication and he is working on more.

*Supervisor:* Professor P Whitelock

(Astronomy)

*Co-supervisors:* Dr E Romero-Colmenero (SAAO/SALT) and Dr S Crawford (NASA)

Precious Thembumuzi Mahlalela

Thesis Title: *Variability and trends in rainy season characteristics of the Eastern Cape*

Precious Mahlalela completed her BSc, BSc(Hons) and MSc at UCT, and began full-time doctoral studies in 2018.

Precious Mahlalela's thesis investigated Eastern Cape rainfall characteristics and trends during spring and summer. These seasons are of interest because they contribute the largest portion of annual rainfall and are therefore crucial for understanding rainfall inputs into Eastern Cape catchments. The study found a significant decreasing trend in total rainfall and number of rainfall days over most of the province in spring. Summer rainfall was less consistent, with a significant increase in some inland areas, but a statistically insignificant decrease near the coast. These observed trends are attributed to an increase in light and moderate rain days inland and a decrease in heavy rain days near the coast. On an interannual scale, the Botswana High has a strong influence on rainfall in both seasons. Large scale modes of variability have no discernible influence in spring,

whereas the summer season displays significant El Niño Southern Oscillation and Southern Annular Mode influences.

*Supervisor:* Professor C Reason

(Oceanography)

*Co-supervisor:* Dr R Blamey

(Oceanography)

Antoine Mahoro

Thesis Title: *Outflows from active galactic nuclei (AGN) and star-forming galaxies*

Antoine Mahoro completed his BSc(Hons) at Kigali Institute of Education, Rwanda and his MSc in Physics at Mbarara University of Science and Technology, Uganda. He began full-time doctoral studies at UCT in 2018.

Antoine Mahoro's dissertation examines active galactic nuclei (AGN) and non-active galaxies in the so-called transitional 'green valley' of galaxies, utilising public data from the Cosmological Evolution Survey (COSMOS) field, and using his own observations at the Southern African Large Telescope (SALT). To characterise galaxy transformation and gas flows in galaxies, he investigated their morphological characteristics and stellar populations, as well as the emission line profile of an important diagnostic oxygen line ([OIII]5007) in their spectra. He discovered that AGN green valley galaxies in the sample have a higher star formation rate than non-AGN green valley galaxies. In contrast to many earlier X-ray and optical studies, this implies positive AGN feedback rather than negative feedback, i.e. that AGN may enhance the star formation properties of their host galaxies during their transformation, rather than only quench star formation.

*Supervisor:* Dr K van der Heyden

(Astronomy)

*Co-supervisors:* Professor P Väisänen

(SAAO, Astronomy), Dr M Pović

(Entoto Observatory) and A/Professor

P Nkundabakura (University of Rwanda)

Phathutshedzo Masithi

Thesis Title: *Novel organocatalytic amination method for the enantioselective synthesis of the alpha-quaternised serine motif of the amicetin antibiotics*

Phathutshedzo Masithi obtained a BSc, BSc(Hons), and MSc in Chemistry, all from the University of the Witwatersrand. He commenced his doctoral studies at UCT in 2019.

Phathutshedzo Masithi's thesis examines the synthetic, methodology and development working on the enantioselective synthesis of alpha-substituted serine derivatives contained in the amicetin antibiotics. The main objective was to selectively synthesis one quaternised enantiomer over the other in enantioenriched form. By screening different cinchona alkaloid catalysts on an acyclic 1,3-dicarbonyl system, he managed to identify a primary amine cinchona catalyst for enantioselective amination via an aminocatalysis mechanistic type. He then conducted an SAR study on his optimized reaction conditions and generally found it to give >98% enantiomeric excess (ees). Few of the obtained aminated products were further functionalized to give oxazolidinones with one pictorial product subjected to the N-N bond cleavage conditions to furnish a protected alpha-substituted serine derivative. Overall, Phathutshedzo Masithi's enantioselective amination methodology provides a novel strategy for quaternisation from challenging acyclic 1,3-dicarbonyl template.

*Supervisor:* Dr W Petersen (Chemistry)  
*Co-supervisor:* Professor R Hunter (Chemistry)

Crispen Munashe Mazodze

Thesis Title: *Radical decarboxylation strategies for synthesis of nitrogen-containing heterocycles*

Munashe Mazodze completed his BSc(Hons) at Chinhoyi University of Technology, Zimbabwe and commenced full-time doctoral studies in 2019.

Munashe Mazodze's thesis describes mild and efficient room

temperature protocols for the synthesis of 2-quinolones and bisoxindoles and their applications the synthesis of therapeutically important alkaloids. He developed a novel radical oxidative-cyclisation-fragmentation-dimerization protocol which, supported by strong mechanistic evidence, allows a diverse library of such molecules to be constructed. Extending this general approach, he went on to develop a visible-light mediated strategy that requires the use of only low-powered LED light as an energy source, rather than heat. These findings directly contribute to addressing the need for sustainable chemical technologies amid the global energy crisis. This work lays the foundation of building low-cost and energy-efficient infrastructure that will support sustainable drug development on the continent. It also enables the synthesis of important drug molecules in Africa, even under severely limited resources.

*Supervisor:* Dr W Petersen (Chemistry)

Sam Zamosa McCarren

Thesis Title: *Floral evolution of long-tubed Erica species*

Sam McCarren completed a BSc at Johannes Gutenberg-University, Germany and an Honours degree at UCT. They commenced study towards an MSc in Evolution 2019 which was upgraded to a PhD in 2020.

Sam McCarren's thesis focuses on the pollination of *Erica*, also known as heaths, and how different factors impact the evolution of their flower traits. The thesis investigates ultraviolet flower colour, stickiness, orientation and the efficiency of pollen transfer in relation to different pollinator types. This work reveals that non-pollinator interactions with nectar robbers can select for flower traits such as stickiness. Sam McCarren also shows that subtle differences in flower colour and orientation affect pollinators and especially that long-proboscid flies strongly prefer ultraviolet flower colour. Additionally, their work confirms that pollinators differ in how efficiently they transfer pollen between flowers. These findings will be useful to further our understanding of what has

driven speciation in one of the biggest genera globally and the enormous diversity of the Cape fynbos.

*Supervisor:* Emeritus Professor J Midgley (Biological Sciences)  
*Co-supervisors:* Professor S Johnson (University of KwaZulu-Natal) and Dr A Coetzee (NMU Nature Conservation)

Angela Moreras

Thesis Title: *Frontline strategies in the arms-race between hosts and their brood parasites: the case of the common redstart and the common cuckoo*

Angela Moreras completed a BSc at Universidad Nacional de Colombia, Colombia, followed by a MSc in Animal Behaviour at Bielefeld University, Germany. She commenced full-time doctoral studies at UCT in 2019.

Angela Moreras's thesis evaluated the earliest breeding decisions and their fitness outcomes of brood parasites and their hosts within a unique study system in Finland: the common redstart (host) and the common cuckoo (brood parasite). Using long-term monitoring and experimental data, she showed that by taking decisions during nest-site choice and nest design, redstarts can adaptively decrease the probability of being parasitized, enhancing their reproductive output. However, no evidence for adaptive associations with heterospecifics in the avian communities were found. She further demonstrated that cuckoos non-randomly parasitized redstart nests. Cuckoos selected females of higher quality, from those nests available space and time. These findings highlight the importance of frontline strategies for both hosts and brood parasites in this co-evolutionary arms-race, and their impact on later stages of the breeding cycle and life history of the species involved.

*Supervisor:* A/Professor R Thomson (Biological Sciences)  
*Co-supervisor:* Dr J Tolvanen (Biological Sciences)

Oliver Moses

Thesis Title: *Climate variability and extremes in the Okavango River Basin, southern Africa*

Oliver Moses is a senior researcher at the University of Botswana and commenced his doctoral studies at UCT in 2020.

Oliver Moses's thesis focuses on the climate of the biodiverse Okavango River Basin region, which includes the World Heritage Okavango Delta. After determining important relationships between rainfall, temperature, river discharge and vegetation cover over the region, their seasonality, interannual variability and trends. He reports in detail on two types of climate extremes that often cause significant damage and loss of life. These are firstly the nature and variability of heavy rainfall events over the region, and secondly, the characteristics of drought, dry spells, and very hot days. Relationships of these extremes with the seasonal movement of the tropical African rain belt and low-level moisture fluxes are explained.

Supervisor: Professor C Reason  
(Oceanography)

Co-supervisor: Dr R Blamey  
(Oceanography)

Gillian Ophelya Nondumiso Ndhlovu

Thesis Title: *Bacteriome interactions in paediatric atopic dermatitis in a rural and urban South African cohort*

Gillian Ndhlovu completed a BSc and BSc(Hons) at UCT. She commenced studies towards a MSc, which was upgraded to a PhD in 2020.

Gillian Ndhlovu's thesis uses next-generation sequencing technology and bacterial culture to investigate shifts in the skin and nasal bacterial profiles of toddlers with atopic dermatitis (AD) from rural (Umtata) and urban (Cape Town) South African communities. She finds that rural and urban toddlers with AD frequently carry *Staphylococcus aureus*, a bacterium implicated in the pathology of AD, compared to their healthy counterparts. Additionally, *S. aureus* from toddlers with AD is associated with antibiotic resistance and increased pathogenicity. She provides evidence that

coagulase-negative staphylococci, when co-carried with *Staphylococcus aureus*, may also contribute to AD pathology. She further shows that the bacterial groups *Streptococcus* and *Veillonella* contribute more significantly to AD disease pathology than the *Staphylococcus* group, which is key in Western and Asian societies. Her findings stress the need for treatment strategies that target the restoration of skin and nasal bacterial communities in AD in South Africa for sustained gains.

Supervisor: Dr F Dube (Molecular and Cell Biology, and Institute of Infectious Diseases and Molecular Medicine)  
Co-supervisors: Dr S Abdulgader (Stellenbosch University) and Professor A Shittu (Obafemi Awolowo University)

Anthony Wilfred Sayster

Thesis Title: *High-school students' productive struggles during the simplification of trigonometrical expressions and the proving of trigonometrical identities*

Anthony Sayster completed a BSc(Ed) at University of the Western Cape and a BSc (Hons) and MSc qualifications at University of Port Elizabeth (now Nelson Mandela University). He began full-time doctoral studies at UCT in 2018.

Anthony Sayster's thesis reports on the productive struggles experienced by a group of high-school students when they simplified trigonometric expressions and proved trigonometric identities. He investigated the nature of these productive struggles and how they influenced the learning and teaching of trigonometry. New knowledge was generated on students' productive struggles during the simplification of trigonometric expressions and the proving of trigonometric identities, thus addressing existing knowledge gaps in the literature. This new knowledge also includes the analyses of why students experience conceptual challenges as they transition from the simplification of algebraic to trigonometric expressions. In addition, this new knowledge includes how students experience *delayed struggles* during these trigonometry-based questions. This new knowledge

can be used to address some of the misconceptions and errors encountered by students while attempting such questions.

Supervisor: A/Professor J Shock  
(Applied Mathematics)

Co-supervisor: A/Professor D Mhakure  
(Mathematics Education)

Muzikayise Edward Sikhonde

Thesis Title: *Shear-free perfect fluid theorems in general relativity*

Muzikayise Sikhonde completed a BSc at University of the Western Cape, followed by a BSc(Hons) and MSc at UCT, and began full-time doctoral studies in 2012.

Muzikayise Sikhonde's thesis reports on the shear-free perfect fluid conjecture in General Relativity by proving theorems using the (1+3) - spacetime decomposition framework. These theorems provide the necessary consistency conditions for a shear-free perfect-fluid spacetime. He began by showing the result obtained by Professor George F.R. Ellis on the dynamics of pressure-free matter while considering a constant pressure scenario. He investigated the shear-free perfect-fluid conjecture, where the acceleration is parallel to the vorticity vector field. Subsequently, the cases where the components of the acceleration orthogonal to the vorticity vector fields are *basic* were shown, followed by the case where the acceleration is orthogonal to the vorticity vector field—culminating in the case where a Killing vector parallel to the vorticity vector field exists, or the spacetime is either expansion free or irrotational.

Supervisor: Professor P Dunsby  
(Applied Mathematics)

Co-supervisor: Professor G Ellis  
(Applied Mathematics)

Luca Stirnimann

Thesis Title: *Plankton dynamics of the open Southern Ocean and surrounding the (Sub)Antarctic islands*

Luca Stirnimann completed a BA in Environmental Science and a MA Marine Sciences in Italy, before commencing doctoral studies at UCT in 2017.

Luca Stirnimann's thesis investigates the role of Southern Ocean plankton in carbon production, cycling, and export using measurements of carbon and nitrogen isotope ratios and plankton taxonomy from across the open Southern Ocean and near its many island systems. Highlight of this work include elucidating the drivers of spatial and temporal variability in the isotope ratios and plankton ecology across the Southern Ocean; characterising the influence of (Sub)Antarctic islands and ice on the isotope ratios and plankton community; examining the impact of the island mass effect on nutrient dynamics, plankton system functioning, and carbon drawdown; the development of a new approach for quantifying carbon export over vast spatial scales; and insights into zooplankton trophic dynamics. His work offers new methodological approaches for studying the Southern Ocean's plankton system and improves our understanding of ocean fertility, the Southern Ocean's CO<sub>2</sub> sink, and its role in regulating Earth's climate.

*Supervisor:* Dr S Fawcett  
(Oceanography)

*Co-supervisors:* Dr T Bornman  
(Nelson Mandela University and the South African Environmental Observation Network) and Dr H Verheye  
(Department of Biological Sciences and Department of Forestry, Fisheries and Environment)

Natasha Zlobinsky

Thesis Title: *Channel parameter tuning in a hybrid wi-fi—dynamic spectrum access wireless mesh network*

Natasha Zlobinsky holds a BSc in Electrical Engineering and an MSc in Telecommunications Engineering from the University of the Witwatersrand. She has worked for Eskom, the CSIR, and Aruba, HPE, where she is currently employed. She commenced part-time doctoral studies at UCT in 2017.

Natasha Zlobinsky's thesis is on Channel Assignment in a multi-radio multi-channel Wireless Mesh Network using both Wi-Fi and Dynamic Spectrum Access (DSA) spectrum bands and standards. The work provides a unified framework for channel optimisation in a WMN that uses DSA for interconnectivity. The work implements and analyses the performance of near-optimal Channel Assignment solutions using metaheuristic algorithms. Real-world measurements confirmed the suitability of the optimisation objective. She introduces a method of spectrum sensing that, unlike previous work, causes zero disruption to the network operation. Markov chain analysis is used to find the length of sensing windows. An efficient and unbiased estimator of the objective is found, and the accuracy of the estimation is quantified under various conditions. This work facilitates the extension of Internet connectivity to the unconnected or unreliably connected in rural or peri-urban areas in a more cost-effective way.

*Supervisor:* A/Professor M Densmore  
(Computer Science)

*Co-supervisor:* Dr D Johnson  
(Computer Science)

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## HISTORICAL SKETCH

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Founded as the South African College (a boys' school that aimed to provide higher education as well) in 1829, the University was established as the University of Cape Town in 1918.

The early history was one of great expectations and hard times and it was not until the early years of the twentieth century that the University was developed into a fully-fledged tertiary institution. A significant and pioneering development in the 19th century was the admission of women as degree students in 1886, many years ahead of most universities in the world.

At the start of the 20th century the University incorporated the Diocesan College, the teacher training classes of the Normal College, the South African College of Music and the Cape Town Schools of Fine Art and Architecture.

The Medical School was established and in the 1920s the University began a partnership with the local health authority (now the Provincial Government's health department) that saw the Medical School move from the Hiddingh Campus and the Green Point Somerset Hospital to Observatory (the rest of UCT's Upper Campus moved from Hiddingh to its present site, on part of Cecil Rhodes' estate, in 1928). This partnership allowed for the construction of the first Groote Schuur Hospital on a University site. The partnership continues to this day and now involves not only Groote Schuur as a teaching hospital but Red Cross Children's Hospital, Valkenberg and a growing number of primary health care sites.

The period between the end of World War II and 1994 was marked by two themes. Firstly, the University recognised that if it was to be fully South African, it would have to move beyond academic non-segregation to be fully inclusive. It would have to face the consequential and increasing clashes with a government determined to legislate for segregation and enforce the doctrine of apartheid. And secondly, the University intended to transform into a leading research institution.

Before World War II, the University was largely a teaching university and its students were mostly undergraduates. The research undertaken was sporadic, though in some cases notable. A research committee was appointed for the first time in 1945. The next 75 years saw a great expansion of research and scholarly work such that the UCT of 2014 has a greater proportion of highly rated researchers and gains significantly more research grants and awards than any other South African University.

The 1980s and 1990s were characterized by the deliberate and planned transformation of the student body. This was aided by the establishment of the Academic Development Programme aimed at helping students from disadvantaged educational and social backgrounds to succeed and the desegregation of student residences. As a result, a student body that was 90% white in 1979, when UCT marked its 150th anniversary, is in 2014 more than 50% black. The total student enrolment of just above 26 000, includes international students drawn from over 100 countries, a significant proportion of which are from SADC states. Particular emphasis is placed on postgraduate studies and more than 20% of these students will be enrolled in master's and doctoral programmes. A growing number of postdoctoral fellows contribute substantially to the research endeavours and reputation of the University (UCT has more than a third of the total number of post docs in South Africa).

UCT continues to work towards its goal to be Africa's leading research university. Its success can be measured by the scope of study it offers and the calibre of its graduates.

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## ACADEMIC DRESS

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### OFFICERS OF THE UNIVERSITY

#### ***CHANCELLOR***

The Chancellor wears a gown made from dark blue silk. The front of the gown has facings down each side made of dark blue velvet embroidered with a gold floral design. The gown and sleeves are lined with pale blue silk and the sleeves are looped up in front with a gold cord and button. The yoke of the gown is edged with gold cord. The gown is worn with a square blue velvet hat with a soft crown and gold tassel.

#### ***VICE-CHANCELLOR***

The Vice-Chancellor wears a gown made from bright blue silk. The front of the gown has facings down each side and sleeve-linings of pale blue silk. The sleeves are looped up in front with a gold cord and button and the yoke of the gown is edged with gold cord. The gown is worn with a black velvet bonnet with a silver cord.

#### ***DEPUTY VICE-CHANCELLOR***

A Deputy Vice-Chancellor wears a gown made from dark blue silk. The gown has closed sleeves with an inverted T-shaped opening at the level of the elbow to free the arms. The front of the gown has facings of light blue down each side. The sleeves are lined with light blue and the yoke of the gown is edged with silver cord. The gown is worn with a black velvet bonnet with a silver cord.

#### ***CHAIR OF COUNCIL***

The Chair of Council wears a gown, of the same pattern as that worn by the Vice-Chancellor, made from light blue silk. The front of the gown has facings down each side and a yoke of dark blue. The sleeves are lined with dark blue and the facings and yoke are trimmed with gold cord. The sleeves are looped up in front with a gold cord and button. The gown is worn with a black velvet bonnet with a gold tassel.

#### ***MEMBERS OF COUNCIL***

Members of Council wear graduate-pattern gowns made from black silk. The front of the gown has 10cm wide, light blue facings down each side trimmed with dark blue cord. The gown is worn with a black velvet bonnet with a blue cord.

#### ***REGISTRAR***

The Registrar wears a gown made from black silk. The front of the gown has 10cm wide facings of blue silk down each side. The gown is worn with a black velvet bonnet with a white cord.

#### ***PRESIDENT OF CONVOCATION***

The President of Convocation wears a gown made from black silk and has long closed sleeves with an inverted T-shaped opening at the level of the elbow to free the arms. The front of the gown has facings down each side and sleeves of blue silk. The gown is worn with a black velvet bonnet with a blue tassel.

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## ACADEMIC DRESS (continued)

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### GOWNS

A plain black gown styled after the pattern of the Oxford scholar's gown is worn by diplomats, and Bachelor's, Honours and Master's graduands. Senior doctoral graduands wear a scarlet gown, with facings the colour distinctive of the faculty in which the degree is awarded. PhD graduands wear a scarlet gown without facings.

### HOODS

The hood is particular to the qualification and the faculty. Diplomates and Bachelor's graduands wear a black hood lined with white and edged with the colour distinctive of the faculty. Master's graduands wear a black hood lined with the colour distinctive of the faculty and edged with white, except in the case of the hood for the MMed degree, which is edged with red. Senior doctoral graduands wear a hood of the colour distinctive of the faculty and a black velvet bonnet with a cord of the colour distinctive of the faculty in which the degree is awarded. PhD graduands wear a hood of scarlet lined with black and a black velvet bonnet with a cord of the colour distinctive of the faculty in which the degree is awarded.

### DISTINCTIVE COLOURS

|                                                  |          |
|--------------------------------------------------|----------|
| Faculty of Commerce                              | Yellow   |
| Faculty of Engineering and the Built Environment | Green    |
| Faculty of Health Sciences                       | Red      |
| Faculty of Law                                   | Old gold |
| Faculty of Humanities                            | Blue     |
| Faculty of Science                               | Purple   |

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## VISION AND MISSION

### UNIVERSITY OF CAPE TOWN

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#### **Vision**

An inclusive and engaged research-intensive African university that inspires creativity through outstanding achievements in learning, discovery and citizenship; enhancing the lives of its students and staff, advancing a more equitable and sustainable social order and influencing the global higher education landscape.

#### **Mission**

UCT is committed to engaging with the key issues of our natural and social worlds through outstanding teaching, research and scholarship. We seek to advance the status and distinctiveness of scholarship in Africa through building strategic partnerships across the continent, the global south and the rest of the world.

UCT provides a vibrant and supportive intellectual environment that attracts and connects people from all over the world.

We aim to produce graduates and future leaders who are influential locally and globally. Our qualifications are locally applicable and internationally acclaimed, underpinned by values of engaged citizenship and social justice. Our scholarship and research have a positive impact on our society and our environment.

We will actively advance the pace of transformation within our University and beyond, nurturing an inclusive institutional culture which embraces diversity.

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## OFFICERS OF THE UNIVERSITY

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### ***Chancellor***

Precious Moloi-Motsepe, MBBCh DCH *Witwatersrand* Dip in Women's and Reproductive Health *Stellenbosch*

### ***Vice-Chancellor (Interim)***

Batmanathan Dayanand Reddy, BSc (Eng) *Cape Town* PhD *Cantab* DSc (hc) *Stellenbosch* FRSSAf MASSAf FSAAE  
MAkadSA FTWAS FoISC OMB

### ***Chair of Council***

Norman Martin Arendse SC, BA LLB *Cape Town* LLM *UCL*

### ***President of Convocation***

Kassi Carl Ange Leopold Manlan, BCom(Hons) *Cape Town* MPA *Harvard*

### ***Deputy Vice-Chancellors***

Susan Thérèse Largier Harrison, BSc(Hons) *Cape Town* PhD *Cantab* MSAICHe SASM FSAIMM FSAAE ASSAf FWISA  
Elelwani Ramugondo, BSc (Occupational Therapy) MSc (Occupational Therapy) PhD *Cape Town*  
Linda Cynthia Ronnie (Acting), Adv Dip in Adult Ed MEd *Sheffield* PhD *Cape Town*

### ***Registrar***

Royston Nathan Pillay, BA HDE BEd MBA (Executive Programme) *Cape Town*

### ***Chief Operating Officer***

Reno Lance Morar, MBChB *Natal* DHMEF MMed *Cape Town* FCPHM *SA*

### ***Deans of Faculties***

*Commerce:* Suki Lesley Goodman, BSocSc(Hons) MBusSc PhD *Cape Town*

*Engineering &  
the Built Environment:* Alison Emslie Lewis, PrEng BSc(Eng)Chem MSc(Eng) PhD *Cape Town* FSAICHe  
FSAIMM MASSAf FSAAE FICHeM

*Health Sciences:* Lionel Patrick Green-Thompson, DA FCA *CMSA* MBBCh MMed PhD *Witwatersrand*

*Humanities:* Shose Kessi, PDBA *Witwatersrand* BA(Hons) *London* MSc PhD *LSE*

*Law:* Danwood Mzikenge Chirwa, LLB(Hons) *Malawi* LLM *Pretoria* PhD *UWC*  
Practitioner of the High Court of Malawi

*Science:* Patrick Alan Woudt (Interim), MSc *Groningen* PhD *Cape Town* MASSAf

### ***Dean of Higher Education Development***

Kasturi Behari-Leak, BA(Hons) HDE BEd *Durban-Westville* MEd *Cape Town* PhD *Rhodes*

### ***Director of the Graduate School of Business***

Catherine Duggan, BA *Brown* PhD *Stanford*

# JOIN UCT ALUMNI CONNECT

Today is not the end of your relationship with the university but the beginning of a new phase in your continuing relationship with UCT, one that you share with the global UCT community of over 200 000 alumni. Wherever you choose to go, fellow UCT alumni will be there. Join UCT Alumni Connect, our bespoke social networking site for alumni. Membership is free and provides access to a global network of like-minded professionals, innovators, thought leaders and entrepreneurs. Join our virtual alumni community today and enjoy these member benefits:

- Expand your professional network
- Stay in touch with your alma mater
- Connect with thousands of UCT alumni
- Locate UCT alumni in your area using mobile GPS
- Access career mentorship opportunities
- Share images from your reunions and alumni events
- View notifications of UCT events taking place in your city
- Access UCT Careers Service support

You can sign-up in less than 2 minutes, utilizing your Facebook, LinkedIn or email credentials. Visit [www.uctalumniconnect.com](http://www.uctalumniconnect.com) or, scan the QR code below, then click on the 'Join' link to sign up. It is that easy. Membership verification is fast.



To remain in contact with former UCT classmates and to keep abreast of important developments taking place at your alma mater, make sure that you update your contact details on our website: [www.alumni@uct.ac.za](mailto:alumni@uct.ac.za). Here are some of the other ways you can stay in touch with us:

- Attend UCT alumni events hosted in your region
- Participate in the AGM of Convocation
- Join UCT Alumni Connect today
- Find and follow us on social media @UCTalumni
- Visit the Alumni Relation team in the Old Admin Building, located on UCT Lower Campus
- We love to profile our alumni. Email your news to: [alumni@uct.ac.za](mailto:alumni@uct.ac.za)

UCT benefits from a global network of alumni ambassadors, chapters and affinity groups, with an increasing number of volunteer networks across Africa. Our international UCT offices are focal points for leveraging institutional and research relationships, as well as donor opportunities. You can connect with one of our regional offices:

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## **AUSTRALIA**

Ruth Thornton: [rjthornton1@bigpond.com](mailto:rjthornton1@bigpond.com)

The Development and Alumni Department look forward to meeting you. Join us at one of the many alumni events hosted around the world, on campus at a UCT public lecture, at UCT Summer School or at your class reunion. Let's stay connected.