GRADUATION CEREMONY

Faculty of Science (Ceremony 2)

SARAH BAARTMAN HALL

2 April 2026

FACULTY OF SCIENCE (CEREMONY 2)

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.

Welcome by the Master of Ceremonies.

Musical Item.

The graduands will be presented to the Presiding Officer by the Dean of the faculty.

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.)

NATIONAL ANTHEM

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.

NAMES OF GRADUANDS

An asterisk * denotes that the qualification will be awarded in the absence of the candidate

FACULTY OF SCIENCE

Dean: Professor H Suleman

DEGREE OF BACHELOR OF SCIENCE

Thobja Gracious Racheku
Rae-Kyndra Ragoobeer
Shiham Rahman
Lesedi Koketso Rakgakule
Qhamani Ralo (with distinction in Astrophysics and the degree with distinction)
Dhiya Ramadhar
Vanessa Mapaseka Rampedi
Thabang Sello Rasebitse
Phindulo Ratshilumela
Reshendran Reddy
Luke Raddon Marshall Reed
Micah Sherwin Retief (with distinction in Computer Engineering and Computer Science and the degree with distinction)
Jenna Paige Rigby
Jessica Jade Rohland
Azlan Patrick Rossouw
Zachary Gabriel Roussos
Jenna Skye Rowley
Ruth-Ann Rudolph
Luke Daniel Ruiters
Laurent John Russell (with distinction in Genetics and the degree with distinction)
Dylan Timothy Saayman (with distinction in Computer Engineering and Computer Science)
Aaisha Saban
Kaamil Saib
Moegamat Azhar Salie
Mujaahid Salie
Ammaarah Samaai
Imaan Samodien
Joshua Samuels
Daniel Francis Sardinha
*Saurav Sathnarayan
Daniel Luke Schlesinger (with distinction in Computer Science and Mathematics and the degree with distinction)
David Eric Schmidt
Brad Robert Scott
Victoria Gisela Seale
Lesiba Jackson Sebati
Oarena Diema Sebona
Mosa Juliet Selela
Reitumetse Shadrack Sephoko
Ziyaad Shaboodien
Ntuthuko Shange
Unnati Shankar (with distinction in Applied Statistics and Economics and the degree with distinction)
Dylan Grant Sherry
*Deshy Shibambu
Thimna Shushu
Kabelo Caroline Sibanda
Jessy Collen Sibitane
Mpumelelo Nhliziyo Sibiya
Asanda Angel Sikhosana
York Martin Singer
Max Thomas Smith
Nicola Allegra Smith
Robyn Lesley Smith (with distinction in Environmental and Geographical Science)
Tristin Justis Smith-Harding
Lawton Bjorne Springbok (with distinction in Computer Science and the degree with distinction)
Caitlynn Haebre Steenkamp
Yulin Whileze Steenkamp (with distinction in Astrophysics and the degree with distinction)
Tavonga Dereck Collins Tawonezvi
*Browan Chelsea Teron
Daniella Thavede
Ella Elizabeth Thorburn
Sancho Emmerson Torr
Roxy Elizabeth Traylor
Alexander William True
Kamogelo Tsele
Lifelihle Mdumiseni Tshabalala
Bonani Tshwane
Katleho Tsolo
Nandile Tyokolo
Chidiebere Emmanuel Umah (with distinction in Computer Science and Statistics and Data Science and the degree with distinction)
Luke Jon Van Coller
Ewan Zondagh Van Der Walt (with distinction in Chemistry)
Isabella Van Huyssteen (with distinction in Applied Mathematics and Astrophysics and the degree with distinction)
Kai Van Niekerk (with distinction in Applied Statistics and Computer Science and the degree with distinction)
Zia Van Niekerk
Edmund Johann Van Rooyen (with distinction in Applied Statistics and Computer Science and the degree with distinction)
*Jos Willem Van Veen
*Bongani Godfrey Van Wyk
Erin Lara Velcich
Adele Xanthia Venter
Jan-Willem Verhoef
Zoë Gabrielle Vermaak
Owam Vethezo
*Alcheden Don Visagie
Mustafaa Von Doorze (with distinction in Applied Statistics and Computer Science and the degree with distinction)
Donfack Happiness Walter
Charlotte Rose Warren
Farrell Kyla Watson (with distinction in Human Anatomy and Physiology)
*Dylan Webb
Kelvin Wei (with distinction in Computer Science and Statistics and Data Science and the degree with distinction)
Gideon Weiss
Ross Anthony Westaway
*David Sven Williams
Jack James Wiltshire
Rui Xuan Calvin Wu
Yi-Xuan Wu (with distinction in Computer Science)
Jing Jonathan Yeh (with distinction in Computer Science)
Zizipho Ethel Yekelo
*Wun Iau Yi (with distinction in Computer Science)
Maliviwe Zenzile
Betty Zhu
Mihle Zungula (with distinction in Finance)

DEGREE OF BACHELOR OF SCIENCE HONOURS

Ibrahim Mostafa Abdou
Amaara Abdulla (in the first class)
Asheeqah Adams (in the first class)

Mahir Labib Ahammed (in the first class)
Temiloluwa Oladipupo Aina (in the first class)
Catalina Victoria Althoff-Thomson (in the first class)
Rahima Baboo
Cassandra Barbis (in the first class)
Connor Jaden Barr (in the first class)
Zahra Bawa (in the first class)
Naval Beekarun
Channing Luca Bellamy (in the first class)
*Caleb Bessit (in the first class)
Unays Bhad (in the first class)
Kate Macquarrie Birch (in the first class)
*Troy Bisnath
Caelin Block (in the first class)
Micaela Anne Boardman (in the first class)
Robyn Jennifer Borgstrom
Alexandra Texas Bouch (in the first class)
Jack Brand (in the first class)
Joshua Conville Britz
Ruhaan kirath Chetty
Dineo Zandile Chiloane
Julia Chowles (in the first class)
Kimon Dimitri Christelis (in the first class)
Catharina Clark
Adam James Coelen (in the first class)
Tziyona Deena Michal Cohen (in the first class)
*Kathryn Hannah Connock
Alexander Cristaudo (in the first class)
Dimitrios Dalakas (in the first class)
Stylianos Dalakas (in the first class)
Chulumanco Liseko Dana
Muhammad Uzair Davids (in the first class)
Matthew Daniel Dean (in the first class)
Gabriel Antonio De Freitas (in the first class)
*Raphael Cardosa De Sousa (in the first class)
Jessica Kate Devine (in the first class)
*Jack Nicholas Dicey Rutherford
Lilith Emma Jolanthe Diener (in the first class)
Victoria Dingle
*Leto Du Plessis
Dionée Du Toit
*Pieter Oscar Duys (in the first class)
Max Elkington (in the first class)
Sinjin Christian Fanner (in the first class)
Muhammad Fazel-Ellahi (in the first class)
Maja Anna Filipkowska (in the first class)
Joshua Jeremy Daniel Fouché (in the first class)
Oliver James Foxcroft (in the first class)
Tyron Carlo Galant
Natalie Jeanne Gelderblom (in the first class)
Taylor Michele Gilbert (in the first class)
Joseph David Goldblatt (in the first class)
Chloë Jean Goldman (in the first class)
Emily Kate Grant (in the first class)
*Sbonelo Wonderboy Gumede
Max Dylan Hall (in the first class)
Thalia Jenna-Beth Hawthorn (in the first class)
*Michael Emile Haydam (in the first class)
Ayoub Hendricks (in the first class)
Kayla Courtney Heuer (in the first class)
Jordan Daniel Heugh (in the first class)
Daniel Aiden Holgate
Donovan Lawrence Holm
*Mohammad Arshad Hussain
*Tasneem Ismail
Moegamad Uzair Jack
Sisanda Jaji
Chandré Janse Van Rensburg
*Mitchell Johnson
Laylaa Jorge Abrahams
Samira Kabir (in the first class)
Faith Henry Katabwa (in the first class)
Molokotima Oti Kekana
Jana Kemp (in the first class)
Naheed Arshad Khan
Dineo Lorraine Khoza
Shirley Anne Knight (in the first class)
Rorisang Kethabile Kobeqo
Arwenn Evenstar Kummer (in the first class)
*Karabo Letsholo
*Matshidiso Kamohelo Letsoha
*Keletso Hope Letsoko
Chloë Levey (in the first class)
Robyn Wendy Liversage (in the first class)
Bianca Louw
Mbuso Affectionate Makamu
*Demi Ann Maker
Siyanda Philani Makhathini
Lethabo Allen Makwa
Daniel Francois Marais (in the first class)
Ebenenzer Elmon Mathebula
Maryam Mather (in the first class)
Anathi Luyanda Mazibuko (in the first class)
Kabelo Lungile Mbayi
Likhona Mbovane
Mika'il Metz (in the first class)
*Simphiwe Mifi
Hritik Mitha (in the first class)
Simphile Olwethu Mkhize (in the first class)
Honest Buhle Mlandu
Lutho Mngqibisa (in the first class)
Kabelo M'sobomvu Moiloa (in the first class)
Tshidiso Vincent Mokgele (in the first class)
*Mahir Moodaley (in the first class)
Sivarniah Moodley
Khadijah Amarah Moosa
Oliver David Moses (in the first class)
Daniel Sabelo Msibi
*Lilian Gamuchirai Mtumanje
Roanda Denga Muedi (in the first class)
*Joshua Mugume Byaruhanga
Lauren Alexandra Mukheibir
Lynn-Joy Murray (in the first class)
Callum Musselwhite (in the first class)
Timothy Muasya Muthama
Sbongiseni Lucas Mzizi (in the first class)
Kamryn Lee Naidoo (in the first class)
Nkosinathi Magnificent Nene
Siphelele Saneliso Nkosi (in the first class)
Thapelo Nyathi
Keegan O'brien (in the first class)
Quill Carthage O'farrell (in the first class)
Mika-Iel Osman
*Allegra Emily Ouwehand (in the first class)
Prashanth Padiachy (in the first class)
Raaziq Parkar (in the first class)
Megan Anne Parker (in the first class)
Kishalan Pather
Nicholas Pather
Anna Francis Porteous
Victoria Mae Pretorius (in the first class)
Jessica Catherine Prevôst (in the first class)
Emily Catherine Raine (in the first class)
Mishka Ramraj
Karabo Goitseone Rantwane
Rector Ratsaka

*Aidan Thomas Ravenscroft (in the first class)
James Hunter Ridley
Rowan John Rosenberg (in the first class)
*Caden Seth Rowe (in the first class)
Jamie Aerin Rowe (in the first class)
Benjamin Anton Ruijsch Van Dugteren (in the first class)
Danielle Sabor (in the first class)
Michal Shira Sacks (in the first class)
Kenzo Sandenbergh (in the first class)
Malcolm Conor Scarrott (in the first class)
Pietro Scheepers (in the first class)
Christiaan Ignatius Schutte (in the first class)
Lindiwe Sentle
Duncan William Sephton
*Shane Silverman
Loyiso Sithole
*Christian Slier (in the first class)
*Amy Natalie Smith (in the first class)
Ethan Joshua Smith (in the first class)
Sohan Ravindra Soni
Robynne Kate Stephenson (in the first class)
Rachel Ann Strachan (in the first class)
Francesca Strydom
Doron Reuben Sumeruk (in the first class)
Brenton Reuben Suriah
Kirsten Sutherland (in the first class)
Charles Thomas (in the first class)
Andre Toerien (in the first class)
Leigh Toet (in the first class)
Cormac Niall Tredoux (in the first class)
Tanya Megan Van Der Merwe (in the first class)
Tiaan Van Der Merwe (in the first class)
Julyan Van Der Westhuizen (in the first class)
Megan Kristi Van Schoor (in the first class)
Nicholas Liam van Tol (in the first class)
*Max Sedgwick Van Veen (in the first class)
Shaylin Velen (in the first class)
Hannah Catherine Verrier (in the first class)
*Friedrich Udo Völcker (in the first class)
Corey Webb (in the first class)
Nathan Jack Wells (in the first class)
*Katinka Nell Wilkinson (in the first class)
Roxanne Willemse (in the first class)
*Rachel Williams (in the first class)
*Isla Jill Wilson (in the first class)
Roche Anastacia Witbooi
*Ethan Patrick Wolff (in the first class)
*Angelo Yang (in the first class)
Joseph Israel Zelezniak (in the first class)
Monde Nkateko Zwane (in the first class)

DEGREE OF MASTER OF PHILOSOPHY

*Sofia Aguilar Flaschka (with distinction)
Catharina Caspers
*Tamika Carmen Du-Pont (with distinction in the dissertation)
*Zahrah Limbada
Natalie Psillos (with distinction in the dissertation)
Shannon Beth Weaver
*Anna Louise Whelan (with distinction)

DEGREE OF MASTER OF SCIENCE

Nabeelah Mohammed Adam (with distinction)
Grace Emmanuella Adoteye
*Isaiah Anuoluwapo Aremu
Amy Hannah Arendse
*George Ghaleb Assaad Zaki Assaad (with distinction)
*Edward Baleni (with distinction)
*Anita Ballerini
Jana Basson (with distinction in the coursework component)
*Mark Oliver Bergh (with distinction)
*Johannes Benjamin Breytenbach (with distinction in the dissertation)
Grace Charmaine Carmichael (with distinction)
Kathleen Kelly-Lindiwe Charlton
*Jacobus Marthinus Cloete (with distinction in the coursework component)
Megan Coetzee (with distinction)
Jayden Collison
Robyn Kayla Daniels (with distinction in the coursework component)
Johannes Louis De Jager
*Guglielmo Discosti
Maryam Fredericks
Jonathan Paul Largier Harrison (with distinction in the coursework component)
Sasha Carmen Holloway
Tatiana Iversson Piazza
*Dishanand Jayeprokash (with distinction in the dissertation)
*Wenjie Jiang
*Eleanor Kedem
Camryn Tayla Lamont
*Gary Grant Louw (with distinction)
Tshilidzi Faith Mabushe
*Delena Danielle Malan
*Alice Isabel Markham (with distinction)
Takunda Ea Mashinya (with distinction in the dissertation)
*Ntandokazi Sijabulisiwe Masimula (with distinction)
Masekamisha Andries Mathiba
Anele Matsebula
Nina Elizabeth Matthews (with distinction)
Sivuyisiwe Mbede
*Miranda Mix (with distinction)
*Kgothatso Modungwa
*Taahir Mohamed
*Patience Sebele Mokgosi
*Mushtaha Mutasim Mohammed El-Amin (with distinction)
*Lerusha Naidoo
Ndivhuwo Theophilus Netshiavha
Mixo Theophilas Nkanyani
Puja Pande
*Erica Pietrobelli
*Morongwa Egnes Ralefeta (with distinction in the dissertation)
Tjale Winnie Ramashia (with distinction in the dissertation)
Sadiyah Rawat (with distinction)
Clare Helen Roberts (with distinction)
Stephanus Johannes Roos (with distinction)
Alice Stilwell Roux
*Thusego Sebastian Setswammung (with distinction in the coursework component)
Sanette Penelao Sheetekela (with distinction in the dissertation)
*Thembeka Cebile Shongwe (with distinction in the coursework component)
Claire Louise Snibbe (with distinction in the coursework component)
Jody Thorburn (with distinction)
Manala Mandisa Tyobeka (with distinction in the dissertation)
Ameel Valjee (with distinction in the coursework component)

*Chelsea Michelle Van Rensburg
Michael Ryan Wade
Batsirayi Mupamhi Ziki

DEGREE OF DOCTOR OF PHILOSOPHY

Mariam Campbell
Thesis Title: *Extended theories of gravity: the early universe and stellar interiors*

Mariam Campbell completed her BSc, BSc (Hons), and MSc qualifications at UCT, and began full-time study towards her PhD in 2020.

Mariam Campbell's thesis explores how alternative theories of gravity, extending Einstein's general relativity, can shed light on the early universe and the structure of dense stars. Her work shows that some modified gravity models allow for a "cosmic bounce," where the universe contracts before expanding, offering an alternative to the traditional Big Bang. These models also explain how a bounce can naturally lead into cosmic inflation. She investigates how such scenarios become more likely under extreme conditions, such as near light-speed motion. Investigating stellar interiors, the thesis presents two new models of compact stars within these extended theories. These models predict layered structures and gravitational behaviors not found in standard gravity. Such differences could be observed with future space missions. Overall, the research opens new ways to test the boundaries of gravity, deepening our understanding of the universe's beginnings and the inner workings of its most extreme objects.

Supervisor: Professor P Dunsby (Mathematics and Applied Mathematics)

Cecilia Cerrilla
Thesis Title: *Ecology and conservation of the endangered Clanwilliam sandfish (Labeo seeberi) in the Olifants-Doring River system, South Africa*

Cecilia Cerrilla holds an ScB (Honours, Magna Cum Laude) in Environmental Science from Brown University, United States and an MSc in Conservation Biology from UCT. She began full-time study towards her PhD at UCT in 2021.

Cecilia Cerrilla's thesis focuses on the Clanwilliam sandfish, a migratory freshwater fish found only in South Africa's Olifants-Doring River system. She evaluates the habitat preferences of three critical life stages, and characterises their ideal spawning and nursery grounds. She collates historical data to reveal a large range contraction since the 1930s, highlighting the roles of in-stream dams and invasive alien fish predation. Using surveys conducted as part of her study, she maps the current distribution and reveals persistent recruitment failure. Finally, she uses PIT tag technology to evaluate a head-start conservation intervention in a key spawning tributary, demonstrating that reservoir-reared fish released to the wild in 2021 and 2022 more than doubled the size of the 2023 spawning run. Finally, she models return likelihood based on several conditions at release, and uses PIT tag detections to evaluate the hydrological cues for migration and spawning.

Supervisor: Emeritus Professor C Griffiths (Biological Sciences)
Co-supervisor: Dr J Shelton (Freshwater Research Centre)

Everlyn Asiko Chimoto
Thesis Title: *Neural machine translation for low-resource languages*

Everlyn Asiko Chimoto holds a BSc in Computer Science from Masinde Muliro University of Science and Technology in Kenya and an MSc in Mathematical Sciences from the African Institute for Mathematical Sciences and UCT. She began her PhD studies in 2022.

Everlyn Asiko Chimoto's thesis addresses the challenge of data scarcity in neural machine translation for low-resource languages, which include the majority of African languages. The thesis focuses on the optimal use of existing data and the efficient creation of new data. She uses the dynamics of AI translation models during their early training phase to identify the best examples to help models learn. This allows pruning of non-essential data, reducing training costs while improving translation performance. Additionally, she shows that incorporating a small number of gloss annotations boosts translation quality significantly. Finally, under severe budget constraints, Everlyn Asiko Chimoto evaluates active learning strategies for selecting which sentences should be translated for training AI models. Collectively, her work offers practical, data-efficient methods to enhance machine translation in low-resource contexts. This is key to creating a future where all Africans have access to good translation capabilities for their mother tongue language.

Supervisor: Professor B Bassett (Mathematics and Applied Mathematics)

Sarah Dsane
Thesis Title: *Understanding parents' information behaviour during the first 1000 days to inform technology design*

Sarah Dsane earned her BSc (Hons) from All Nations University and her MBA from the Kwame Nkrumah University of Science and Technology, both in Ghana. She has been a lecturer at Koforidua Technical University, Ghana since 2012. She began her PhD in 2019.

Sarah Dsane's doctoral research explores how parents in low-resource contexts seek and share information during the first 1000 days of a child's life, particularly through digital interventions. Using qualitative methods, including interviews, co-design sessions, and analysis of WhatsApp peer support groups, she examines the role of digital platforms in fostering parenting knowledge and community support. Her study integrates feminist HCI and intersectionality to challenge maternal-centric models in

maternal and child health, advocating for shared parenting responsibilities. Through participatory design, she develops a low-fidelity prototype for a mobile application tailored to the needs of parents in underserved settings. Her findings contribute to Human-Computer Interaction (HCI) and health informatics, informing the design of more inclusive and culturally relevant digital health interventions.

Supervisor: Associate Professor M Densmore (Computer Science)
Co-supervisor: Dr Y Joolay (Paediatrics)

Michael Patrick Edwards
Thesis Title: *Gene regulation during desiccation and rehydration in the seedlings of Xerophyta elegans and Xerophyta schlechteri*

Field of Genetics and Bioinformatics

Michael Edwards completed his BSc, BSc (Hons) and MSc at the University of the Witwatersrand. He began his PhD at UCT in 2021 and carried out a year exchange to the University of Potsdam, Germany in 2022.

Michael Edwards' thesis aimed to identify the transcription factors (TFs) that regulate vegetative desiccation tolerance (VDT) in the South African resurrection plants Xerophyta elegans and Xerophyta schlechteri. To this end, he generated a detailed transcriptome time course dataset from the seedlings of these species as they dried and rehydrated. Reconstruction of gene regulatory networks allowed for the identification of two TFs that play a conserved role regulating the stress response to drying in both species. Michael Edwards also contrasted processes relating to chlorophyll metabolism in the X. elegans seedlings, which retain their chlorophyll during desiccation, to those of X. schlechteri, which degrade their chlorophyll upon drying. These findings will inform future research into the regulation of VDT in plants and in the long run aid in the generation of more drought tolerant crop cultivars.

Supervisor: Professor N Illing (Molecular and Cell Biology)
Co-supervisor: A/Professor R Ingle (Molecular and Cell Biology)

Mari-Lise Franken
Thesis Title: *A systematic approach to the identification, mapping and spatial prioritisation of Vulnerable Marine Ecosystems in South Africa*

Mari-Lise Franken holds a BSc degree from UCT and an Honours degree from the University of the Western Cape. With over a decade of experience in South Africa's marine sector, she specialises in offshore ecosystems, focusing on marine ecosystem mapping and assessment.

Mari-Lise Franken's thesis develops systematic approaches for identifying and prioritising Vulnerable Marine Ecosystems (VMEs, e.g. corals) in South African waters. Through comprehensive vulnerability assessments of potential VME indicator taxa, predictive habitat modelling, and analysis of visual survey data, the research establishes the first systematic evaluation framework for VMEs in the region. The study reveals significant gaps in protection, with coverage ranging from zero to 75 percent across different VME biotope types. Importantly, the research identifies spatially efficient solutions to improve VME protection while minimising economic impacts, providing a scientific foundation that can directly inform marine spatial planning, biodiversity conservation, and sustainable fisheries management.

Supervisor: Dr N Karenyi (Biological Sciences)
Co-supervisor: Professor K Sink (South African National Biodiversity Institute); Dr L Atkinson (Biological Sciences)

Kelebogile Verginia Stephanie Gasealahwe
Thesis Title: *Neutron star X-ray binaries with MeerKAT*

Kelebogile Verginia Stephanie Gasealahwe completed her BSc, BSc (Hons), and MSc degrees in Astrophysics and Space Science at UCT and began her doctoral studies in 2021.

Her thesis focuses on characterising low mass X-ray binary stars that include a neutron star as the compact object. She used data from radio and X-ray telescopes to investigate the inflow and outflow of matter in these systems. In her study, she analysed contemporaneous data from MeerKAT, Swift and MAXI telescopes of the outbursting accreting millisecond pulsar SAX J1808.4-3658 and the transitional Z-Atoll source XTE J1701-462. She showed that these systems undergo flaring events during outburst, which indicates strengthening of the jet. The radio/X-ray correlation in these systems shows a slope similar to that observed in black hole binary stars, suggesting a comparable radiative efficiency. She led an intensive monitoring binary star system, Circinus X-1. Kelebogile presents the deepest-ever radio image of this source, revealing relativistic jet-punched bubbles. The results provide, for the first time, evidence of an initial breakout of neutron star jets from their natal supernova remnant.

Supervisor: Dr I Monageng (Astronomy)
Co-supervisor: Professor P Woudt (Astronomy)

Bafana Gweba
Thesis Title: *Numerical modelling of wave-current interaction in the Agulhas Current towards better sea-state informations*

Bafana Gweba completed his BSc and BSc (Hons) in Applied Mathematics at the University of Fort Hare, followed by a BSc (Hons) in Mathematical Biology and an MSc in Applied Mathematics at Stellenbosch University. He began his PhD in 2019.

Bafana Gweba's research

investigates how the Agulhas Current influences wave dynamics along the South African coast using the WaveWatch III model. By validating his model against satellite and buoy data, he demonstrated its accuracy in capturing sea-state parameters. Results indicated that opposing waves and currents increase wave heights by 10-20%, while aligned waves reduce them by 10%. These interactions cause wave refraction, steepening, and cross-seas, raising the risk of rogue waves and impacting maritime safety. His findings reveal that the Agulhas Current significantly increases crossing swells' occurrence, particularly along the northeast coast. His work highlights the importance of incorporating wave-current interactions into models to improve sea-state forecasting, offering critical insights for coastal management and maritime safety in the South African marine sector.

Supervisor: Professor M Vichi (Oceanography)

Robyn Angelique Humphreys
Thesis Title: *Critically engaged archaeology: Prestwich Street burial grounds as a case study*

Robyn Humphreys grew up in Strandfontein, Cape Town, and has always been passionate about community orientated research practice. She holds a BSc (Hons) in Molecular Sciences and an MSc in Archaeology, both from UCT.

Robyn Humphreys' thesis uses contestation about the exhumation of ancestors from Prestwich Street Burial Ground (PSBG), a site associated with the history of slavery discovered during development, to explore how archaeological practice shapes the relationship between communities and ancestors (human remains) from archaeological sites. This research shows that historical and contract archaeological practices at PSBG are informed by their development in the late 1980s in service of neoliberal development agendas in Cape Town which did not consider the role of communities in managing their heritage. Post-colonial and social archaeology that developed in the early 1990s also could not facilitate community-centred archaeological practice at PSBG, because they relied on colonial relations of knowledge production - that centred Western science and positioned the archaeologists as expert - to inform critical archaeological practice. PSBG challenges knowledge hierarchies and calls for new archaeological practice based on community activist heritage practice in post-apartheid South Africa.

Supervisor: Professor RR Ackermann (Archaeology)
Co-supervisor: Professor JB Hutchison (Centre for Education Rights and Transformation); Dr W Black (Archaeology)

Petronella Janse Van Rensburg
Thesis Title: *Studying gas flows in the SUNBIRD starburst galaxies and LIRGs*

Petronella Janse van Rensburg has BSc, BSc (Hons) and Master's degrees via the National Astrophysics and Space Science Program (NASSP) node at UCT. Her Master's research was on asteroids, but she decided to switch topic to nearby galaxies for her PhD.

Petronella Janse van Rensburg's PhD thesis focuses on using observations of nearby star forming galaxies from the Southern African Large Telescope (SALT) to find gas flowing into or out of these galaxies. The galaxies contain a lot of dust and gas, and they are forming stars more intensely than most other typical galaxies. In this work she analyses different types of gas in the galaxies, and finds gas flows that reach hundreds of kilometres per second. Intense star formation and galaxies colliding or interacting with each other are some of the causes of these intense flows of gas. The study provides insight into what will happen to this gas and how it affects the evolution of the galaxies.

Supervisor: Dr M Mogotsi (Astronomy)
Co-supervisors: Honorary Professor P Väisänen (University of Turku, Finnish ESO Centre) , Professor M Bershady (University of Wisconsin-Madison, Astronomy)

*Eugene Kabwe Ntuntu Kabamba
Thesis Title: *Genomic evolution of extreme abiotic stress tolerance in plants: Vegetative desiccation tolerance in Xerophyta resurrection plants and nickel hyperaccumulation in Senecio coronatus*

Eugene Kabwe completed his BSc, BSc (Hons) and MSc qualifications at the University of Pretoria, and began full-time study towards his co-badge PhD degree at UCT and the University of Potsdam in 2021.

Eugene Kabwe's thesis explores how some plants develop the rare ability to survive extreme conditions. First, he assembled and evaluated the genomes of two Xerophyta species that have the ability to survive desiccation. He identified gene families that are expanded in these plants, particularly those related to stress response and cellular protection, as well as in the regulation of these traits, that help the plants survive dehydration. Secondly, he assembled and analysed the genomes of plants from two populations of Senecio coronatus, one that can accumulate nickel to extremely high levels in shoot tissues, and one that cannot. This analysis revealed gene duplications and changes in the expression of genes involved in nickel transport within the plant, as well as genes involved in protecting the plant from the negative effects of accumulated nickel. This research highlights how changes in a plant's genome can lead to remarkable adaptations and extreme stress tolerance.

Supervisor: Professor N Illing (Molecular and Cell Biology)
Co-supervisor: A/Professor R Ingle (Molecular and Cell Biology)

Maleshigo Komane
Thesis Title: *Investigating biocharacter and mechanisms of progestins used in contraception via the glucocorticoid receptor; implications for choice of contraception and HIV-1 infection*

Maleshigo Komane completed her BSc (Hons) in Molecular and Cell Biology at UCT and began full-time MSc studies in the same department.

Her MSc project showed exceptional promise and was formally upgraded to a PhD. During her PhD journey, she was awarded a Fulbright Scholarship and spent a year lecturing at the University of Delaware in the United States, enriching her academic experience and fostering international collaboration. Alongside her research and teaching, she embraced the life-changing journey of becoming a mother to two children while completing her doctoral studies.

Maleshigo Komane's research investigates how synthetic progestins used in contraceptives interact with the glucocorticoid receptor (GR) and the implications for immune function and HIV-1 infection. Using laboratory models and primary immune cells, she compared five progestins and found that medroxyprogesterone acetate (MPA) and nestorone (NES), unlike others, activate the GR and modulate immune gene expression and HIV-1 infection in vitro. These findings offer a mechanistic explanation for some clinical data linking MPA to increased HIV-1 acquisition risk and provide valuable mechanistic insights for improving contraceptive design. Her work contributes to a growing body of research aimed at guiding informed contraceptive choices and advancing women's health in vulnerable populations in regions with high HIV burden.

Supervisor: Professor J Hapgood (Molecular and Cell Biology)
Co-supervisor: Dr C Avenant (Molecular and Cell Biology)

Molopo Johannes Lipali
Thesis Title: *Decoding Mycobacterium abscessus biofilm formation: investigating the impact of in vitro model properties/parameters, nutrient availability, drug and lipid treatment on biofilm formation*

Molopo Lipali holds BSc (Biochemistry and Drama), BSc Honours (Biotechnology) and MSc (Biotechnology) degrees from Rhodes University. His previous postgraduate research focused on microbial fuel cell technology. He began his PhD in the Department of Molecular and Cell Biology at UCT in 2022.

Molopo Lipali's thesis reports the systematic characterisation and comparison of three in vitro Mycobacterium abscessus biofilm models, namely pellicle, submerged, and colony models. The assessment of structural, metabolic, and compositional differences between the three models was facilitated by the development of standardised protocols for biofilm cultivation and characterisation. These protocols were then used to evaluate the impact of nutrient availability, surfactant exposure and drug treatment on biofilm formation and maturation across the models. The analysis revealed model-specific responses, which challenges the assumption of biofilm model equivalence and highlights the importance of a multi-model approach in studying biofilm biology and drug efficacy.

Supervisor: Dr M Williams (Molecular and Cell Biology)

Lydia Khumo Madika
Thesis Title: *Systematics and diversification of the genus Aspalathus (Crotalarieae, Leguminosae)*

Lydia Madika completed her BSc and MSc at the University of Johannesburg and began her PhD studies at UCT in 2022.

Lydia Madika's thesis reports on the evolutionary history and taxonomy of Aspalathus, a diverse Cape genus of almost 300 species, best known for its "rooibos" (Aspalathus linearis) tea. About 95% of its species are endemic to the Cape Floristic Region, a global biodiversity hotspot. Using molecular phylogenetics (Sanger sequencing and Angiosperms353) and detailed morphological analyses, she resolved its long-debated classification, uncovering two major clades and revising the placement of the ecologically important Sericeae clade. Her study reveals a Miocene origin, links diversification to fire, soils, and pollinators, and provides a concise taxonomic revision of subgenus Sericea. By illuminating the evolutionary story behind the plant that gave the world rooibos tea, her research broadens our understanding of how South Africa's fynbos landscapes have generated and sustained their unique plant diversity, with implications for both conservation and the sustainable use of endemic species.

Supervisor: Professor M Muasya (Biological Sciences)
Co-supervisors: Dr D Zhigila (Biological Sciences), Professor C Stirton (Biological Sciences), Professor R Sebola (South African National Biodiversity Institute)

Buyani Khulakahle Mazeka
Thesis Title: *Biodiversity patterns of free-living marine nematodes as indicators of natural and anthropogenic change in False Bay, South Africa*

Buyani Mazeka obtained a BSc (Hons) and MSc in Marine Science from the University of Zululand, KwaZulu-Natal. His research focuses on utilising free-living marine nematodes as indicators of anthropogenic change.

Buyani Mazeka's PhD thesis examined biodiversity patterns and drivers of free-living marine nematodes in False Bay, South Africa, and their role as bioindicators of natural and anthropogenic change. He generated the most comprehensive nematode dataset along the southern African coastline, providing essential baseline information. The thesis showed that nematode assemblages in False Bay are unique compared to other regions, linked to the bay's dynamic hydrodynamics and the combined influence of the Benguela Upwelling and Agulhas Currents. His work demonstrated the capacity of nematode biodiversity to track oceanographic variability across temporal and spatial scales and to detect anthropogenic impacts. He also applied the Ecological Quality Status Index (EcoQ) to assess sediment metal contamination— the first attempt in Western Cape, South Africa and only the third along the African coast—

highlighting the need to refine EcoQ thresholds for broader applicability. Finally, his molecular work revealed variable effectiveness of DNA extraction protocols and primer pairs, supporting genomic approaches for future nematode research.

Supervisor: Dr N Karenyi (Biological Sciences)
Co-Supervisor: Dr M Hendricks (University of the Western Cape, Biodiversity and Conservation Biology)

Mashudu Mokhithi
Thesis Title: *Reframing the transition: a mixed methods case study of mathematical thinking workshops in first-year university mathematics*

Mashudu Mokhithi completed a BSc (Eng) in Chemical Engineering and an MSc in Tertiary Mathematics Education at the UCT. Since 2017 he has taught first- and second-year mathematics, convened a large first-year engineering course, and received the 2022 Science Faculty Emerging Teacher Award.

Mashudu Mokhithi's thesis investigates how first-year science students transition into university mathematics and whether structured Mathematical Thinking Workshops (MTWs) support that transition. Using a mixed-methods design, the study combines propensity-score-based analyses of course outcomes with reflexive thematic analysis of focus group interviews. Quantitatively, matched comparisons estimate the impact of MTWs participation on assessments while addressing selection bias and covariate balance. Qualitatively, student narratives illuminate changes in strategy use, metacognitive regulation, confidence, and belonging, as well as contextual barriers such as workload, timetabling, and learning spaces. Integrating these strands, the study shows that MTWs can strengthen foundational reasoning and self-regulatory practices linked to improved early performance, while highlighting design features - task structure, facilitation moves, and opportunities for explanation and revision - that help students consolidate and extend their learning. The thesis offers a theory-informed, evidence-based model for supporting mathematical thinking in large, diverse cohorts and provides practical guidance for scalable implementation.

Supervisor: A/Professor A Campbell (Centre for Research in Engineering Education)
Co-Supervisor: A/Professor J Shock (Mathematics & Applied Maths)

Benjamin Murphy
Thesis Title: *Taking the heat: how do parent birds mitigate costs of breeding at high temperatures?*

Benjamin Murphy obtained his BSc Zoology at the University of Edinburgh and his MSc Zoology with distinction at the University of Exeter before starting his PhD in Biological Sciences at UCT.

Benjamin Murphy's thesis investigates whether fork-tailed drongos (Dicrurus adsimilis) in the Kalahari buffer nestlings against hot weather through behavioural flexibility. He investigated avenues for behavioural adjustments using supplementary feeding experiments and measured consequences for nestling growth and adult body mass. He found drongos provisioned more on mornings of hot days and increased load sizes when provisioning rates declined during hot weather. Drongos also increased nest attendance during hot periods, reducing nestlings' exposure to extreme heat. Adult drongos retreated into shade during hot weather, but did not suffer associated foraging costs. Better-hydrated birds reduced foraging in the heat, suggesting water was a key limiting resource. Unlike other birds, drongos did not suffer temperature-related reductions in growth (nestlings) or body condition (adults). Drongos' remarkable behavioural flexibility currently allows them to escape costs of breeding at high air temperatures. However, there remains a need to understand conservation implications of climate-driven constraints on behavioural plasticity.

Supervisor: A/Professor S Cunningham (Biological Sciences)
Co-supervisor: Adjunct Professor T Flower (Capilano University, Biology)

Glory Nicholas Oden
Thesis Title: *Palaeoecological dynamics at the fynbos-forest ecotone: a multiproxy study from Jonkershoek, South Africa*

Glory Oden holds BSc and MSc degrees in Botany from the Universities of Calabar and Lagos, Nigeria respectively. She joined the Biological Sciences Department at UCT in 2021 for her PhD studies. Before joining UCT, she worked as an Assistant Lecturer at the University of Calabar, Nigeria.

Glory Oden's thesis investigates the ecological dynamics in the hyper-diverse Fynbos Biome over 8000 years. She used a multiproxy approach to explore vegetation response to changing climates and land use regimes in Jonkershoek Nature Reserve. Fossil pollen, dung spores, diatoms, charcoal, and geochemistry, were used to reconstruct the effects of herbivory, fire and climate on vegetation and erosion. Her results highlight fynbos' resilience and stability through time, mitigated by the high moisture availability and varied local topography. The study further demonstrates that recent fire regimes and erosion are atypical and influenced by recent land use change. Based on climate projections, these may result in undesirable ecological shifts and species loss in the future. These findings will be useful for managing the Jonkershoek Nature Reserve, especially regarding managing fire and alien plants to conserve desired vegetation composition.

Supervisor: Professor L Gillson (Biological Sciences)
Co-supervisor: Professor T Hoffman (Biological Sciences)

Olufemi Promise Olubodun
Thesis Title: *Life history and population dynamics of the African Pygmy Falcon – an obligate associate of the sociable weaver*

Olufemi Olubodun holds a BSc (Hons) in Zoology from the University of Ilorin in Nigeria and an MSc degree in Wildlife Management. He came to UCT in 2019 for his PhD studies.

Olufemi Olubodun's thesis investigates the life history and population dynamics of Africa's smallest diurnal raptor, the pygmy falcon. His thesis produced and used an 11-year dataset of detailed monitoring of demographic variables and explored the influence of long-term variation in environmental and weather conditions. He found the year-to-year variation in the breeding parameters of pygmy falcon were linked to the high annual environmental stochasticity. Weather variables were more important for phenological traits, and daily activities, than for vital rates like survival, suggesting differential vulnerability of life stages to environmental pressures. His findings provide the understanding required to make key predictions on the species' population responses to global change, and to make predictions of the response of the Kalahari animal community to changing climate.

Supervisor: Associate Professor R Thomson (Biological Sciences)

Mita Dimpho Ramabulana
Thesis Title: *On Delsarte-type extremal problems for positive definite functions*

Mita Ramabulana completed his BSc, BSc (Hons) and MSc (with distinction) qualifications at UCT. He began his PhD in the Department of Mathematics and Applied Mathematics in 2022.

Mita Ramabulana's thesis explores positive definite functions on locally compact groups and homogeneous spaces. He focuses on a class of problems known as Delsarte-type extremal problems, which use tools from Harmonic Analysis to obtain estimates to optimisation problems in Geometry and Combinatorics. These techniques have applications to questions such as determining the densest way to pack spheres, or designing highly efficient error-correcting codes. His research establishes a general result proving that solutions to these extremal problems always exist. Motivated by a question from Spatial Statistics concerning spheres, he also extends these ideas to homogeneous spaces and demonstrates how problems on such spaces relate to corresponding problems on their transformation groups.

Supervisor: A/Professor E Berdysheva (Mathematics & Applied Maths)
Co-supervisor: Professor S Révész (Institute of the Hungarian Academy, Mathematics)

Camila Belén Riera Soto
Thesis Title: *Tiny little fragments: study of archaeological pottery circulation in the Atacama Desert (Tarapacá, Northern Chile) through radiogenic isotopes, geochemistry, and petrography*

Camila Riera-Soto is a Chilean geologist with a Master's degree in Anthropology, specialising in Archaeology, from Universidad Catolica del Norte. She began full-time study towards her PhD at UCT in 2020, funded by Becas-Chile (ANID, Government of Chile) and one month before the COVID pandemic, a rough start to a PhD!

Camila Riera-Soto's project focussed on defining different geochemical groupings in ceramics from the Iluga Túmulos archaeological site in the Tarapacá Region of northern Chile. Her thesis provides a replicable methodological framework applicable to any historical ceramic assemblage, particularly those consisting of small fragments often considered archaeologically insignificant. Her research integrates traditional and automated petrography, elemental geochemistry, and radiogenic isotopes. Her findings in the project area in northern Chile identified petrographic groups reflecting distinct technological choices. These geochemical compositions distinguish local from non-local material sources, while isotope data offered key insights into raw material selection across different pottery traditions. This approach enhances our understanding of circulation material networks, technological styles, typologies, and raw material procurement. Through this novel combination of archaeology and cutting-edge geochemistry, this contributing provides a more comprehensive reconstruction of Tarapacá's pre-Hispanic history and its connections to southern Peru, and the Bolivian and Argentine Altiplano.

Supervisor: Dr P le Roux (Geology)

*Ashley Stephen Robson
Thesis Title: *Assessing the performance, prospects, and priority of Africa's protected areas*

Ashley Robson completed his BSc, BSc (Hons), and MSc degrees at the University of Pretoria. Before joining the Institute for Communities and Wildlife in Africa at UCT in 2020 for his PhD, he worked as a consultant on climate change and conservation projects across Africa and Asia.

Ashley Robson's thesis evaluates the status of Africa's protected areas, their resilience to socio-economic change, and priorities for future protected area investment. Using an extensive database on protected area funding, management, anthropogenic threats, and biodiversity conservation outcomes, he develops a Conservation Area Performance Index, revealing that over 80% of Africa's conservation land is failing or deteriorating in its ability to effectively conserve biodiversity. He then models the relationships between protected area management, threats, conservation success, and socio-economic factors, demonstrating that protected area effectiveness is closely linked to broader socio-economic conditions—a challenge given predicted shifts. Finally, he constructs a Conservation Value Index using data on biodiversity irreplaceability, ecosystem services, connectivity, and habitat integrity to identify high-priority protected areas, emphasising their role in securing Africa's conservation future. His findings have already informed conservation strategies and will continue to shape policy and management across the continent.

Supervisor: Professor J O'Riain (Biological Sciences)
Co-supervisor: Professor N Nattrass (School of Economics)

Lara Rush
Thesis Title: *Linearly constrained robust portfolio construction using Bauer-Householder bounds on the condition number*

Lara Dalmeyer holds a Master's degree in Business Science, specialising in Statistics, from UCT. She works as a portfolio manager at Abax Investments, managing multi-asset portfolios and a specialised hedge fund.

Lara Dalmeyer's thesis investigates robust portfolio optimisation. She investigates the geometry behind portfolio construction; more particularly the angle between the direction of expected returns and the optimal portfolio weights from quadratic portfolio optimisations, and how these have an upper bound dependent on the condition number of the covariance matrix. This is used to argue that an equally weighted portfolio is in general not preferable to the mean-variance portfolio, even with poor forecast ability and a badly conditioned covariance matrix. Furthermore, a new shrinkage methodology directly using these geometric insights is proposed and investigated, and shown to be superior to a collection of standard shrinkage methodologies known in the literature, and performed in practice.

Supervisor: Associate Professor T Gebbie (Statistical Sciences)

*Ali Shams
Thesis Title: *The density, occupancy and movement patterns of the North-west African cheetah (Acinonyx jubatus hecki) in the Sudano-Sahel*

Ali Shams is a conservation biologist dedicated to cheetah conservation. Since 2014, he has worked on the protection of the last remaining Asiatic cheetahs in Iran and has expanded his efforts to the conservation of different cheetah subspecies in South Africa, Central Africa, and Northwest Africa. Holding a master's degree in Assessment and Land Use Planning, he pursued his PhD on the conservation of the North-west African cheetah.

Ali Shams's research investigates the population status, habitat use, and movement patterns of the North-west African cheetah (A. j. hecki) in the W-Arly-Pendjari Complex of Benin and the Greater Zakouma Ecosystem of Chad. Using camera trap surveys and GPS telemetry, he assesses cheetah density, occupancy, and spatial ecology. His findings reveal a highly fragmented and low-density population, impacted by interspecific competition, prey depletion, and human disturbances. The study highlights the need for transboundary conservation approaches to ensure long-term population viability. By integrating ecological connectivity, adaptive management, and ex-situ conservation strategies, his research provides a critical framework for mitigating habitat fragmentation and enhancing conservation efforts for this endangered subspecies.

Supervisor: Professor J O'Riain (Biological Sciences)
Co-supervisor: Dr V Naude

Bernard John Ssennyomo
Thesis Title: *Investigating rural high school mathematics teachers' techno-logical pedagogical content knowledge development using GeoGebra through a lesson study approach*

Bernard John Ssennyomo holds a BSc Education qualification from Makerere University, Uganda. He also completed his BEd, BEd (Hons) and MEd in Mathematics Education at Rhodes University, South Africa, and begun studying towards his PhD in 2022.

Bernard John Ssennyomo's thesis investigates rural high school mathematics teachers' technological pedagogical content knowledge (TPACK) development using GeoGebra software through a lesson study approach when teaching transformation geometry. He uses a baseline survey, focus group interviews, and three transformation geometry research lessons, and observation guides to collect data. The qualitative findings show that the teachers transitioned from pre-recognising to higher TPACK development levels (exploring and advancing) from training to research lesson three. The study contributes to mathematics teachers' TPACK development in the South African context and the use of GeoGebra in the teaching and learning of transformation geometry. In addition, the findings of the study contribute to the body of knowledge required in teacher education and professional development of in-service mathematics teachers on the use of GeoGebra to teach transformation geometry.

Supervisor: A/Professor D Erwin (Mathematics & Applied Maths)
Co-supervisor: A/Professor D Mhakure (Numeracy Centre)

Francesca Marina Tavolaro
Thesis Title: *An interdisciplinary mixed-methods approach to understanding the community-based natural resource management system and human-wildlife interactions in Namibia*

Francesca Marina Tavolaro holds a BSc (Hons) in Zoology from University of Aberdeen and a MSc by research from Bristol University (UK). She worked as a researcher at Onderstepoort and as a consultant at the Food and Agriculture Organization of the United Nations before starting her PhD at UCT.

Francesca Marina Tavolaro's thesis took an interdisciplinary approach to better understand and tackle conservation conflicts in Namibian communal conservancies. She analyses national data quantifying the type and frequency of human-wildlife conflicts within communal conservancies and explores possible biological drivers of temporal and spatial variation of these data. Using the Theory of Planned Behaviour she shows what drives farmers' intention to report livestock depredation events caused by hyena or engage in retaliatory killing of this pervasive carnivore. She also found that tolerance levels for selected species differed for farmers living inside and outside conservancies, with only the former perceiving any tangible benefits. She concludes that more effective communication to members as to the long-term benefits and short-term costs is an essential first step in assuring the

future of the programme for both people and wildlife living in Namibia.

Supervisor: Professor J O'Riain (Biological Sciences)
Co-supervisor: Dr Z Woodgate (Biological Sciences)

Seturumane Johannes Tema
Thesis Title: *A study of the cosmological singularity from modified gravity*

Seturumane Tema completed his BSc at the University of the Witwatersrand and obtained his BSc (Hons) and MSc degrees at UCT before commencing full-time PhD study in 2022.

Seturumane Tema's thesis explores the mathematical structure of cosmological singularities and how they can be resolved within classical extensions of General Relativity. By applying the Raychaudhuri equations for time-like and null geodesic congruences, he identifies conditions under which the convergence theorem and consequently the classical singularity theorems can be violated in higher-order gravity theories. The study examines Stelle gravity and f(R) gravity, which are higher-order extensions, as well as Brans–Dicke theory, a scalartensor modification of General Relativity. Within these frameworks, power-law cosmologies in the Friedmann–Lemaître–Robertson–Walker spacetime are analyzed in the ekpyrotic and accelerating regimes to determine the convergence theorem-violating conditions. The study also utilizes a compact dynamical systems approach in f(R) gravity to investigate non-singular cosmological bounces, encompassing the universe's smooth transition from contraction to expansion. The results of the research provide rigorous mathematical evidence that classical extensions of General Relativity can support geodesically complete cosmologies without singularities.

Supervisor: Dr S Haque (Mathematics & Applied Maths)
Co-supervisor: Professor S Das (University of Lethbridge, Physics and Astronomy)

Tesha Toolsee
Thesis Title: *The influence of storms on the CO2 flux in the Southern Ocean*

Tesha Toolsee earned her BSc, BSc (Hons) in Ocean and Atmosphere Science, and MSc in Physical Oceanography from UCT and began her full-time PhD in 2022.

Tesha Toolsee's thesis examines how mid-latitude storms impact the air-sea exchange of carbon dioxide (CO2) in the Southern Ocean, a crucial region for the uptake of anthropogenic CO2 and heat. Her research employs autonomous robots and model simulations to demonstrate that, while wind strength has long been viewed as the key factor influencing short-term CO2 uptake variations in the Southern Ocean, it is as important to consider the differences in CO2 concentration between the surface ocean and the atmosphere during storms. Her findings enhance our understanding of how Southern Ocean storms regulate CO2 uptake and underscore the necessity for high-resolution observations in the Southern Ocean.

Supervisor: Professor M Vichi (Oceanography)
Co-supervisors: Dr SA Nicholson (Southern Carbon-Climate Observatory); Professor P Monteiro (Stellenbosch, Climate Studies)

*Mia Truter
Thesis Title: *Breast cancer subclass analytics from glycoenzyme gene expression using machine learning and bioinformatics methods*

Mia Truter completed her BSc Biotechnology and Master's (Bioinformatics) at the University of Pretoria. She started her PhD in Computational Science in the Department of Chemistry, Scientific Computing Research Unit, at UCT in 2022,.

Mia Truter's research explored the use of machine learning and bioinformatics methods to discover breast cancer subtypes through glycoenzyme gene expression. The study employed an unsupervised algorithm, the Growing Hierarchical Self-Organising Map (GHSORM), developed at the Scientific Computing Research Unit, to classify breast cancer subtypes based on their glycoenzyme expression profiles. She used machine learning and bioinformatics to functionally interrogate the breast cancer subtypes. This approach revealed novel subtypes, highlighting significant variation in glycosylation patterns across different cancer samples and paving the way towards personalised cancer treatment strategies.

Supervisor: Professor K Naidoo (Chemistry)

Julia Abigail Watson
Thesis Title: *Investigating the feasibility of Yeast surface display for isolating antibodies to the key Rainbow trout bacterial pathogen Lactococcus petauri*

Julia Watson completed her BSc and BSc (Hons) qualifications at UCT and began full-time study towards her PhD in 2020.

Julia Watson's thesis investigated a deadly bacterial infection of farmed Rainbow trout. She identified the bacterium Lactococcus petauri as the main cause of recent outbreaks in Southern Africa. She developed a yeast-based system to isolate antibodies that bind specifically to L. petauri as an antibody-based therapy. Her work lays the foundation for the development of a novel treatment that combines immune-boosting probiotics and targeted antibodies to improve disease control in farmed Rainbow trout.

Supervisor: Professor V Coyne (Molecular and Cell Biology)
Administrative supervisor: A/Professor M Rafudeen (Molecular and Cell Biology)

VISION AND MISSION
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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.

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Lu Nteya: lu.nteya@uct.ac.za
Cindy De Oliveira: cindy.deoliveira@uct.ac.za
Nomcebo Msweli: nomcebo.msweli@uct.ac.za

UNITED STATES OF AMERICA
Porcha Dodson: porcha.dodson@uct.ac.za
Marifel Verlohr: marifel.verlohr@uct.ac.za

UNITED KINGDOM
Sam Davies: sam@ucttrust.org.uk

EUROPE
Andrew Wigley: andrew.wigley@uct.ac.za

AUSTRALIA
Jillian Shiels: jillian.shiels@uct.ac.za

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