
FACULTY OF SCIENCE (CEREMONY 2)

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ORDER OF PROCEEDINGS

Academic Procession.

(The congregation is requested to stand as the procession enters the hall and is invited to participate in the singing of Gaudeamus)

The Acting Vice-Chancellor, Professor S Klopper, will constitute the congregation.

The National Anthem.

The University Statement of Dedication will be read by a representative of the SRC.

Musical Item.

Welcome by the Deputy Vice-Chancellor, Professor F Petersen.

Professor Petersen will present Stephen Richardson for the award of a Fellowship.

The graduands will be presented to the Acting Vice-Chancellor by the Deans of the Faculty.

The Acting Vice-Chancellor will congratulate the new graduates.

Professor Petersen will make closing announcements and invite the congregation to stand.

The Acting Vice-Chancellor 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.)

The music for the recessional march was composed by Emeritus Professor Klatzow.

GAUDEAMUS

Gaudeamus igitur, juvenes dum sumus,
Gaudeamus igitur, juvenes dum sumus,
 Post jucundam juventutem, post
 molestam senectutem,
Nos habebit humus, nos habebit humus.

Ubi sunt qui ante nos in mundo fuere?
Ubi sunt qui ante nos in mundo fuere?
Vadite ad superos, transite ad inferos,
Quos si vis videre, quos si vis videre.

Vita nostra brevis est, brevi finietur,
Vita nostra brevis est, brevi finietur,
Venit mors velociter, rapit nos atrociter,
 Nemini parcetur, nemini parcetur.

Vivat Academia, vivant Professores,
Vivat Academia, vivant Professores,
 Vivat membrum quodlibet, vivant
 membra quaelibet,
Semper sint in flore, semper sint in flore.

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.

DISTINCTIONS IN THE FACULTY OF SCIENCE

Bachelors degrees may be awarded with distinction

in a subject (or major), where the student achieves first class passes in specified courses

in the degree, where the student has both distinction in at least one subject (or major) and first class passes in at least the equivalent of six full courses.

Honours degrees are awarded by class (first, second class division one, second class division two, or third).

Master's degrees may be awarded with distinction

in the degree, (by dissertation) for especially meritorious work

in the degree, (by coursework and minor dissertation) for especially meritorious work for the dissertation as well as achieving 75% or better for the coursework.

FELLOWSHIP

The election by Senate of a member of the faculty to be a fellow recognises sustained and original contributions through research or creative endeavour.

The fellows in the Faculty of Science and their years of election are:

2009: I Barashenkov
1998: WJ Bond
2010: SA Bourne
2005: MR Caira
2010: K Chibale
2005: A Chinsamy-Turan
2011: TJ Egan
2010: JM Farrant
2005: CL Griffiths
2011: G Janelidze
2011: H Künzi
2005: AP le Roex
1995: BD Reddy
2005: AL Rodgers
2011: E Rybicki
2009: JC Sealy

FELLOWSHIP (continued)

The following member of the Faculty of Science has been elected to a fellowship:

Stephen Hilary Richardson
Professor in the Department of Geological Science

Professor Richardson is a geochemist with exceptional expertise in isotope geochemistry who has specialised from the outset of his career in addressing major issues in the Earth Sciences relating to continental evolution and diamond genesis – from a direction not used previously in the field. His strength in research has been his meticulous attention to detail, ability to work with samples little more than 20 microns in size (beyond the ability of most), by applying analytical techniques to such samples in ways not possible for the average, and the rigour in the way he interprets elemental and radiogenic isotope measurements.

He has a deep insight into the Earth sciences and what the big picture questions are which drive the discipline. This has enabled him to identify important problems of international interest to work on. His record proves that he is one of a very small group of the best Earth scientists in the world able to acquire and interpret data on small inclusions in diamonds, and realise their full significance without overstatement. He has demonstrated that mineral inclusions in diamonds could provide unique information relevant to processes in craton evolution and diamond formation. In addition he has shown that some diamonds are Archean in age and that all are significantly older than the volcanic rocks (kimberlite) that carried them to the Earth's surface. His arguments are accepted universally in the field.

Professor Richardson has contributed evidence of the importance of recycled ocean crust in the genesis of eclogitic diamonds in Southern African kimberlites, and mapped out the Archean onset of the Wilson cycle (the opening and closing of ocean basins by virtue of movements of the Earth's crust). His research tracks the evolution of a Mesozoic slab beneath Western Gondwanaland and more than incidentally provides the first realistic age and origin for nitrogen free type II diamonds.

Professor Richardson's early ground breaking work and on-going contributions using diamond inclusions to provide information towards understanding diamond genesis and the formation and evolution of the Earth's continental lithosphere have been profound.

**NAMES OF
GRADUANDS/DIPLOMATES**

An asterisk * denotes that the degree or diploma will be awarded in the absence of the candidate.

1. FACULTY OF SCIENCE

Dean: Professor A le Roex

**DEGREE OF BACHELOR
OF SCIENCE**

Bianca Abrahams	Matthew David Carr	Michelle Jacqueline Gore
Miengah Abrahams	Tara Leigh Jane Cathcart	*Akhona Gqokonqana
Aaron David Adler	Sarah Ashley Catto	*Joni-Lee Grace
Megan Eve Ahrens	Sixolile Sibongiseni Centane	Lungile Zama Gumede
Iyaloo Taimi Akuaake	Darshan Chetty	Nokubonga Charity Gumede
Ashlee Elizabeth Alston	Victoria Ingle Cole	James George Hagan (with distinction in Applied Biology, Environmental & Geographical Science and the degree with distinction)
Travis America	Claire Rosemary Conradie	Mark Christopher Hague
Rooksaar Amod	John Patrick Cullum	Miles Charlie Hamilton
Brittany Morgan Andrew (with distinction in Human Physiology)	Tavis Andrew Dalton (with distinction in Applied Biology, Marine Biology and the degree with distinction)	Britt Hanson (with distinction in Genetics, Microbiology and the degree with distinction)
Lee Angela Badenhorst	Refilwe Felicity Damane	Bianca Alexandra Harrison (with distinction in Geology, Ocean & Atmosphere Science and the degree with distinction)
Tatjana Alexa Baleta	Rughshana Daniels	Kelly Lyn Hartman
*Marine Barnabe	Anusca Danuta Daries	*Penelope Ruth Hay-Hartnady
Nicole Kerry Barnes (with distinction in Genetics, Human Physiology and the degree with distinction)	Sian-Ailin Da Silva (with distinction in Human Physiology and Genetics)	Janika Liv Heyerdahl
Shanle Baron	*Tobin Joe Davenport	Theresa Elizabeth Maria Hille (with distinction in Biochemistry and Human Physiology)
Jessica Francis Barrell	Kieran George Deane	Leigh Bronwyn Jacqueline Howard (with distinction in Genetics, Human Physiology and the degree with distinction)
Jody Lee Bell	*Christopher Kieran De Cerf	Rebekah Hughes
Laura Kareline Benetton	Victoria Suzanne Delbridge	Laa-Iqa Jacobs
Julia Rosemary Bishop	Ayabulela Delo	Raygaana Jacobs
Lorna Erin Born	Timothy James Dennis	Chelsea Christine Johnson
Lily Astrid Bovim	James Anthony Dicks	Chriselle Joubert
Jemma Susan Brewitt	Ryan Michael Dinkele (with distinction in Biochemistry, Microbiology and the degree with distinction)	*Mohammed Kajee
Katherine Rose Brink (with distinction in Ocean & Atmosphere Science)	Duduzile Princess Dlamini	Danai Katsere
Emma Bronwyn Broadway	Nokulunga Vuma Dlamini	Tarryn Ann Kawalsky (with distinction in Italian Language & Literature)
Jody Frank Brown	Deelan Sudhir Doolabh (with distinction in Genetics, Microbiology and the degree with distinction)	Andisiwe Ketse
Jonathan Brown	Frances Maria Dreyer (with distinction in Human Physiology, Psychology and the degree with distinction)	Nametso Kgabileng
*Sacha Maximillian Bruessow	*Sascha Emil Dyer	Flavia Nantege Kigozi
Tanya Lauren Bruggemann	Aqeelah Begum Ebrahim	Angela Mary Kirykowicz (with distinction in Biochemistry and Genetics)
Siobhan Nadine Brushett (with distinction in Genetics)	Jennifer Obiaderi Ehima	Johanna Katharina Kohler (with distinction in Marine Biology, Ocean & Atmosphere Science and the degree with distinction)
Lee Cackett (with distinction in Biochemistry, Genetics and the degree with distinction)	Toshika Sheshna Emrith	Matsepo Viwe Koyi
	Kim Enfield	Bafana Thabo Kubheka
	Hannah-Ruth Engelbrecht (with distinction in Human Physiology, Genetics and the degree with distinction)	
	Rachel Tal Esra (with distinction in Genetics)	
	Campbell Fleming	
	Rukeya Games	
	Amy Frances Geard (with distinction in Biochemistry, Genetics and the degree with distinction)	
	*Amy Sue Gibbings	
	*Andrew Gregg Gillard	

- Gabriella Ruth Michaela
Leighton (with distinction in
Applied Biology, Ecology
& Evolution and the degree
with distinction)
- *Tegan Louise Leisegang
Simone Catherine le Roux
Vinzeigh Nicholas Leukes
James Joseph Storr Lister
Daisy Refloie Litsoane
Chandra Longden-Thurgood
Bianca Linda Lourens
Caylee Jane Luden
Dunyiswa Lucia Lumko
Lucrecia Katlego Maboane
Matjie Lillian Maboya
Rebecca Barbara Mackinnon
(with distinction in Marine
Biology)
- Matthew Benoit Macray
Sasha Leanne Madzivire
Silence Magagula
Heather Vimbai Mahachi
- *John William Mains-Sheard
Buhle Makalima
Munyaradzi Eliah Makuwaza
Aquinar Tebatso Malatji
- *Amy Claire Martin
Jonathan William Martin
Tarisiro Matiza
Netshedzo Ashley Mavhungu
Takalani Mbooi
Alice Margaret Mc Grath
Megan Mehnert
Kudakwashe Mhuruyengwe
Coleen Middleton
William Middleton
Ryan Jonathan Miltz
- *Fabrizio Minutolo (with
distinction in Spanish)
- Matthew Zbigniew Mischczak
Bonga Mkalali
Nonkululeko Gugulethu
Mkwanazi (with distinction
in Biochemistry)
- Koketso Michelle Molepo
Bellinda Mashoene Monyela
Tumelo Morapi
- *Buhlebethu Sukoluhle Mpofo
Nokuthula Msibi
Odwa Ntsika Mtembu
- *Kakale Munamati
Tafadzwa Nola Mutogo
Roger Kabeya Mutombo
Gloria Mwad-A-Mutomb
Fikiswa Phelokazi Mxaka
Andisiwe Venolia Mzamane
Rofhiwa Ndou
- Lahja Nyanyukweni Newaka
Chumisa Ngubo
Annabelle Pamela Nichol
Pamela Nkuna
Anna Josephine Notten (with
distinction in Human
Physiology and the degree
with distinction)
- Bronte Oaker
- *Dominique Susanne Odayan
- *Jessica Lee Odendaal (with
distinction in Genetics)
- Toni Olsen
- *Eira Palme
Ashley Victoria Parker (with
distinction in Ecology &
Evolution, Genetics and the
degree with distinction)
- Justin Paul
James Grant Pelsler (with
distinction in Genetics and
Microbiology)
- Michaela Frances Pelsler
Robin Peters
Hana Petersen
Florence Malehlabathe
Phelanyane (with distinction
in Genetics, Microbiology
and the degree with
distinction)
- Philippa Gillian Phelp
Relebohile Pherane
Tristan Jade Porter
Elizabeth Sarah Potter
Caryn Samantha Louise Prentice
David Bryce Purchase
- *Skye Sizwe Pym Pym-Siljeur
Success Mpumelelo Qoyo
Beatrice Relebogile Ramorola
- *Devasha Redhi
- *Kathryn Lindsay Rennie
Yumnah Richards
Jessica Ellen Ringshaw (with
distinction in Human
Physiology, Psychology and
the degree with distinction)
- Peter Jean Roberts
Sanjo Rose
Sinazo Runeyi
Arao Joaquim Samunda
Anja Schwär
Manare Caroline Sejeng
Teizeen Amin Shamshudin Kara
Melinda Lori Simon
Caitlin Gifford Sole
Ian Macdonald Spence
Lindsay Toyah Starling
Zizo Stimela
- Robert David Stuart
- *Thomas Robert Sutcliffe
Sheveenah Sunnassee Taukooor
Kyla Xabisa Thompson
Musa Tiki
Nadine Sydney Timmer (with
distinction in Biochemistry,
Genetics and the degree with
distinction)
- Cameron Frank Tonkin
Riley James Traviss
Jason Pierre Truter
Keamogetse Tebogo Charlotte
Tshenkeng
- *Nicola Kim Tuckniss
Sylvia Dominique Ujma (with
distinction in Biochemistry,
Microbiology and the degree
with distinction)
- Shannon-Leigh Valentine
Paul Frederick Van Der Merwe
Joshua Maarten van der Ploeg
Amy Louise Veenstra
- *Tawanda Peter Vengesa
Estee Ann Vermeulen
Alexios Ivan Vicatos (with
distinction in Chemistry)
- Daniel John Watson (with
distinction in Biochemistry,
Microbiology and the degree
with distinction)
- Mark Jonathan Widegger
Cody Williams
- *Daniel Peter Wilson
Caroline Helyn Wood (with
distinction in Ocean &
Atmosphere Science)
- Thembeke Prudence Zama
Sean Darrell Zeederberg
- *Ting-Ting Zhang
- In Chemical, Molecular &
Cellular Sciences:*
Hilda Phatswana
- DEGREE OF BACHELOR OF
SCIENCE (HONOURS)
- In Actuarial Science:*
(First class) Izak Jacobus Nel
- In Archaeology:*
Candice Louise Koopowitz
- *Nicole Jean Mann
*David James Rutherford-Jones

In Archaeology & Environmental Science:

*Navashni Naidoo
Dimakatso Rosina Tlhoale

In Atmosphere Science:

*Samantha Jayne Hackett
(First class) Christoph William Kent
*(First class) Hazel Jean Little
Tichaona Tavare Mukunga
*(First class) Claire van Wyk

In Biological Sciences:

Inge Alison Adams
*(First class) Francois Stephanus Becker
*Yolanda Tendai Chirango
(First class) Gabriel Lyle Cornell
Raheem Dalwai
*(First class) Andrew Dirk De Blocq Van Scheltinga
*(First class) Angela Joan Ferguson
Randall Evan Josephs
*Joel Robin Lewis
*Kirtanya Lutchminarayan
*(First class) Vincent Norman Naude
*(First class) Jacques Nel
Daniel Mika-Nsimbi Poultney
*(First class) Alexander Douglas Rebelo
*Christian Karlheinz Setzer
*(First class) Shona Joy Troost
Zoe Anne Woodgate

In Chemistry:

(First class) Jessica Nicole Akester
Linley Nicole Barnard
(First class) Stefan Jason Benjamin
Irwin Cassells
*Yi-Hwa Chen
(First class) Jasmin Ferreira
*Muhammad Motala
Nosipho Mercy Nzama
Mohamed Habeeb Parker
(First class) Chiara Theresa Schiava
*Tayyibah Tahier
Esther Nashipolo Uushona
Dillon Sydney Uys
(First class) Lauren Amy Wainwright
Chad Wilkinson
Matthew Aaron Williams

In Environmental & Geographical Science:

Hannah Benn
(First class) Jessica Leigh Fell
(First class) Abigail Sarah Ann Graham
*Mphangera Kamanga
*Unathi Mfupi
Sarina Sempotseng Motsuki
*(First class) Jody-Lee Reizenberg
*(First class) Michael-James Stowe
*(First class) Jessleena Suri

In Geochemistry:

Camille Andrea Elisa Olianti
Silindile Noluthando Zondi

In Geology:

*Adrian Peter Bunge
Antónia Reis De Carvalho
Abel Francisco Muxito Diogo
*Buhlebenkosi Joylene Donga
Leslie Huang
Vamumusa Malusi Khumalo
Nyamaizi Caroline Kiiza
Sanelisiwe Mhlambi
Tirelo Mputle
Robert Anthony Muir
*Melissa Stephanie Oosthuizen
*Mhairi Lesley Reid
Chanel Hayley Samuels
*Ellwin Taleni Shiimi
Rosalia Tuwilika Shiimi

In Marine Biology:

Danielle Winona Boyd
Isabelle Carr
Darren Scott du Plessis
(First class) Kirti Narendra Gihwala
(First class) Sarah Bernadette Levy
(First class) Jessica Muriel Micklem
Talitha Gaby Noble
Michal Viskich
Andrea Yankee Liang

In Molecular & Cell Biology:

Scott De Beer
Romana De Jesus Do Rosario Yanez
*Johann Els
Cynthia A S Fan
Tomas Hessler
Angus Love Mackay
*Rikus Marais

Bahiah Meyer

*(First class) Evan David Milborrow
Michelle Rudo Ngwarai
*Tawanda Jonathan Nhundu
Astrid Lillie Radermacher
(First class) Edmund Schram Rodseth
*Michael John Huntly Shaw
(First class) Shelley Helen Smith
(First class) Gertrud Talvik
Alma Esther Truys
*Ethan van Rooy
*(First class) Gerrit van Wyk
Rouxjeane Venter
Sara Sylvia Wighard

In Ocean & Atmosphere Science:

*(First class) Marc de Vos
*Jean-Pierre Fourie
(First class) Mark Joseph Jacobson
(First class) Khushboo Jhugroo
Peliwe Jubase
Fisokuhle Lungile Mbatha
*Imke Meyer
*(First class) Rose Tufilonghenda
Tuye-Mewano Mtuleni
*Tharone Rapeti
*Ramontsheng Sakia Rapolaki
*(First class) Tania Carol Williams

DEGREE OF MASTER OF SCIENCE

In Applied Marine Science:

*Lekraj Etwarysing
Lisa Labinjoh
*Jannes Landschoff
Mary Jane Rowlinson

In Archaeology:

(With distinction) Cuan Thomas Hahndiek

In Biological Sciences:

(With distinction) Carla-Louise Ramjukadh

In Botany:

Leanne Gersun
Kim Christie Zoeller

In Chemistry:

*James Tapiwa Biwi
Gaynor Norma Manuel

Latisa Maqeda
(With distinction) Allistair Frans
Mokoena

*In Climate Change &
Development:*

*(With distinction) Nicholas James
Wiid

In Conservation Biology:

*Jordan-Laine Calder
*Greg Thomas Campbell
*Nadia Rachel De Souza
*(With distinction) Kirsten Sarah
Leilani Gallaher
*Rukaya Johaadien
*Elliot James Kinsey
*(With distinction) Zanne
Labuschagne

*In Environmental &
Geographical Science:*

*Sandra Appavoo Moodelly
(With distinction) Pierre-Louis
Kloppers
*Claude-Michel Nzotungicimpaye

In Geology:

Louis Smit
Bronwyn Kate Smith
Sukey Anna Jay Thomas

In Molecular & Cell Biology:

*(With distinction) Nyambura
Shawa

In Ocean & Atmosphere Science:

Kyle Francis Cooper
Isabelle Sindiswa Giddy

In Ocean & Climate Dynamics:

*Xolisa Dlomo
Ndunisani Precious Mongwe

In Physical Oceanography:

*Nicholas Christopher Pringle

In Structural Biology:

*Kyle Clayton Dent

In Zoology:

Philna Botha
*Zoleka Nontlantla Filander
Corlia Meyer
(With distinction) Germán Andrés
Montoya Sanhueza
*Ropafadzo Kelebuhile Moyo
*Dane Matthew Paijmans

DEGREE OF MASTER
OF PHILOSOPHY

In Applied Marine Science:

*Leslie Amlwch Roberson

In Conservation Biology:

*John Moore Heydinger

*In Environment, Society
& Sustainability:*

Belinda Huddy
*Nadine Soutschka

DEGREE OF DOCTOR
OF PHILOSOPHY

In Archaeology:

Katharine Kyriacou
Thesis Title: *Coastal resources
and nutrition among Middle Stone
Age hunter gatherers in the South-
Western Cape*

Katharine Kyriacou has a BA (cum
laude) and a BA Honours in Social
Anthropology from the University
of South Africa, a BA(Hons) (with
distinction) in Archaeology and an
MPhil in Archaeology from UCT.

Katharine Kyriacou's
thesis is an examination of the
nutritional resources available
to Middle and Later Stone Age
hunters and gatherers of the
Fynbos landscape. Her aim has
been to document the nutrient
compositions of foods known
or suspected to have been used
by emergent Homo sapiens to
understand the constraints implied
by uneven availability of key
resources. Given that the significant
characteristic of modern people
is their encephalisation, requiring
substantial supplies of nutrients
needed to support expensive brain
growth, her interest has been in
the connections between nutrient
distributions, archaeological
evidence for food choices and the
innovative practices developed
by early modern people in the
Cape. Her results have showed
where nutrient supplies would
have been constraining on human
settlement choices and will in
time lead to a better understanding
of the emergence of our species.

Supervisor: Emeritus Professor J
Parkington (Archaeology)

Co-supervisor: Professor D Marais
(Clinical Laboratory Sciences)

In Botany:

Caitlynne Melanie Francis
Thesis Title: *Systematics of the Laurencia complex (Rhodomelaceae, Rhodophyta) in southern Africa*

Caitlynne Francis has a BSc, majoring in Biodiversity & Evolutionary Biology and Marine Biology, and a BS(Hons) in Botany, both from UCT. During these studies she developed a strong interest in the systematics and evolution of marine plants.

Caitlynne Francis' thesis investigated the systematics of a very common and abundant group of red seaweeds, including the large genus *Laurencia*. This group has been much studied recently, worldwide, due to the possession of interesting bioactive chemical constituents. A combination of morphology (form) and molecular sequencing studies were used to investigate and describe genera and species in South Africa, and on adjacent tropical shores in the southwestern Indian Ocean. Prior to the study, 10 species were recognised to be present in South Africa, all in the genus *Laurencia*. Species in the related genera *Chondrophycus*, *Laurenciella* and *Palisada* were discovered in South Africa for the first time. The number of species in the *Laurencia* complex in South Africa has been raised to 19, with, in addition, six thus far unidentified lineages awaiting further study. Five species of *Laurencia* new to science are described in the thesis, and studies on the biogeography of the complex in the southwestern Indian Ocean have been initiated.

Supervisor: Professor JJ Bolton (Biological Sciences)
Co-supervisors: A/Professor RJ Anderson (Agriculture, Forestry and Fisheries)
Dr L Mattio (Biological Sciences)

Dawood Hattas

Thesis Title: *Carbon based secondary metabolites in African savanna woody species in relation to anti-herbivore defense*

Dawood Hattas has a BTech from the Cape Peninsula University of Technology, and an MSc from the University of the Western Cape. His PhD thesis emerged from his interest in plant chemical defenses.

Dawood Hattas' thesis aims to improve our understanding of how savanna trees allocate carbon to chemical defense compounds that may protect them against herbivores. He shows that the commonly measured chemical defense compound, condensed tannins, may have been incorrectly measured, due to using an inappropriate standard, where Quebracho tannin overestimates condensed tannin concentration by more than 8 times in certain species. Dawood further shows that the chemical composition of condensed tannins determine their reactivity. He profiled chemicals that may protect plants against mammalian herbivores and discovered that a high concentration of myricitrin, a chemical that has been previously shown to protect plants against insects, is present in an unpalatable species. Furthermore, Dawood shows that the growth differentiation balance hypothesis, a hypothesis developed in northern boreal and temperate forests to explain how plants allocate carbon to defense compounds in response to increasing resource supply and herbivory, does not apply in an African savanna species.

Supervisor: Professor JJ Midgley (Biological Sciences)
Co-supervisors: A/Professor P Scogings and Professor R Julkunen-Tiito (Biological Sciences)

Robert Paul Skelton

Thesis Title: *The role of hydraulic strategies in understanding the response of fynbos to drought*

Robert Skelton has BSc, BSc (Hons) and MSc degrees from UCT. His doctoral thesis emerged as a result of his passion for the flora of the Cape Floristic Region, a well-known global biodiversity hotspot, and his interest in exploring the diversity and function of whole organisms in response to global-change-type events.

Robert Skelton's thesis aims to examine the relevance of plant hydraulic regulation strategies in understanding and predicting the response to drought of diverse fynbos communities. Robert managed to do this through a combination of multi-year field-based physiological measurements and modelling approaches. The product of his research is a synthesis of theory and observation that allows us to predict which species are vulnerable to drought. Key findings are that species of the largely endemic genus *Erica* are highly susceptible to hydraulic failure and carbon starvation, and that *Protea* species are more likely to suffer carbon limitation over protracted drought events. The thesis highlights the importance of detailed physiological knowledge in understanding the response of diverse communities to global change.

Supervisor: Dr AG West (Biological Sciences)
Co-supervisor: Professor T Dawson (Integrative Biology, University of California at Berkeley)

Nicola Stevens

Thesis Title: *Exploring the potential impacts of global change on the woody component of South African savannas*

Nicola Stevens has a BSc(Hons) from the University of the Witwatersrand and an MSc from the University of Groningen (Netherlands). Her PhD emerged from having worked in savannas for several years. She conducted her PhD whilst employed at the CSIR on a studentship.

Nicola Stevens' research aims to assess if global change will cause bush encroachment and tree range shifts in South African savannas. She measured tree cover change across South African savannas across four common land uses over the past 70 years. Her results show that widespread bush encroachment has occurred across South African savannas, to the extent that some savannas are being lost. The increases are most likely driven by elevated CO₂ and the loss of megafauna from the landscape. Contrary to the assumption that tree ranges will shift with changing climate, she demonstrated that climate does not limit common savanna tree ranges. The current approach used for predicting future tree range responses to climate change is therefore not suitable for savannas. The role of fire and herbivory were more important factors in setting tree ranges, and future studies should focus on understanding how climate change affects these controls. She has provided a new framework from which to consider global change in savannas of the world.

Supervisor: Emeritus Professor WJ Bond (Biological Sciences)

Co-supervisors: Dr SA Archibald (Animal Plant and Environmental Sciences, Witwatersrand), A/Professor BFN Erasmus (Animal Plant and Environmental Sciences: Witwatersrand)

In Chemistry:

Mustafa Alarabi Benamer

Thesis Title: *Chemical speciation, spatial and vertical distribution of heavy metals and their adsorption onto sediments of the Berg River, Western Cape, South Africa*

Mustafa Benamer has a BSc from the University of Zawia and an MSc from the University of Tripoli. His thesis originated from his research activities in the Department of Chemistry at the University of Tripoli, where he has been a member of the marine research group since 2002.

Mustafa Benamer's thesis aims to establish a database of heavy metal concentrations in sediment along the Berg River and to investigate the ability of the Berg estuary sediment to adsorb heavy metals. He analyses chemical speciation of heavy metals to determine the mobility and bioavailability of these metals in their different forms. Mustafa Benamer also examines the vertical distribution of heavy metals in sediment cores to evaluate the contamination of metal from the surface to the bottom sediments. He studies the spatial distribution of metals in river and estuary sediments to understand how location is linked to metal concentration. The most important findings of his study are that; Cd and Zn are very mobile and bioavailable; that the vertical distribution of metals with depth in the core samples indicated an increase in pollution over time; and that the sediments of the Berg River Estuary have a low-potential for adsorption of heavy metals. His findings provide a baseline for continued monitoring of the Berg River.

Supervisor: Professor G Jackson (Chemistry)

Co-supervisor: Dr K Winter (Environmental & Geographical Science)

Pumeza Christine Gogwana

Thesis Title: *Investigation of the potential beneficial effects of supplemental polyunsaturated fatty acids and glycosaminoglycans on the risk factors for calcium oxalate kidney stone formation using theoretical, experimental, and human models*

Pumeza Gogwana has a BSc(Hons) and MSc from the University of Fort Hare, where she served as a Junior Lecturer in the Chemistry Department from 2007-2009. In 2010 she was awarded a UCT Equity Development Programme Bursary (Chemistry) for PhD studies.

Pumeza Gogwana's thesis investigates whether certain essential fatty acid and chondroitin sulphate health supplements may reduce the risk factors in blood and urine for kidney stones and whether black and white individuals may respond differently to such supplements, based on the relative rarity of this disease in the former group. Initially, Pumeza performed computer modelling studies in which the effects of these substances were calculated. Next, in vitro crystallization experiments were performed in synthetic and real urine samples. Finally, mini-trials were conducted, in which volunteers from both race groups ingested the supplements. The results revealed that certain risk factors were reduced and that there was a different renal response in the two race groups. The thesis provides a basis for future large-scale clinical trials using these and related compounds, and demonstrates that relative stone rarity could be due to different physiological handling mechanisms of dietary challenges in healthy and stone-prone individuals.

Supervisor: Emeritus Professor A Rodgers (Chemistry)

Co-supervisor: Professor N Ravenscroft (Chemistry)

Krishna Kuben Govender
Thesis Title: *The development of hybrid quantum classical computational methods for carbohydrate and hypervalent phosphoric systems*

Krishna Govender obtained BSc, BSc(Hons) and MSc (with distinction) degrees in Chemistry from the University of Pretoria, before joining the Scientific Computing Research Unit (SCRU) at UCT in 2010 as a doctoral student. His PhD research centered on computer code development for problems in Chemical Glycobiology.

Krishna Govender's thesis work produced a quantum classical method that makes it possible to accurately model the biochemical synthesis of complex carbohydrates (glycans) in cellular systems using multi-scalar computer simulations. His work on the development of the Austin Model 1 including d-orbitals for Chemical Biology 1 (AM1/d-CB1) is the quantum component of a hybrid quantum classical (QM/MM) approach necessary for the simulation of biochemical reactions. Specifically AM1/d-CB1 is designed to model the biochemical engineering of glycans inside cells and on cell surfaces which are central to activating biological pathways that fuel growth, manage development and ensure survival of cells. It is not possible to investigate the chemical mechanisms leading to glycan synthesis using experimental laboratory methods. Krishna Govender's work therefore allows chemical biologists to investigate the complex network of biochemical paths responsible for cellular metabolism and communication leading to the onset of disease.

Supervisor: Professor KJ Naidoo
(Chemistry)
Co-Supervisor: Dr G Venter
(Chemistry)

Gift Mehлана
Thesis Title: *Crystal engineering of dynamic metal organic frameworks for applications in chromic sensing and capturing of small molecules*

Gift Mehлана completed his BSc(Hons) degree in Chemical Technology at the Midlands State University in Zimbabwe. He joined the Centre for Supramolecular Chemistry Research at UCT in 2011.

Gift Mehлана's thesis involved synthesis of metal organic frameworks (MOFs). The ability of MOFs to respond to different chemical and physical environments was realised by introducing flexibility through organic linkers which change conformation upon exposure to external stimuli. This flexibility, coupled with porosity, makes MOFs suitable as candidates in sensing and storing of chemicals. Gift Mehлана's work includes a comprehensive study of the reaction conditions required to prepare MOFs before progressing to the evaluation of their ability to respond to different solvent molecules and conditions through visible colour changes. MOFs were characterised by X-ray diffraction and thermal techniques, as well as topological analysis, to better understand the connectivity of molecules within structures. Several novel complexes which change colour reversibly as a result of their exposure to various chemicals were found and the mechanisms responsible for the colour changes elucidated. The latter is a crucial step in the development of these materials as potential chemical sensors.

Supervisor: Professor SA Bourne
(Chemistry)
Co-supervisor: Dr G Ramon
(Chemistry)

Mathew Ngaruiya Njoroge
Thesis Title: *In vitro metabolism of tetrazole aminoquinolines and derivatives of metergoline and fusidic acid*

Mathew Njoroge has a BPharm from the University of Nairobi, and upgraded his MSc degree at the University of Cape Town in 2011, resulting in this doctoral work.

Mathew Njoroge's thesis work is on the metabolism of novel compounds as part of early drug discovery efforts against malaria and tuberculosis. Drug metabolism is an important criterion for compound progression through the various stages of drug discovery and development. In particular, the thesis focuses on the metabolism of synthetic aminoquinoline tetrazoles, and derivatives of the natural compounds, metergoline and fusidic acid. Mathew Njoroge uses Liquid Chromatography-Mass spectrometry to investigate the metabolic clearance of these compounds and to identify their metabolites. He also investigates the potential for drug-drug interactions through Cytochrome P450 inhibition. The findings will be useful in the design of more metabolically stable analogues for the exploration of these compounds as potential antiplasmodial and/or antimycobacterial agents.

Supervisor: Professor K Chibale
(Chemistry)

Nicholas Mwaura Njuguna
Thesis Title: *Investigating the chemical space and metabolic bioactivation of natural products and cross-reactivity of chemical inhibitors in CYP450 phenotyping*

Nicholas Njuguna obtained both his Bachelor of Pharmacy and Master of Pharmacy in Pharmaceutical Analysis degrees from the University of Nairobi, Kenya.

Nicholas Njuguna's thesis focuses on two important aspects of drug discovery. On the one hand, his work uses computational tools to compare the physico-chemical properties of natural product compounds isolated from documented African medicinal plants against those of conventional drugs in clinical use. Additionally, he investigates the potential of such natural products to cause toxicity in vivo through undesirable metabolic bioactivation, using a combination of in vitro enzyme inhibition assays and reactive metabolite trapping experiments. The second part of his thesis focuses on studying the cross-inhibitory effects of compounds routinely used to identify the main cytochrome P450 enzymes involved in oxidative hepatic compound metabolism. Factoring in such cross-reactivity in enzyme phenotyping data has the potential to greatly improve the accuracy of predicting the metabolic fate of new drug entities during the early stages of drug development.

Supervisor: Professor K Chibale
(Chemistry)

Co-supervisor: Dr C Masi-mirembwa (African Institute of Biomedical Science and Technology, Harare, Zimbabwe & Division of Pharmacology, UCT)

Majimi James Sehata
Thesis Title: *Synthesis and evaluation of M. tb glycosyltransferase (MshA) inhibitors*

James Majimi Sehata has a BSc and BSc(Hons) from the University of Limpopo and an MSc from the University of the Western Cape. Majimi Sehata's thesis addresses the need to find new anti-tubercular drugs. The emergence of multiple drug resistant (MDR) and extremely drug resistant (XDR) strains of Mycobacterium tuberculosis (M. tb) against the known anti-tuberculosis drug regimens has further complicated the challenge of designing new anti-tubercular drugs. In this study he reports the design and synthesis of a series of molecules and enzyme substrate mimics aimed at targeting the mycothiol biosynthetic pathway which is specific to mycobacteria. Mycothiol acts as a cellular antioxidant molecule protecting M. tb in a similar fashion as that of glutathione in humans. The strategy involved design of molecules that are expected to compete for the natural substrate, UDP-GlcNAc, binding site of the glycosyltransferase (MshA) which is involved in the first biosynthetic step of mycothiol. The bioactivity of the designed molecules against M. tb in cell free and whole cell assays served as a basis for further inhibitor optimisation and development to new anti-tubercular drug candidates.

Supervisor: Dr MA Jardine
(Chemistry)

In Environmental & Geographical Science:

*Nadine Methner

Thesis Title: *Conceptualizing horizontal cooperation in regional socio-ecological systems through actor networks and collective action: the case of Berg River catchment*

Nadine Methner holds a Bachelors of Arts in Peace and Conflict Studies from the University of California Berkeley and a Masters of Arts in Global Studies from the University of Freiburg.

Nadine Methner's thesis aims to assess how actor relations enhance or hinder learning and collective action for adaptive management in regional catchment areas. The thesis is situated in the research area of adaptive water governance and complex regional socio-ecological systems. The Berg River catchment in South Africa was chosen as a case study to analyse such complex systems. A network perspective was applied to better understand the role and impact of actor constellations on adaptive water resources management. The thesis illustrates the importance of self-organization and collective action that arises from horizontal cooperation. However, horizontal cooperation at the operational level can only transform into functioning governance arrangements when complemented by vertical integration into larger structures and decision-making processes. This suggests the importance of understanding nested governance arrangements that provide room for self-organisation, as well as cross-boundary coordination.

Supervisor: Dr G Ziervogel
(Environmental & Geographical Science)

Co-supervisors: Professor R Hamann (Graduate School of Business), Professor C Pahl-Wostl (University of Osnabrück)

In Geology:

Roger Edward Diamond

Thesis Title: *Stable isotope hydrology of the Table Mountain Group*

After graduating with an MSc from UCT in 1997, Roger Diamond worked in Australia and South Africa, for private, government and consulting firms, in geology, hydrogeology and environmental fields, before returning to do his PhD on the groundwater of the Table Mountain Group.

Roger Diamond's thesis documents the variation in oxygen and hydrogen isotope composition of precipitation around the Cape Fold Belt, along with rivers, springs, seeps and boreholes, and uses these data to understand the hydrology of the fractured aquifers of the Table Mountain Group. Rainfall isotope ratios are negatively correlated with continentality and altitude. Temporal and spatial variations in the amount effect reveal meteorological variability, and emphasise the need for long-term monitoring of isotope composition. Groundwater-fed surface waters show little systematic variation in isotope composition within catchments, indicating groundwater mixing. Differences between catchments are significant, and reveal continental and altitude effects across the Cape Fold Belt. There has been no significant change in hot spring isotope compositions over 40 years, confirming deep, well-mixed groundwater flow. Variations in the deuterium excess of Table Mountain water match changes in the isotope composition of rain water and are consistent with rapid recharge.

Supervisor: Professor C Harris
(Geological Sciences)

In Molecular & Cell Biology:

Bridget Calder

Thesis Title: *A proteomic investigation of the heat stress response of the South African abalone *haliotis midae**

Bridget Calder has a BSc and BSc(Hons) from the University of KwaZulu-Natal. Since abiotic stress increases the susceptibility of abalone to infectious disease, climate change can be expected to have a significantly negative impact on abalone farming in the foreseeable future. For this reason, Bridget Calder's thesis employs a proteomics approach to identify proteins that respond to elevated water temperature in order to define the stress response of the proteome of abalone haemocytes, a principal component of the animal's immune system. The study identifies a number of proteins that are differentially expressed in response to thermal stress and with the use of a variety of bioinformatics tools, shows that they function in cell signalling, stress response systems and metabolic regulation. One of the proteins, identified as the molecular chaperone calreticulin, is shown to be up-regulated at the translational level, validating the iTRAQ LC-MS/MS data. The data obtained from this study reflect the complexity of the abalone response to heat stress. The thesis provides an important platform that will allow the discovery of stress biomarkers that could potentially be used to monitor the health of farmed abalone as climate change escalates.

Supervisor: A/Professor V Coyne
(Molecular & Cell Biology)

Co-supervisor: Dr M Rafudeen
(Molecular & Cell Biology)

Byron William Patrick Reeve

Thesis Title: *Nitrogen metabolism and butanol production by South African *Clostridium beijerinckii* and *Clostridium saccharobutylicum* strains*

Byron Reeve has BSc and BSc(Hons) degrees from the University of Cape Town. His MSc project began in 2010 and expanded into his current PhD project.

Byron Reeve's thesis aims to genetically characterise and assess the solvent producing capabilities of novel *Clostridium* strains originating from a local biobutanol facility that ceased operations in the 1980s. Biobutanol is recognised as a fuel additive which can be used in the current fuel infrastructure to supplement diminishing fossil fuel reserves. This project gives a more detailed understanding of the genetic relationships of the strain collection, and the fermentation abilities on different carbohydrate substrates are documented. Nitrogen metabolism, or how amino acids and proteins are made from simple nitrogen-containing compounds, is vital to maintaining all aspects of life in these *Clostridium* bacteria. The effect of several amino acids on the growth, survival and biobutanol production are investigated during fermentation conditions. A number of key amino acids are shown to confer improved acid survival properties and to promote better growth and biobutanol production. Several strains have been identified as appropriate for the current international biobutanol industry.

Supervisor: A/Professor SJ Reid
(Molecular & Cell Biology)

*Arthur Yen Hsiang Shen
Thesis Title: *The transcriptome response of leaves of the resurrection plant Xerophyta humilis to desiccation*

Arthur Yen-Hsiang Shen completed his undergraduate and honours qualifications at UCT. His MSc was upgraded to a PhD in the Department of Molecular & Cell Biology.

Xerophyta humilis leaves are remarkable in their ability to survive extreme desiccation. Arthur Yen-Hsiang Shen applies a global molecular analysis to characterize the expression of 1680 genes in the leaves of the X. humilis, during a cycle of desiccation, to ask the question whether this ability arose from an adaptation of the desiccation response that is active in most angiosperms as part of the seed maturation programme. Using clustering analysis, combined with tests for functional enrichment, Arthur Yen-Hsiang Shen classifies groups of genes which are co-regulated as leaves desiccate. Most importantly, Arthur Yen-Hsiang Shen identifies a group of silencing, chromatin modifying genes which are active in hydrated leaves, and which are down-regulated during desiccation. This observation has led to the proposal that seed maturation genes are activated in the leaves of X. humilis by switching these silencing genes off; a desiccation response pathway that has been well-described in the earliest phases of angiosperm seedling development.

Supervisor: Professor N Illing
(Molecular & Cell Biology)

Albertha René van Zyl
Thesis Title: *Development of plant-produced bluetongue virus vaccines*

Albertha van Zyl has BSc, BSc(Hons) and MSc degrees from the University of the Free State. In 2009 she started a PhD project in Molecular & Cell Biology at UCT.

Albertha van Zyl's thesis aims to develop particulate plant-produced vaccines against Bluetongue disease, which is caused by Bluetongue virus (BTV) and primarily infects sheep. The vaccines are produced in Nicotiana benthamiana plants by introducing recombinant plant expression vectors into the leaf cells encoding the relevant genes for viral protein expression and subsequent assembly of the vaccine. The first vaccine candidate developed takes the form of a virus-like particle (VLP) vaccine, which resembles viral particles, but lacks the infectious nucleic acid. The second and third vaccine candidates are two novel protein body candidates. One is aimed at being a rapid response vaccine against BTV and the other is a multi-epitope vaccine that could possibly protect against infection with multiple BTV serotypes. The vaccine candidates were successfully produced in N. benthamiana and shown to elicit significant immune responses in mice. These can now be taken further to test for efficacy in sheep.

Supervisor: Professor EP Rybicki
(Molecular & Cell Biology)

Co-supervisor: Dr A E Meyers
(Molecular & Cell Biology)

In Physical Oceanography:
Penny Meredith Driver
Thesis Title: *Rainfall variability over southern Africa*

Penny Driver has a BSc(Hons) from the University of the Witwatersrand and an MSc from Louisiana State University. She came to UCT to do her PhD following a period of employment in financial mathematics at RMB.

Penny Driver's thesis uses observational data and output from a non-hydrostatic, stretched grid atmospheric general circulation model to study the interannual variability of summer rainfall over southern Africa. Focus is also placed on the variability of dry day frequencies and their relationships with regional circulation features and sea surface temperature (SST). The mid-level Botswana High, which has previously been suggested as exerting a control on rainfall, is examined in detail. The association of this feature with ENSO and other climate modes is investigated, as well as its prominence during years which are neutral with respect to ENSO. Two ENSO events with unexpected rainfall impacts over southern Africa are investigated using the CAM EULAG atmospheric model. The relative contributions of SST forcing from each ocean basin are studied. It was found that forcing from no single basin dominated and that the anomalously strong Angola Low during these seasons played an important role in the observed rainfall.

Supervisor: Professor CJC Reason
(Oceanography)

Co-supervisor: Dr B Abiodun
(Environmental & Geographical Science)

Hayley Louise Evers-King
Thesis Title: *Phytoplankton community structure determined through remote sensing and in situ optical measurements*

Hayley Evers-King has a BSc from Plymouth, UK and MSc from the University of Southampton, UK. Her PhD thesis emerged as a result of her attempting to bridge the gap between optical signals measured in the ocean, and those made aboard orbiting marine observing satellites.

Hayley Evers-King's thesis aims to link variability in optical ocean measurements with phytoplankton community characteristics, in order to extend the use of the vast resource of the satellite ocean colour archive, and to help understand the range of species, functional types or size classes through a spectrum of empirical/analytical models. In order to achieve this, she needed to quantify the sensitivity in reflectance which can be attributed to phytoplankton characteristics (e.g. cell size) under different optical regimes. Both a forward and inverse approach has been used, employing a phytoplankton particle population model coupled to a reflectance approximation: the radiative transfer model, EcoLight-S and a non-linear optimisation inversion scheme. Her research will help answer critical questions relating to primary ecosystem variability; from carbon uptake to fisheries dynamics. Her study area is the southern Benguela Upwelling System off South Africa, where harmful algal blooms threaten the economic viability of fishery and marine aquaculture industries and also pose a risk to public health.

Supervisor: Emeritus Professor F A Shillington (Oceanography)

Co-supervisors: Dr S Bernard (CSIR Earth Observation Group), A/Professor M I Lucas (Biological Sciences), Dr S Henson (National Oceanographic Centre, UK)

Warren Ryan Joubert
Thesis Title: *Primary productivity and its variability in the Atlantic Southern Ocean*

Warren Joubert holds BSc and BSc(Hons) degrees from University of Stellenbosch, and an MSc from UCT (Department of Geosciences). His doctoral thesis was completed in collaboration with the Southern Ocean Carbon and Climate Observatory, where he is a member of the research staff.

Warren Joubert's thesis improves our understanding of the variability of algal primary production in relation to forcing mechanisms in the High Nutrient/Low Chlorophyll environment of the Southern Ocean during austral summer. Using in situ observations of biological production and ocean physics, this study has highlighted the role of synoptic-scale physical events at the ocean surface mixed layer. These modulate water column irradiance conditions and nutrient supply, particularly iron, which subsequently stimulates phytoplankton productivity. It also shows that variability in light-dependent productivity is affected by iron availability, emphasising the synergistic link between light and iron as drivers of productivity. Understanding the role of factors which impact on Surface Ocean mixed layer dynamics, spatial variability and biogeochemical responses is key to predicting Southern Ocean productivity, climate sensitivity and future trends in large-scale carbon cycling.

Supervisor: Dr H Waldron (Oceanography)

Co-supervisor: Dr P Monteiro (Council for Scientific and Industrial Research)

In Zoology:

*Lorraine Kara Boast
Thesis title: *Exploring the causes of and mitigation options for human-predator conflict on game ranches in Botswana: how is coexistence possible?*

Lorraine Boast has a BSc from Lancaster University and an MSc from Kings College University, London. Her doctoral work emerged as a result of her research experiences at Cheetah Conservation Botswana, where she worked from 2006 to 2011.

Lorraine Boast's thesis aims to determine the intensity, drivers and potential solutions to human-predator conflict on private commercial game-ranches in Botswana. The research focus is on the potential role of game ranches in large predator conservation and focuses on the species perceived by farmers to cause the largest economic losses, cheetahs. This thesis explores the density of large predators on commercial farmland, prey preferences of cheetahs and farmers attitudes to predator conservation and the impact of human-predator conflict. The research informs and impacts the wider global topic of human-wildlife conflict.

Supervisor: Emeritus Professor LG Underhill (Biological Sciences)

Co-supervisors: Dr I Wiesel (Brown Hyena Research Project, Namibia), Dr Q Martins (Cape Leopard Trust), Professor A Dickman (Wildlife Conservation Research Unit, University of Oxford)

Shannon Leanne Hampton
Thesis Title: *Multidisciplinary investigation into stock structure of small pelagic fishes in southern Africa*

Shannon Hampton completed all her tertiary education at UCT. Her PhD project was carried out in collaboration with the Department of Agriculture, Forestry and Fisheries and the University of Pretoria.

Shannon Hampton's thesis investigates the stock structure of commercially-important species of small, schooling fish from southern Africa. For sardine, the thesis tests for genetic evidence of putative west and south coast stocks, as well as separate stocks from Namibia and the KwaZulu Natal sardine run. Two genetic indicators show high levels of diversity and individual variability, with some evidence of differences among regions. Cape anchovy, which have two spawning locations off South Africa, show high levels of genetic diversity, with some differentiation among fish from different sites. However, sampling of anchovy was limited and further work is recommended. The shapes of "earbones" (otoliths) from sardine, anchovy and round herring were analysed to assess whether differences in their morphology might indicate stock structure. In each case, otolith shape is mainly influenced by the length of the fish, but also by gender in the case of round herring. In addition, sardine from the south coast have different-shaped otoliths to those from other regions, further supporting a multiple-stock hypothesis.

Supervisor: A/Professor CL Moloney (Biological Sciences)
Co-supervisors: Professor P Bloomer (University of Pretoria); Dr CD van der Lingen (Department of Agriculture, Forestry and Fisheries)

Sonja Carin Kruger
Thesis Title: *An investigation into the decline of the bearded vulture Gypaetus barbatus in southern Africa*

Sonja Krüger has a BSc(Hons) and MSc from the University of Natal. Her doctoral research emerged as a result of her work as an ecologist for Ezemvelo KZN Wildlife where she works in the Maloti Drakensberg World Heritage Site and has been monitoring vultures since 2000. The Bearded Vulture *Gypaetus barbatus* is Critically Endangered in southern Africa with the entire range located in the Maloti-Drakensberg Mountains of South Africa and Lesotho. In her thesis, Sonja Krüger synthesises 15 years of research on this population, investigates the mechanisms for this decline and suggests management actions necessary to reverse this species decline. Population trends are assessed by exploring territory occupancy, distribution and density of the population over two time periods. Three hypotheses (human impact, food availability and climate change) are then explored to explain the drivers of territorial abandonment; strongest support was found for the human impact hypothesis. The movements of different age classes are investigated using data from satellite transmitters fitted to 18 birds to determine exposure to anthropogenic risks (human settlements and powerlines) or benefits (feeding sites). The genetic risk for this isolated population are examined by sampling two populations in sub-Saharan Africa to ascertain genetic variation, evolutionary placement and connectivity using Mitochondrial DNA fragment analyses. Lastly, population viability analysis was used to determine the future population trend and identify the primary demographic mechanisms for the decline. Several recommendations are listed to address the primary threat of poisoning.

Supervisor: Dr A Amar (Biological Sciences)
Co-supervisor: Dr R Simmons (Biological Sciences)

Lisa Jane Nupen
Thesis Title: *A conservation genetic study of threatened, endemic southern African seabirds*

Lisa Nupen has a BSc and BSc(Hons) in Zoology, and an MSc in Conservation Biology from UCT. Her PhD research combines her strong interests in evolutionary genetics and animal ecology to explore gene flow and population structure in three highly endangered seabird species occurring around the coast of southern Africa.

Lisa Nupen's thesis uses multiple lines of evidence to investigate how seabird biology influences population-level responses to changing environments in the Agulhas-Benguela Ecosystem of southern Africa; an area where twentieth century shifts in the distribution of key pelagic prey species have had serious consequences for endemic seabirds. Using an evolutionary genetic framework, Lisa Nupen's thesis quantifies genetic structure and connectivity in the African Penguin *Spheniscus demersus*, Cape Gannet *Morus capensis* and Cape Cormorant *Phalacrocorax capensis*, and presents a case-book study of how knowledge of wild populations informs captive management of endangered species. The study reveals extensive regional genetic connectivity and minimal loss of genetic variation in each focal species, despite significant population declines. These results support an evolutionary scenario where specific life-history traits may buffer seabird breeding colonies against environmental uncertainty. This study fills an important knowledge gap in our understanding of the ecological and evolutionary drivers of genetic variation in the Agulhas-Benguela Ecosystem and directly informs effective long-term biodiversity planning in the region.

Supervisor: Dr JM Bishop (Biological Sciences)
Co-supervisor: Professor PG Ryan (Biological Sciences)

ACADEMIC DRESS

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.

ACADEMIC DRESS (continued)

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 degrees 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

MISSION STATEMENT OF THE UNIVERSITY OF CAPE TOWN

UCT aspires to become a premier academic meeting point between South Africa, the rest of Africa and the world. Taking advantage of expanding global networks and our distinct vantage point in Africa, we are committed, through innovative research and scholarship, to grapple with the key issues of our natural and social worlds. We aim to produce graduates whose qualifications are internationally recognised and locally applicable, underpinned by values of engaged citizenship and social justice. UCT will promote diversity and transformation within our institution and beyond, including growing the next generation of academics.

Foundation statement underpinning the mission statement

Our research-led identity is shaped by a commitment to:

- academic freedom as the prerequisite to fostering intellectual debate and free inquiry;
- ensuring that research informs all our activities including teaching, learning and service to the community;
- advancing and disseminating knowledge that addresses the key challenges facing society – South African, continental and global;
- protecting “curiosity driven” research;
- nurturing and valuing creativity in the sciences and arts including the performing and creative arts;
- stimulating international linkages of researchers and research groupings.

We strive to provide a superior quality educational experience for undergraduate and postgraduate students through:

- providing an intellectually and socially stimulating environment;
- inspired and dedicated teaching and learning;
- exposure to the excitement of creating new knowledge;
- stimulating the love of life-long learning;
- the cultivation of competencies for global citizenship;
- supporting programmes that stimulate the social consciousness of students;
- offering access to courses outside the conventional curricula;
- attracting a culturally and internationally diverse community of scholars;
- guaranteeing internationally competitive qualifications;
- offering a rich array of social, cultural, sporting and leadership opportunities;
- providing an enabling physical and operational environment.

In advancing UCT as an Afropolitan university, we will:

- expand our expertise on Africa and offer it to the world;
- extend our networks on the continent, along with our global connections and partnerships;
- promote student and staff exchanges and collaborative research and postgraduate programmes;
- engage critically with Africa’s intellectuals and world views in teaching and research;
- contribute to strengthening higher education on our continent.

We strive to provide an environment for our diverse student and staff community that:

- promotes a more equitable and non-racial society;
- supports redress in regard to past injustices;
- is affirming and inclusive of all staff and students and promotes diversity in demographics, skills and backgrounds;
- offers individual development opportunities to all staff;
- is welcoming as a meeting space for scholars from Africa and around the world.

THE UNIVERSITY OF CAPE TOWN DONOR ROLL

The University of Cape Town gratefully acknowledges the sustained contributions of the following partners. Their generosity has assisted us toward our goals of improving student access to tertiary education and promoting curriculum, staff and student transformation; increasing our research capacity; and implementing programmes that promote social engagement and community upliftment.

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Organisations that have made gifts to UCT, over R50 million

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