

LAURINDA STEYN

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I am a very capable, reliable, and highly motivated person with the ability to manage and encourage post-graduate students, as I get on well with subordinates, peers, and seniors, fitting well into a multi-disciplinary team. As a lecturer at the University of the Free State I have always strived to give the best possible education to the students by applying possible resources available to me. I have had no formal teaching education but have attended many teaching and education learning courses to obtain knowledge regarding this.

As Bioreactor Laboratory coordinator, I am involved in many post graduate research projects within the Department, as co-supervisor or consultant. Projects involving the cultivation of microorganisms for many applications, such as vaccine production, bioremediation, biocatalysis and other biotechnological applications.

I am the chair of the Safety Committee within our building and has obtained training as fire marshal, emergency evacuation, first aid and is a certified safety representative. Currently I also serve as biosafety officer on the Environment & Bio-Safety Research Ethics Committee (EBREC), University of the Free State.

WORK EXPERIENCE

JANUARY 2018 – PRESENT

LECTURER / RESEARCHER, UNIVERSITY OF THE FREE STATE

Lecturing and involvement in research as consultant in projects within the department related specifically with growth kinetics and bioreactor usage. Co-supervisor of several postgraduate students.

JANUARY 2007 – DECEMBER 2017

RESEARCHER, UNIVERSITY OF THE FREE STATE

APRIL 2000 – DECEMBER 2006

ASSISTANT RESEARCHER, UNIVERSITY OF THE FREE STATE

Working in the research group fermentation biotechnology, with special interest in continuous cultures, yeast physiology and the production of metabolites such as bioethanol using filamentous fungi and bacteria, including genetically engineered micro-organisms.

OCTOBER 1994 – FEBRUARY 2000

DEVELOPMENT BIOTECHNOLOGIST, AECI BIOPRODUCTS

Part of developmental research group for a dynamic industrial cooperation producing amino acids for animal feed. Initially as biotechnologist and later as manager of the fermentation development laboratory.

SHE Representative (Fire Fighting, Evacuation Officer and First Aid officer, Breathing Apparatus Training)

APRIL 1990 – SEPTEMBER 1994

LABORATORY ASSISTANT, UNIVERSITY OF THE FREE STATE

Assisted lecturers and researcher in the fermentation research group with every day running of laboratory.

DECEMBER 1983 – FEBRUARY 1990

MEDICAL TECHNICIAN, DRS VOIGT AND PARTNERS (PATHOLOGISTS)

LECTURING MODULES

JULY 2011 – NOVEMBER 2016

MCBG3614, MICROBIAL GROWTH, NUTRITION AND DEATH

This module contains fundamental knowledge, theories, principles and practices of Microbiology, including: quantitative enumeration techniques for microorganisms, microbial growth and death, the principles of and methods for the determination of microbial concentration, growth and death and the fundamental kinetics involved, the principles of microbial nutrition and the effects of physical and chemical antimicrobial agents, enumeration methods, the construction of microbial growth and survival curves and the calculation of kinetic parameters, bacterial isolations on selective and differential media.

JANUARY 2017 – CURRENT

MCBH2614, INTRODUCTION TO MICROBIOLOGY FOR HEALTH AND CONSUMER SCIENCES

This module contains fundamental knowledge, theories, principles and practices of Microbiology, including: a basic overview on the historical development of microbiology, including the classification, cell structure, and characteristics of bacteria, fungi and protista, microbial symbiotic relationships, basic virology, the growth and survival of microorganisms, factors affecting cell growth and death, microbial growth control and principles of immunology.

JULY 2016 – CURRENT

MCBH2624, INTRODUCTION TO MICROBIAL PATHOGENICITY FOR HEALTH AND CONSUMER SCIENCES

This module contains fundamental knowledge, theories, principles and practices of pathogenicity and immunology, including: the concepts of epidemiology, nosocomial infections, immunization, immune testing and an introduction to the major groups of pathogenic microorganisms, occurrence and spread of pathogens, the mechanisms of disease transmission, control measures for application outside the body, the control of pathogens inside the body with the aid of immunization and treatment with antibiotics.

APRIL 1990 – SEPTEMBER 1994 (MULTIPLE LECTURERS)

MCBT6814, TECHNIQUES IN MICROBIOLOGY

Research techniques in biochemistry and microbiology: chromatography, spectroscopy, electrophoresis, microbial cultivation techniques, PCR, Sanger sequencing, an introduction to mass spectrometry and other analytical techniques for the analysis of biomolecules and products. Science writing skills, nature and philosophy of science, research ethics, statistics.

Lecturing: good laboratory practice, microbial cultivation techniques, centrifugation and modelling of experimental data

EDUCATION

JANUARY 2002 - DECEMBER 2006

MSC WITH COURSE WORK (PART-TIME), UNIVERSITY OF THE FREE STATE

Based on my years of experience and previous education I was granted the opportunity to complete an MSc with course work (part-time) within the Department of Microbiology and Biochemistry. This involved subjects in BSc and BSc honours. Distinction obtained for dissertation.

JANUARY 1984 TILL DECEMBER 1989

MEDICAL TECHNICIAN

JANUARY 1972 TILL DECEMBER 1983

SCHOLAR, JBM HERTZOG PRIMARY AND SECONDARY SCHOOL

Matriculated in 1983

MEMBERSHIPS AND OTHER INFORMATION

- Departmental Safety Committee Chair, Department Microbiology and Biochemistry, University of the Free State
- Biosafety Officer, Environmental, Biosafety Research Ethical Committee, University of the Free State
- ORCID 0000-0003-2464-9392
- Member of the South Africa Society for Microbiologists

JOURNAL PUBLICATIONS

- *Chryseobacterium pennae* sp. nov., isolated from poultry feather waste. July 2021 International Journal of Systematic and Evolutionary Microbiology. A Lum Nde, G Charimba, AC Hitzeroth, L Oosthuizen, **L Steyn**, JD Newman, C Hugo
- Bacterial and fungal dynamics during the fermentation process of Sesotho, a traditional beer of Southern Africa. June 2020 Frontiers in Microbiology. ED Cason, BJ Mahlomaholo, MM Taole, G Abong, J Vermeulen, O de Smidt, M Vermeulen, **L Steyn**, A Valverde, BC Viljoen
- *Chryseobacterium pennipullorum* sp. nov., isolated from poultry feather waste. May 2019 International Journal of Systematic and Evolutionary Microbiology. L Oosthuizen, G Charimba, AC Hitzeroth, A Lum Nde, **L Steyn**, JD Newman, C Hugo
- Production of single cell oil from cane molasses by *Rhodotorula kratochvilovae* (syn, *Rhodospiridium kratochvilovae*) SY89 as a biodiesel feedstock. August 2018. Chemistry Central Journal . T Milkessa, **L Steyn**, CH Pohl, D Abate
- Optimization of cultivation conditions for biotechnological production of lipid by *Rhodotorula kratochvilovae* (syn, *Rhodospiridium kratochvilovae*) SY89 for biodiesel preparation. June 2017, 3 Biotech. T Milkessa, M Groenewald, CH Pohl, **L Steyn**, N Kiggundu, D Abate
- Differential RNA-seq, multi-network analysis and metabolic regulation analysis of *Kluyveromyces marxianus* reveals a compartmentalised response to xylose. June 2016 PLoS ONE. DWP Schabort, PK Letebele, **L Steyn**, JC Du Preez
- Comparison of the growth kinetics and proteolytic activities of *Chryseobacterium* species and *Pseudomonas fluorescens*. September 2015 Canadian Journal of Microbiology. A Bekker, **L Steyn**, G Charimba, C Hugo

- Lipid breakdown and sensory analysis of milk inoculated with *Chryseobacterium joostei* or *Pseudomonas fluorescens* September 2015 International Dairy Journal. A Bekker, P Jooste, **L Steyn** C Hugo
- Protein enrichment of an *Opuntia ficus-indica* cladode hydrolysate by cultivation of *Candida utilis* and *Kluyveromyces marxianus*. March 2015 Journal of the Science of Food and Agriculture. GB Akanni, JC Du Preez, **L Steyn**, SG Kilian
- *Opuntia ficus-indica* cladodes as feedstock for ethanol production by *Kluyveromyces marxianus* and *Saccharomyces cerevisiae*. September 2014 World Journal of Microbiology and Biotechnology. O Kuloyo, JC Du Preez, M Del Prado García-Aparicio, L Steyn, J Görgens
- Cultivation of *Candida utilis* on cassava peel hydrolysates for single-cell protein production. August 2012. OO Ezekiel, OC Aworth, JC Du Preez, **L Steyn**

CONFERENCE PROCEEDINGS

- Dithebe K, Van Wyk PWJ, Steyn L, Pohl CH (April 2018) Characterization of intracellular gas bubbles in *Saccharomyces*. The 20th Biennial congress of the South African Society for Microbiology. Muldersdrift, South Africa.
- Laurinda Steyn, JC du Preez, J Albertyn, O de Smidt: Phenotype microarray analysis of multiple ADH deletion mutants of *Saccharomyces cerevisiae*. 31st International Specialised Symposium on Yeast, Nova Gorica & Vipava, Slovenia; 10/2014
- Laurinda Steyn: Phenotype microarray analysis of multiple ADH deletion mutants of *Saccharomyces cerevisiae*. FEMS 2013, Leipzig, Germany; 07/2013
- JC du Preez, L Steyn, O de Smidt, J Albertyn: The physiological role of alcohol dehydrogenase 5 during chemostat cultivation of *Saccharomyces cerevisiae*. 13th International Congress on Yeasts (ICY), Madison, Wisconsin, USA. 09/2012
- A Bekker, C Hugo, P Jooste, L Steyn: Effect of temperature on growth and proteolytic activity of *Chryseobacterium* in milk. 16th Biennial Congress of the SA Society for Microbiology (SASM), Cape Town, South Africa; 11/2011
- G Alkani, JC du Preez, L Steyn, SG Kilian: Evaluation of yeast single cell protein production using a hydrolysate of *Opuntia ficus-indica* biomass as carbon feedstock. 16th Biennial Congress of the SA Society for Microbiology (SASM), Cape Town, South Africa; 11/2011
- A Meyer, JC du Preez, L Steyn, SG Kilian: The critical dissolved oxygen level in respect of glucose and xylose utilisation by *Kluyveromyces marxianus*. 16th Biennial Congress of the SA Society for Microbiology (SASM), Cape Town, South Africa; 11/2011
- Laurinda Steyn, O de Smidt, JC du Preez, J Albertyn, SG Kilian: The physiological role of alcohol dehydrogenase 5 (Adh5p) isozyme in *Saccharomyces cerevisiae*. 16th Biennial Congress of the SA Society for Microbiology (SASM), Cape Town, South Africa; 11/2011
- O. Kuloyo, L. Steyn, J.C. du Preez: A comparative evaluation of *Kluyveromyces marxianus* and *Saccharomyces cerevisiae* for bioethanol production from *Opuntia ficus*. ISSY29, 29th Specialized Symposium on Yeast, Guadalajara, Mexico; 09/2011
- J Albertyn, O de Smidt, A Dukunde, MM Henn, L Steyn, JC du Preez: Molecular and physiological aspects of alcohol dehydrogenases in the yeast *Saccharomyces cerevisiae*. 16th Biennial congress of the South African Society for Microbiology, Durban; 09/2009
- JC du Preez, L Steyn, O de Smidt, A Dukunde, J Albertyn: Phenotypic characteristics of multiple ADH deletion mutants of *Saccharomyces cerevisiae*. ISSY27, Paris, France; 08/2009
- Laurinda Steyn, O de Smidt, K Ntlhokoa, J Albertyn, JC du Preez: The role of alcohol dehydrogenase 1 and 2 in *Saccharomyces cerevisiae*. 15th Biennial Congress of the SA Society for Microbiology (Bio-08); 01/2008

STUDENT SUPERVISION RECORD

Year degree obtained

2008 Mahlangeni, A (BSc Hons) Co-supervisor; Kuloyo, OO (BSc Hons) Co-supervisor
2009 Akanni, GB (BSc Hons) Co-supervisor
2010 Meyer, AM (BSc Hons) Co-supervisor
2011 Mohafa, TAL (BSc Hons) Supervisor
2012 Kuloyo, OO (MSc) Co-Supervisor, Bekker, A (MSc) Co-supervisor
2013 Akanni, GB (MSc) Co-supervisor
2014 Masemi, MJ (MSc) Co-supervisor
2015 Mahlomaholo, BJ (BSc Hons) Supervisor; Jiru, TM (MSc) Co-supervisor
2016 Ntoi (BSc Hons) Co-supervisor
2017 Lum Nde, A (MSc) Co-supervisor
Bekker, A (PhD) Co-supervisor
Lum Nde, A (PhD) Co-supervisor
Swart, R (MSc) Co-supervisor
Badenhorst, M (MSc) Co-supervisor

COURSES ATTENDED

2018 Animal Research Ethics, Foundational training program, University of the Free State
2016 Fire fighting and safety evacuation, Safety Representative
2015 Best Laboratory Management Practices, Chayil Resources
2014 Microsoft Excel Data Analysis, Postgraduate School University of the Free State
2012 Bioreaction Engineering Principles, University of Pretoria
2010 STATISTICA Intro Training, StatSoft Southern Africa
2009 Intermediate SPSS, SPSS - SA
2008 Introduction to SPSS, SPSS – SA
2001 Industrial Quality Management, University of the Free State
2000 Introduction to Microbiology, Merck Laboratory Supplies
1999 Data Processing and Modelling Course, University of the Free State
1999 Hazard Studies Including HAZOP, AECl Engineering
1999 Excel Intermediate, AECl Bioproducts
1998 Team Business, Business Education
1998 Basic Firefighting Extinguisher Training, AECl Operations Services
1997 Basic Experimental Design and Response Surface Methodology, AECl Research and Development Department
1997 Team Achievement Workshop, Owen, Adendorff & Associates
1997 Biostat ED hardware and software training, AECl Bioproducts
1992 Selfbestuur, Loopbaanbeplanning, - ontwikkeling en Algemene Bestuur, University of the Orange Free State
