

## SUSAN VAN DYK PhD

Email: svandyk100@gmail.com

### CURRENT POSITION

Research Associate at the University of British Columbia and self-employed as an independent researcher and freelance editor and writer.

### RESEARCH INTEREST AND FOCUS

I was the Coordinator of IEA Bioenergy Task 39 (Liquid Biofuels) from 2013 to 2018, as well as a Research Associate and Postdoctoral Fellow at UBC. Part of this work included project management on several Biojet Fuel projects and main author of many international reports and papers. In these positions I have gained expertise on all aspects of biofuels at an international level; including conversion technologies (including biochemical, oleochemical and thermochemical), implementation, sustainability (life cycle assessment and certification) and policy (mandates, low carbon fuel standards, financial incentives, carbon taxes).

My specific area of focus for the past six years has been conversion technologies for production of sustainable aviation biofuels and policies to promote the production and consumption of aviation biofuels within broader climate change objectives. Technical areas of specific interest include gasification and pyrolysis technologies and upgrading of syngas and bio-oils to biofuels, including potential refinery synergy and co-processing of bio-intermediates within petroleum refineries (both at hydroprocessing and fluid catalytic cracking stages).

In addition, my work has incorporated feedstock availability and quality assessment, supply chains (up and downstream), legislative frameworks and basic techno-economic analysis. Lignocellulosic biomass supply chains can be based on agricultural or forest biomass and I have come to understand the forest sector supply chain and its challenges and opportunities in great depth. Apart from fuels, diversification across multiple products in a biorefinery concept, including bioproducts and bioenergy has been shown to be the key to successful economics of biofuel producers.

All this experience has built on my PhD research on enzymatic hydrolysis of lignocellulosic biomass for the production of cellulosic sugars for subsequent fermentation.

### EDUCATION

- PhD Biochemistry Rhodes University, South Africa, 2006-2010
- B.Sc. Honours in Biotechnology (with distinction) Rhodes University, South Africa 2005
- B.Sc. (distinctions in Chemistry & Microbiology) Rhodes University, South Africa 2002-2004
- LL.M. (Labour Law) University of Stellenbosch, South Africa 1992-1993
- LL.B. University of Stellenbosch 1990-1991
- B.A. (Law) University of Stellenbosch 1987-1989

### LEADERSHIP/MANAGEMENT ROLES

**2020 Assistant project Manager – (Funder: Natural Resources Canada) A technical and costing assessment of producing and processing lipids and biocrudes in petroleum refineries.**

**2018-2019 Assistant project manager on developing a White paper and Roadmap on biofuels for aviation, shipping, rail and long-distance trucking for British Columbia. (Funder BC Government & BC Bioenergy Network)**

**2016-2019 Co-project manager – (Funders: Boeing and GARDN) ATM Project (Assessment of likely technology maturation pathways for biojet fuel development).**

This is a 3-year project funded by the Green Aviation Research and Development Network (GARDN). I was responsible for writing the grant proposal and I am part of the project management team. The project objective is to obtain 3 different bio-oils from fast pyrolysis, catalytic pyrolysis and hydrothermal liquefaction for upgrading by two laboratories to determine the products and their characteristics, with a specific focus on the biojet fraction. I am responsible for coordination of the final research report, and

responsible for writing about 40% of the report.

**Assistant Project Manager – (Funder Green Aviation Research and Development Network) CBSCI biojet project 2016-2019**

This is a different biojet project funded by GARDN, looking at the production of biojet from vegetable oils at a facility in California and its integration into the hydrant system at Pierre Trudeau Airport in Montreal. I am responsible for editing and drafting the final report with the Project Manager.

**2015 Project manager – (Funder: Boeing) The viability of a biojet fuel supply chain in Western Canada.**

Our research group obtained a contract from Boeing to develop a research report. I was the project manager for a group of researchers from different departments, assessing lignocellulosic feedstock availability and supply chains in Western Canada; assessment of suitable conversion technologies for production of biojet fuels from lignocellulose; as well as a detailed assessment of policies at an international and national level and recommendations. I was responsible for writing several sections and overall editing and completion of the report.

**2014-2015 Research coordinator for UBC – Transport Canada Clean Transport Initiative on developing an Aviation Biofuel Supply Chain in Canada (2014-2015).**

I coordinated a group of UBC researchers on assessment of feedstock availability in Canada (oleochemical and lignocellulosic) and conversion technologies for a short and medium-term scenario. I was responsible for writing sections on conversion technology assessment.

**Postdoc representative** on Faculty of Forestry Council (2014-2017)

**Chairperson** of the Postdoctoral liaison committee at Rhodes University (2011, 2012)

**Student representative** South African Society for Biochemistry and Microbiology (SASBMB) Council 2008, 2009

**Tutor:** Biochemistry 2 (2006), 3 (2007, 2008, 2009), Honours (2007, 2009)

**Vice-chairperson** Rhodes University Rifle Club (2006)

**Member of Executive Committee,** Makana & District Squash committee (2007, 2008)

## PEER-REVIEWED PUBLICATIONS

**Total Citations (March 2020) [Google Scholar](#) 1758**

**h-index 18**

**i10-index 23**

1. [A review of lignocellulose bioconversion using enzymatic hydrolysis and synergistic cooperation between enzymes—factors affecting enzymes, conversion and synergy](#)  
JS Van Dyk, BI Pletschke  
Biotechnology advances 30 (6), 1458-1480
2. [Review on the use of enzymes for the detection of organochlorine, organophosphate and carbamate pesticides in the environment](#)  
JS Van Dyk, B Pletschke  
Chemosphere 82 (3), 291-307
3. [Food processing waste: Problems, current management and prospects for utilisation of the lignocellulose component through enzyme synergistic degradation](#)  
JS Van Dyk, R Gama, D Morrison, S Swart, BI Pletschke  
Renewable and Sustainable Energy Reviews 26, 521-531
4. [The addition of accessory enzymes enhances the hydrolytic performance of cellulase enzymes at high solid loadings](#)  
J Hu, R Chandra, V Arantes, K Gourlay, JS Van Dyk, JN Saddler  
Bioresource technology 186, 149-153
5. [A review of the enzymatic hydrolysis of mannans and synergistic interactions between  \$\beta\$ -mannanase,  \$\beta\$ -mannosidase and  \$\alpha\$ -galactosidase](#)

- S Malgas, JS van Dyk, BI Pletschke  
World Journal of Microbiology and Biotechnology 31 (8), 1167-1175
6. [The cellulolytic and hemi-cellulolytic system of Bacillus licheniformis SVD1 and the evidence for production of a large multi-enzyme complex](#)  
JS van Dyk, M Sakka, K Sakka, BI Pletschke  
Enzyme and Microbial Technology 45 (5), 372-378
  7. [Identification of endoglucanases, xylanases, pectinases and mannanases in the multi-enzyme complex of Bacillus licheniformis SVD1](#)  
JS van Dyk, M Sakka, K Sakka, BI Pletschke  
Enzyme and Microbial Technology 47 (3), 112-118
  8. [The effect of mixtures of organophosphate and carbamate pesticides on acetylcholinesterase and application of chemometrics to identify pesticides in mixtures](#)  
K Mwila, MH Burton, JS Van Dyk, BI Pletschke  
Environmental monitoring and assessment 185 (3), 2315-2327
  9. [Fungal biodegradation of hard coal by a newly reported isolate, Neosartorya fischeri](#)  
EE Igbini, S Aktins, Y van Breugel, S van Dyke, MT Davies-Coleman, ...  
Biotechnology Journal: Healthcare Nutrition Technology 3 (11), 1407-1416
  10.  [\$\beta\$ -Mannanase \(Man26A\) and  \$\alpha\$ -galactosidase \(Aga27A\) synergism—a key factor for the hydrolysis of galactomannan substrates](#)  
S Malgas, SJ van Dyk, BI Pletschke  
Enzyme and microbial technology 70, 1-8
  11. [The accessible cellulose surface influences cellulase synergism during the hydrolysis of lignocellulosic substrates](#)  
J Hu, K Gourlay, V Arantes, JS Van Dyk, A Pribowo, JN Saddler  
ChemSusChem 8 (5), 901-907
  12. [Time dependence of enzyme synergism during the degradation of model and natural lignocellulosic substrates](#)  
S Malgas, M Thoresen, JS van Dyk, BI Pletschke  
Enzyme and microbial technology 103, 1-11
  13. [Drop-in biofuel production via conventional \(lipid/fatty acid\) and advanced \(biomass\) routes. Part I](#)  
S Karatzos, JS van Dyk, JD McMillan, J Saddler  
Biofuels, Bioproducts and Biorefining 11 (2), 344-362
  14. [Bacillus subtilis SJ01 produces hemicellulose degrading multi-enzyme complexes](#)  
SM Jones, JS van Dyk, BI Pletschke  
BioResources 7 (1), 1294-1309
  15. [Characterisation of the multi-enzyme complex xylanase activity from Bacillus licheniformis SVD1](#)  
JS van Dyk, M Sakka, K Sakka, BI Pletschke  
Enzyme and microbial technology 47 (4), 174-177
  16. [Optimisation of enzymatic hydrolysis of apple pomace for production of biofuel and biorefinery chemicals using commercial enzymes](#)  
R Gama, JS Van Dyk, BI Pletschke  
3 Biotech 5 (6), 1075-1087
  17. [Extracellular polysaccharide production in Bacillus licheniformis SVD1 and its immunomodulatory effect](#)  
JS van Dyk, NLA Kee, CL Frost, BI Pletschke  
BioResources 7 (4), 4976-4993
  18. [The effect of alcohols, lignin and phenolic compounds on the enzyme activity of Clostridium cellulovorans XynA](#)  
D Morrison, JS van Dyk, BI Pletschke  
BioResources 6 (3), 3132-3141
  19. [Fruit waste streams in South Africa and their potential role in developing a bio-economy](#)  
N Khan, M le Roes-Hill, PJ Welz, KA Grandin, T Kudanga, JS Van Dyk, ...  
South African Journal of Science 111 (5-6), 1-11

20. [Characterization of Xyn30A and Axl43A of Bacillus licheniformis SVD1 identified by its genomic analysis](#)  
M Sakka, S Tachino, H Katsuzaki, JS van Dyk, BI Pletschke, T Kimura, ...  
Enzyme and microbial technology 51 (4), 193-199
21. [Synergy between EngE, XynA and ManA from Clostridium cellulovorans on corn stalk, grass and pineapple pulp substrates](#)  
B Olver, JS Van Dyk, N Beukes, BI Pletschke  
3 Biotech 1 (4), 187-192
22. [The inhibitory effects of various substrate pre-treatment by-products and wash liquors on mannanolytic enzymes](#)  
S Malgas, JS Van Dyk, S Abboo, BI Pletschke  
Journal of Molecular Catalysis B: Enzymatic 123, 132-140
23. [Lime pretreatment of sugar beet pulp and evaluation of synergy between ArfA, ManA and XynA from Clostridium cellulovorans on the pretreated substrate](#)  
R Dredge, SE Radloff, JS van Dyk, BI Pletschke  
3 Biotech 1 (3), 151-159
24. [Formulation of an optimized synergistic enzyme cocktail, HoloMix, for effective degradation of various pre-treated hardwoods](#)  
S Malgas, R Chandra, JS Van Dyk, JN Saddler, BI Pletschke  
Bioresource technology 245, 52-65
25. [Potential synergies of drop-in biofuel production with further co-processing at oil refineries](#)  
S van Dyk Jianping Su James D. Mcmillan Jack (John) Saddler  
Biofuels Bioproducts and Biorefining
26. [Mobilisation of forest bioenergy in the boreal and temperate biomes: Challenges, opportunities and case studies](#)  
E Thiffault, CT Smith, M Junginger, G Berndes  
Academic Press
27. [Using an artificial neural network to predict the optimal conditions for enzymatic hydrolysis of apple pomace](#)  
R Gama, JS Van Dyk, MH Burton, BI Pletschke  
3 Biotech 7 (2), 138
28. [Effect of physical conditions and chemicals on the binding of a mini-CbpA from Clostridium cellulovorans to a semi-crystalline cellulose ligand](#)  
LM Lavan, JS Van Dyk, H Chan, RH Doi, BI Pletschke  
Letters in applied microbiology 48 (4), 419-425
29. [Biofuels for aviation: Technology brief](#)  
IRENA  
International Renewable Energy Agency, Abu Dhabi
30. [Challenges and opportunities for the conversion technologies used to make forest bioenergy](#)  
W Cadham, JS Van Dyk, JSL Kumar, JN Saddler  
Mobilisation of Forest Bioenergy in the Boreal and Temperate Biomes, 102-126
31. [Immobilisation of Acetylcholinesterase onto Electrospun Nanofibres for Carbofuran and Demeton-S-Methyl Sulfone Detection](#)  
T Mafuma, J Susan van Dyk, S Chigome, N Torto, B I Pletschke  
Current Biotechnology 4 (2), 134-144
32. [Drop-in biofuel production via conventional \(lipid/fatty acid\) and advanced \(biomass\) routes. Part I. Biofuels Bioprod Biorefining. 2017](#)  
S Karatzos, JS van Dyk, JD McMillan, J Saddler
33. [Enzyme synergy for enhanced degradation of lignocellulosic waste](#)  
JS van Dyk, BI Pletschke  
Advances in Enzyme Biotechnology, 57-65

34. [SDG 9: Industry, Innovation and Infrastructure–Anticipating the Potential Impacts on Forests and Forest-Based Livelihoods](#)  
MF Tomaselli, J Timko, R Kozak, J Bull, S Kearney, J Saddler, S van Dyk, ...  
Sustainable Development Goals, 279
35. [Potential yields and emission reductions of biojet fuels produced via hydrotreatment of biocrudes produced through direct thermochemical liquefaction](#)  
S van Dyk, J Su, M Ebadian, D O'Connor, M Lakeman, JJ Saddler  
Biotechnology for Biofuels 12 (1), 281
36. [A review of the enzymatic hydrolysis of mannans and synergic interactions between  \$\beta\$ -mannanase,  \$\beta\$ -mannosidase and  \$\alpha\$ -galactosidase \(2015\) Word J Microbiol Biotechnol, 31](#)  
S Malgas, JS van Dyk, BI Pletschke  
COI 1, 1167-1175

## REPORTS

John (Jack) Saddler, **Susan van Dyk**, Don O'Connor, Mahmood Ebadian, Jianping Su, (2020) A technical and costing assessment of producing and processing lipids and biocrudes in petroleum refineries. Prepared for Natural Resources Canada.

**Van Dyk** et al. (2019) Assessment of likely maturation pathways for production of biojet fuel from forest residues. Vancouver, University of British Columbia

**International Renewable Energy Agency** (2017) Biofuels for aviation. Technology Brief

**Susan van Dyk** et al. (2015) An assessment of the potential viability of producing biojet from woody biomass in Western Canada. Report prepared for Boeing.

**Susan van Dyk** and Jack Saddler (2016) Flying green: The need for good policy to help develop the production and use of biojet in Canada. Prepared for the BioFuelnet Policy Task Force

**J Susan van Dyk**, Ling Li, Deborah Barros Leal, Jinguang Hu, Xu Zhang, Tianwei Tan, Jack Saddler (2016) The potential of biofuel in China. Report prepared for IEA Bioenergy Task 39.

**Susan van Dyk** and Jack Saddler (2016) Possible long-term implications for the Canadian forest sector of global bioenergy/biofuels predicted production and use. Report prepared for the Canadian Forest Service (CFS)

**Susan van Dyk**, Amadeus Pribowo and Jack Saddler (2014) Implications of 3D printing on the Canadian forest sector. Report prepared for the Canadian Forest Service (CFS)

**Susan van Dyk**, Jack Saddler and Warren Mabee (2014) Update on Implementation Agendas 2014. A review of key biofuel producing countries. Report prepared for IEA Bioenergy Task 39.

Pletschke B.I., Mwila K., Van Zijl M.C., Anech-Hahn N.H., **Van Dyk J.S.** and Burton M. (2011). Rapid enzymatic detection of organophosphorus and carbamate pesticides in water. WRC Report No: 1902/1/11. ISBN 978-1-4312-0040-5, Pretoria.

Pletschke B., Cockburn I., Adebiyi A. and **J.S. Van Dyk**. (2010). Rapid enzymatic detection of organochlorine pesticides. WRC Report No: 252/10. ISBN 978-1-4312-0040-5, Pretoria.

## OTHER NON-PEER REVIEWED WRITING

As Coordinator of Task 39 I was responsible for publishing three Newsletters per year (13 in total). <http://task39.ieabioenergy.com/>  
I have written numerous feature articles for the Newsletter on the status of biofuels in Canada, USA, Brazil and Australia. I was also responsible for website editing and management.

## BOOK CHAPTERS

**Van Dyk, JS**, Pletschke, BI. Enzyme synergy for enhanced degradation of lignocellulose. In: "Advances in Enzyme Biotechnology" Springer. ISBN 978-81-322-1094-8

Cadham, William, **Van Dyk, J. Susanna**, Kumar, Linoj, Saddler, Jack Challenges and Opportunities for the conversion technologies used to make forest bioenergy. In: Mobilisation of Forest Bioenergy in the Boreal and Temperate Biomes DOI: 10.1016/B978-0-12-804514-5.00007-X

## CONFERENCE PROCEEDINGS (local and international)

**Susan van Dyk** and Jack Saddler. Policies to promote the production and consumption of biojet fuels. Biojet Symposium, UBC, Vancouver February 2017)

**Susan van Dyk** and Jack Saddler. Policies to promote the production and consumption of biojet fuels. IEA Exco Workshop, Rotorua, New Zealand November 2016

**Susan van Dyk** and Jack Saddler. Biojet development – conversion technologies, feedstocks and the need for the “right” policies. Advanced Biofuels Symposium (BioFuelNet – July 2016, Vancouver)

**Susan van Dyk** and Jack Saddler. Forest biomass-to-biojet. UBC and partners’ approach to this opportunity/challenge. NARA Renewables conference (Seattle 3,4 May 2016)

**Susan van Dyk** and Jack Saddler. Potential production of biojet fuel from forest residues in Western Canada. ECO- BIO (Rotterdam, Netherlands 2016)

**Susan van Dyk** and Jack Saddler. The potential and technology challenges of producing biojet fuels. ICBB conference, Vancouver, 2015

**Susan van Dyk**, Keith Gourlay and Jack Saddler. The potential and technology challenges of producing renewable aviation fuels. 37th Symposium on Biotechnology for Fuels and Chemicals 2015 (San Diego)

**Susan van Dyk**, Sergios Karatzos, Jim McMillan and Jack Saddler. The potential and challenges of “drop-in” biofuels. ISAF 2015 (Korea)

**Susan Van Dyk**, Jinguang Hu, Valdeir Arantes, Jack Saddler. How to better measure the hydrolytic potential of biomass deconstruction enzyme mixtures, 36th Symposium on Biotechnology for Fuels and Chemicals (April 28-May 1, 2014), 2014

**van Dyk, J Susan**. The potential and technology challenges of producing renewable aviation fuels, 37th Symposium on Biotechnology for Fuels and Chemicals, 2015

**Van Dyk, J.S.** and Pletschke B.I. Cellulase, endopolygalacturonase, arabinase and galactanase display synergy on pectin containing lignocellulose substrates. Gordon research conference on cellulosomes, cellulases & other carbohydrate modifying enzymes. Proctor academy, Andover, New Hampshire, U.S.A. August 4-9, 2013:

**Van Dyk, J.S.**, Beukes, N., Dredge, R., Olver, B., Pletschke, B.I. The role of hemicellulases in lignocellulose bioconversion. SASBMB 2012. Champagne Castle Sports resort. Winterton. South Africa.

S.Swart, **JS van Dyk**, N Beukes, BI Pletschke. Enzyme Synergy Studies with Viscozyme® L, a commercial lignocellulolytic enzyme cocktail, for optimal lignocellulose degradation. SASBMB 2012. Champagne Castle Sports resort. Winterton. South Africa.

**Van Dyk, JS**, Pletschke, BI. Extracellular polysaccharide production in *Bacillus licheniformis* SVD1. Eurocarb 16<sup>th</sup> Carbohydrate conference. (2011) Sorrento, Italy.

D. Morrison, **JS van Dyk**, BI Pletschke. The Effect of Alcohols, Lignin and Phenolic Compounds on *Clostridium cellulovorans* XynA Activity. SASM (2011). Cape Sun Hotel, Cape Town, South Africa.

Pletschke, B., Beukes, N., Gama, R. and **Van Dyk, J.S.** Cellulase and Hemicellulase Synergy for Lignocellulose Degradation. 16th South African Society for Microbiology (SASM) conference (2011). Cape Sun Hotel, Cape Town, South Africa.

**Van Dyk, JS**, Sakka, M, Sakka, K and Pletschke, BI. Characterisation of CMCase, xylanase, pectinase and mannanase activity in *Bacillus licheniformis* SVD1 with specific emphasis on the presence of these enzymes within a multi-enzyme complex. South African Society for Biochemistry and Molecular Biology (SASBMB), (2010), Ilanga Estate, Bloemfontein, South Africa.

**Van Dyk, JS**, Pletschke, BI. *Bacillus licheniformis* produces a multi-enzyme complex when cultured on xylan and bagasse. South African Society for Biochemistry and Molecular Biology (SASBMB), Bio08, (2008) Rhodes University, Grahamstown, South Africa.

**Van Dyk, JS**, Pletschke, BI. The cellulolytic and hemi-cellulolytic system of *Bacillus licheniformis* SVD1 and the presence of a multi-enzyme complex. Biotechnology of lignocellulose degradation, biomass utilization and biorefinery. MIE Bioforum, (2008) Shima-Isobe, Japan.

**Van Dyk, JS**, Pletschke, BI. Isolation of a large multi-enzyme complex from *Clostridium beijerinckii* and characterisation of xylanase activity. South African Society for Biochemistry and Molecular Biology (SASBMB), Eastern Cape Symposium, (2007) Katberg Hotel, Fort Beaufort, South Africa.

**Van Dyk, JS**, Igbini, E, Atkins, S and Rose, PD. The fungal bioconversion of humic acids. South African Society for Biochemistry and Molecular Biology (SASBMB), Eastern Cape Symposium (2005), Rhodes University, Grahamstown, South Africa.

## WORK EXPERIENCE

Sept 2017 – April 2018	Research Associate with Prof Jack Saddler, Department of Wood Science, University of British Columbia.
Aug 2013-Aug 2017	Coordinator: IEA Bioenergy Task 39 (Liquid Biofuels) Postdoctoral researcher with Prof Jack Saddler, Department of Wood Science, University of British Columbia. Includes responsibility for writing grants and research progress reports. Coordinator: IEA Bioenergy Task 39 (Liquid Biofuels)
2010-July 2013	Relief lecturer, Department Biochemistry, Microbiology and Biotechnology, Rhodes University
2010–2013	Postdoctoral researcher with Prof B Pletschke, Department Biochemistry, Microbiology and Biotechnology, Rhodes University
2002 – 2009	Student at Rhodes University (BSc, BSc Honours, PhD)
1997 – 2004	Self-employed as a Labour Relations & Human Resource Consultant (continued consulting during my BSc degree to support myself)
Sept 1994-Jun 1997	Industrial Relations and Legal Adviser. The Footwear Manufacturers’ Federation of South Africa
Mar-Sept 1994	State Public Prosecutor, Kimberley Magistrates Court
1992-1993	Junior Lecturer University of Stellenbosch (Department of Public Law and Commercial Law) 1989 –
1991	Volunteer Consultant University of Stellenbosch Legal Aid Clinic (part-time)
1987-1993	B.A., LL.B., LL.M. studies at University of Stellenbosch

## TEACHING EXPERIENCE

2015/2016	Guest lecturer in Wood 249 on the topic of biofuels
2013	20 lectures for Biochemistry II (Carbohydrates, Metabolism) plus 2x3h practicals. Course development and material preparation, test and exam questions and grading.
2012	20 lectures of Biochemistry III (Enzyme mechanisms). Course development and material preparation, test and exam questions and grading.

2011	35 lectures of Biochemistry II (Protein purification, Electrophoresis and Bioenergetics) and Biochemistry III (Enzyme mechanisms) plus 4x3h practicals. Course development and material preparation, test and exam questions and grading.
2010	30 lectures of Biochemistry II (Protein purification) and Biochemistry III (Enzyme mechanisms) plus 2x3h practicals. Course development and material preparation, test and exam questions and grading.
2002	Adult Basic Education (English & Mathematics at Makana Brick)
1995-2001	Numerous workshops and training courses (>40) on Labour Legislation and Employment Equity to Human Resource Personnel; Disciplinary procedures; Handling Grievances in the workplace; Chairing disciplinary hearings; etc. Course material development and facilitation
1992/1993	Tutorial classes to 2 <sup>nd</sup> year business students on Company Law

### **SUPERVISION OF STUDENTS**

#### **Rhodes University:**

PhD co-supervision	Repson Gama (2011, 2012, 2013)
MSc. co-supervision (2013-2014), Samkelo Malgas (2013-2014)	Katayi Mwila (2010, 2011), Dave Morrison (2011, 2012), Mariska Thoresen
BSc. Honours co-supervision	Lara Lavan (2008), Rowan Fenn (2008), Charles Waitaka (2010), Dave Morrison (2010), Shanna Swart (2011), Mariska Thoresen (2012), Samkelo Malgas (2012)

#### **University of British Columbia:**

Assisted supervision of MSc.&Ph.D.	William Cadham (2013-2015); Anna Ringsred; Fraser Larock, Jianping Su
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### **SCHOLARSHIPS AND AWARDS**

Claude Leon postdoctoral fellowship 2010, 2011  
 NRF Innovation Fund postdoctoral scholarship 2010  
 NRF Scarce Skills Scholarship 2006, 2007, 2008, 2009 NRF Prestigious Scholarship 2006  
 HB Webb Scholarship 2006  
 Ernst and Ethel Eriksen Trust scholarship 2006 Rhodes Postgraduate Scholarship 2006  
 Graduated with academic honours for 2004(B.Sc.) & 2005 (B.Sc. Honours) Merck Prize for Biotechnology 2005 (Top Biotechnology Honours student) Henderson Scholarship 2006, 2007, 2008, 2009  
 William Barker Memorial Prize for Chemistry 2004 Sasol Centenary scholarship for 2005  
 Conrad Dylan Cambray Scholarship for achievement in Chemistry and Microbiology (2004) Dr Kendall scholarship for top 4<sup>th</sup> graduate of 2004  
 Maryam Babangida scholarship for top female 2<sup>nd</sup> year student in 2003 Dean's Merit List for 2003 & 2004  
 Member of Winning Team – Chemistry Entrepreneurial Project (2003 & 2004)