

CURRICULUM VITAE**PERSONAL DATA**

South African

Female

Date of birth: 1973-08-24

Married (née Kritzinger)

Two children: Noah and Anouk (3 yrs absence from science: 2003-2005)

WORK ADDRESS

Institute for Microbial Biotechnology (IMBM)

Department of Biotechnology

University of the Western Cape

Life Science Building

Modderdam Road

Bellville 7535, South Africa

Tel.: +27 (0)21 959 2817

Fax: +27 (0)21 959 3505

E-mail: rbauer@uwc.ac.za

Web: www.imbm.co.za

EDUCATION: ACADEMIC

- B.Sc. Agric. in Biochemistry, Microbiology, Genetics (1995)

Stellenbosch University

- Full degree course in Enology (1998-2000)

Department of Enology and Viticulture

Stellenbosch University

- M.Sc. in Microbiology (1997)

Microbiology Department

Stellenbosch University

- M.Sc. in Analytical Chemistry (2010)

Department of Analytical Chemistry

Stellenbosch University

- Ph.D. Agric. in Microbiology and Molecular Biology (April, 2004)

Strategies for the control of malolactic fermentation: Characterization of pediocin PD-1 and the gene for the malolactic enzyme from *Pediococcus damnosus* NCFB 1832.

Microbiology Department

Stellenbosch University

EDUCATION: OTHER

- Wine Master (2009)

Cape Wine Academy

- Essential Intellectual Property Management Short Course (2009)

DNAbiotec

LANGUAGE SKILLS

- Afrikaans: fluent
- English: fluent
- German: good communication
- French: basic communication
- Mandarin: basic communication

Language Education:

- Mandarin (1999)
- German 178 (2006) and German 278 (2007)
- French 178 (2008)

*Department of Modern Foreign Languages
Stellenbosch University*

EMPLOYMENT

- Laboratory Manager (1996 – 2002)

*Microbiology Department (Prof. L.M.T. Dicks)
Stellenbosch University*

- Post Doctoral Fellowship (2006 – 2008)

*Institute for Plant Biotechnology (Prof. J. Kossmann)
Genetics Department
Stellenbosch University*

- Project Manager (2009)

*Institute for Microbial Biotechnology and Metagenomics (Prof. D.A. Cowan)
Department of Biotechnology
University of the Western Cape*

- Senior Lecturer/Researcher (2010)

*Institute for Microbial Biotechnology and Metagenomics (Prof. D.A. Cowan)
Department of Biotechnology
University of the Western Cape*

LECTURING EXPERIENCE**Postgraduate level:**

- Food Microbiology Hons. B.Sc. (1998 - 1999)
- Molecular Biology Techniques Hons. B.Sc. (1997 - 2002)

Microbiology Department

Stellenbosch University

- Molecular Biology Techniques Hons. B.Sc. (2006 - 2009)

Institute for Plant Biotechnology

Genetics Department

Stellenbosch University

- Molecular Biology Techniques M.Sc. (2010)

Course coordinator

Institute for Microbial Biotechnology and Biotechnology

Biotechnology Department

University of the Western Cape

Pregraduate level:

- Biotechnology 244 (2006 - 2008)

Institute for Plant Biotechnology

Genetics Department

Stellenbosch University

AWARDS

Best Paper Award in Enology. 2002. H.A. Nel, R. Bauer, L.M.T. Dicks and G. Wolfaardt.

The effect of bacteriocins pediocin PD-1, plantaricin 423 and nisin on biofilms of *Oenococcus oeni* on a stainless steel surface. *American Journal of Enology and Viticulture* 53:191-196.

EDITORIAL

- Associate Editor: South African Journal for Enology and Viticulture (SAJEV)

SKILLS

Microbiology

- All standard microbiological techniques

Molecular Biology

- All standard DNA and RNA manipulation techniques
- Expression of genes in heterologous hosts
- Protein purification and characterization
- Bio-prospecting for novel enzymes and biopolymers
- Metagenomic technologies

Analytical Chemistry

- Good insight into all standard techniques (HPLC, GC, MS, ICP, NMR, CE, etc)
- Analytical method development

Plant Biotechnology

- Metabolic engineering, profiling and analysis
- Gene discovery: (meta)genomics, transcriptomics
- Bio-prospecting for novel enzymes and biopolymers
- Virus and RNA induced gene silencing
- Standard Tissue Culture techniques

Wine related skills

- Strong background in viticulture and enology
- Experimental wine making, including all major styles
- Qualified wine judge
- Serving on the Expert Tasting Panel of Food Science (Stellenbosch University)

- Serving on the Expert Tasting Panel of the Institute for Wine Biotechnology (Stellenbosch University)
- Being a microbiologist, I have an excellent understanding of all the problems associated with fermentation.

Management skills

- General laboratory, financial and logistics management
- Intellectual Property (IP) management
- Personnel management and recruitment
- Project planning and research supervision
- Data handling and reporting
- Product research and ordering
- Ability to sensitively interact with people from different backgrounds

STUDENT SUPERVISION

Microbiology Department, SUN

- Hannes Nel M.Sc. Dec 2002 complete
- Iansha van der Merwe M.Sc. Dec 2002 complete

Institute for Plant Biotechnology, SUN

- Christian du Toit Hons. Dec 2006 complete
- Anneke Brand Hons. Dec 2008 complete

- Gavin George M.Sc. Dec 2007 complete (upgraded)
- Colin Ohlhoff M.Sc. Dec 2008 complete
- Carin Basson M.Sc. Dec 2008 complete
- Christelle Cronje M.Sc. Dec 2008 complete (cum laudes)

- Gavin George Ph.D. Mar 2010 complete

- Stanton Hector Ph.D. Mar 2011

Institute for Wine Biotechnology, SUN

- Carin Basson Ph.D. Jun 2009 -

Institute for Microbial Biotechnology and Metagenomics, UWC

- Aza Madikizela Hons. Dec 2010 complete
- Danielle Sonn Hons. Dec 2010 complete

- Xiao Ping Hu M.Sc. Dec 2010 complete
- Megan Oldale M.Sc. Dec 2010 complete
- Lesley Ann Matthews M.Sc. Dec 2010 complete
- Randall Crisp M.Sc. Mar 2011
- Munaka Matshaya M.Sc. Jan 2010 -
- Rhulani Ngobeni M.Sc. Jan 2010 -
- Rudzani Mutengwe M.Sc. Jan 2010 -
- Gao Yu M.Sc. Jan 2010 -
- Timna January M.Sc. Jan 2010-

- Colin Ohlhoff Ph.D. Jan 2009 -
- Ilana Ackerman Ph.D. Apr 2010 -
- Stephen McKay Ph.D. Sept 2010 -

POST DOCORAL RESEARCHERS

Institute for Microbial Biotechnology and Metagenomics, UWC

- Dr Inonge Mulako PhD, UCT, SA
- Dr Rob Huddy PhD, UCT, SA
- Dr Bronwyn Kirby PhD, UCT, SA
- Dr Ana Casaneuva PhD, UCT, SA
- Dr Mariette Smart PhD, UCT, SA
- Dr Desiree Barnard PhD, SUN, SA

Dr Saliou Fall PhD, Lyon, France
Dr Samantha Easton PhD, UCL, UK
Dr Laisve Lideikyte PhD, Vilnius, Lithuania

PUBLICATIONS IN REFEREED JOURNALS

* Corresponding author

1. H.A. Nel, R. Bauer E. J. van Damme and L.M.T. Dicks*. 2001. Growth optimization of *Pediococcus damnosus* NCFB 1832 and the influence of pH and nutrients on the production of pediocin PD-1. *Journal of Applied Microbiology*, 91:1131-1138 (2001).
2. H.A. Nel, R. Bauer, L.M.T. Dicks and G. Wolfaardt*. The effect of bacteriocins pediocin PD-1, plantaricin 423 and nisin on biofilms of *Oenococcus oeni* on a stainless steel surface. *American Journal of Enology and Viticulture*, 53:191-196 (2002).
3. R. Bauer, H.A. Nel and L.M.T. Dicks*. Pediocin PD-1 as a method to control the growth of *Oenococcus oeni* in wine. *American Journal of Enology and Viticulture*, 54:86-91 (2003).
4. I. van der Merwe, R. Bauer, T.J. Brits and L.M.T. Dicks*. Characterization of thoeniicin 447, a bacteriocin isolated from *Propionibacterium jensenii* strain 447. *International Journal of Food Microbiology*, 92:153-160 (2004).
5. R. Bauer and L.M.T. Dicks*. Control of malolactic fermentation in wine. A review. *South African Journal of Enology and Viticulture*, 25:74-88 (2004).
6. R. Bauer, M.L. Chikindas, and L.M.T. Dicks*. Purification, partial amino acid sequence and mode of action of pediocin PD-1, a bacteriocin produced by *Pediococcus damnosus* NCFB 1832. *International Journal of Food Microbiology*, 101:17-27 (2005).
7. R. Bauer and L.M.T. Dicks*. Mode of action of lipid II-targeting lantibiotics. *International Journal of Food Microbiology*, 25:201-216 (2005).
8. R. Bauer, H. Volschenk and L.M.T. Dicks*. Cloning and expression of the malolactic gene of *Pediococcus damnosus* NCFB 1832 in *Saccharomyces cerevisiae*. *Journal of Biotechnology*, 118:353-362 (2005).
9. R. Bauer*, H. Nieuwoudt, F.F. Bauer, J. Kossmann, K.R. Koch and K.H. Esbensen. Fourier transform infrared spectroscopy for grape and wine analysis. *Analytical Chemistry*, 80:1371–1379 (2008).

10. R. Bauer*, J.P. Bekker, N. van Wyk, C. du Toit, L.M.T. Dicks and J. Kossmann. Exopolysaccharide production by lactose-hydrolyzing bacteria isolated from traditionally fermented milk. *International Journal of Food Microbiology*, 131:260-264 (2009).
11. R. Bauer*, M. du Toit and J. Kossmann. Influence of environmental parameters on production of the acrolein precursor 3-hydroxypropionaldehyde by *Lactobacillus reuteri* DSMZ 20016 and its accumulation by wine lactobacilli. *International Journal of Food Microbiology*, 137: 28–31 (2010).
12. C.E. Basson, J-H. Groenewald, J. Kossmann, C. Cronje, and R. Bauer*. Sugar and acid-related quality attributes and enzyme activities in strawberry fruits: invertase is the main sucrose hydrolysing enzyme. *Food Chemistry*, 121: 1156–1162 (2010).
13. R. Bauer*, D.A. Cowan, and A. Crouch. Acrolein in wine: Importance of 3-hydroxypropionaldehyde and derivatives in production and detection. *Journal of Agricultural and Food Chemistry*, 58: 3243-3250 (2010).
14. G.M. George, M.J. Van der Merwe, A. Nunes-Nesi, R. Bauer, A.R. Fernie, J. Kossmann and J. Lloyd*. Virus-induced gene silencing of plastidial soluble inorganic pyrophosphatase impairs essential leaf anabolic pathways and reduces drought stress tolerance in *Nicotiana benthamiana*. *Plant Physiology*, 154:55-66 (2010).
15. C.E. Basson, J.-H. Groenewald, J. Kossmann, C. Cronje, R. Bauer*. Upregulation of pyrophosphate:D-fructose-6-phosphate 1-phosphotransferase activity in strawberry. *Transgenic Research*, DOI: 10.1007/s11248-010-9451-0 (2010).

POPULAR PUBLICATIONS

16. HA Nel, R Bauer, GM Wolfaardt and LMT Dicks. Is this the new age of sanitizers and biocontrol? *Wineland* (January 2002).

BOOK CHAPTERS

17. R Bauer, MS Mutondo, RJ Huddy, IM Tuffin and DA Cowan. Metagenomic Gene Discovery. Book Chapter 15. In: *Metagenomics and its Applications in Agriculture, Biomedicine and Environmental Studies*. Robert W Li, Ed; Nova Science Publishers Inc (October 2010).

18. TL Meiring, R Bauer, I Scheepers, C Ohlhoff, MI Tuffin, and DA Cowan. Current advances and future trends in metagenomics. Book Chapter 1. In: Metagenomics: Current Innovations and Future Trends. Diana Marco, Ed. In Press (2010).

CONFERENCE PAPERS AND PRESENTATIONS AT INTERNATIONAL SYMPOSIA

19. R. Kritzinger, L.M.T. Dicks and M.L. Chikindas. Characterization of the bacteriocin PD-1, produced by *Pediococcus damnosus*. 8th International Congress of the Bacteriology and Applied Microbiology Division of the International Union of Microbiological Societies. Jerusalem, Israel (1996).
20. L.M.T. Dicks, R. Kritzinger, C.A. Van Reenen and G. Green. Three newly described bacteriocins and their role as natural food preservatives. 14th International Congress of the South African Association for Food Science and Technology. Pretoria, South Africa (1997).
21. R. Kritzinger and L.M.T. Dicks. Purification and N-terminal amino acid sequence of pediocin PD-1 produced by *Pediococcus damnosus* NCFB1832. 6th Symposium on Lactic Acid Bacteria: Genetics, Metabolism and Applications. Veldhoven, The Netherlands (2000).
22. H.A. Nel, R. Bauer, E.J. Vandamme, I. Hallemeersch and L.M.T. Dicks. Fermentation optimization of *Pediococcus damnosus* NCFB 1832 and the production of pediocin PD-1. NIZO Dairy conference on Food Microbes - from knowledge to application, Ede, The Netherlands (2001).
23. H.A. Nel, R. Bauer, E.J. Vandamme, I. Hallemeerch and L.M.T. Dicks. Selection of medium components to increase activity levels of the antimicrobial peptide pediocin PD-1. 4th International Congress of the Recent Advances in Fermentation Technology, Long Beach, California (2001).
24. R. Bauer, H.A. Nel and L.M.T. Dicks. The control of lactic acid bacteria by a new bacteriocin, pediocin PD-1, in the production of wine. SAAFoST16th Biennial International Congress, Durban, South Africa (2001).
25. R. Bauer and L.M.T. Dicks. The effect of various parameters on the antimicrobial effect activity of pediocin PD-1. SAAFoST 16th Biennial International Congress, Durban, South Africa (2001).

26. H.A. Nel, R. Bauer, E.J. Vandamme and L.M.T. Dicks. Optimization of the production of pediocin PD-1, a bactericidal antimicrobial peptide produced by *Pediococcus damnosus* NCFB 1832. SAAFoST 16th Biennial International Congress, Durban, South Africa (2001).
27. H.A. Nel, R. Bauer, G.M. Wolfaardt and L.M.T. Dicks. The formation of biofilms by *Oenococcus oeni* under wine making conditions. SAAFoST 16th Biennial International Congress, Durban, South Africa (2001).
28. M. Smith, R. Bauer, E. Balla and L.M.T. Dicks. The cloning and expression of bacteriocin AS-48 in *Lactobacillus*. SAAFoST 16th Biennial International Congress, Durban, South Africa (2001).
29. I.R. van der Merwe, R. Bauer, T.J. Britz and L.M.T. Dicks. Characterization of an antimicrobial peptide produced by a propionibacterium sp. SAAFoST 16th Biennial International Congress, Durban, South Africa (2001).
30. R. Bauer and L.M.T. Dicks. Strategies for the control of malolactic fermentation by *Saccharomyces cerevisiae*. 22nd International Specialized Symposium on Yeast: Yeast fermentations and other yeast bioprocesses. Pilanesberg, South Africa (2002).
31. R. Bauer, M.L. Chikindas and L.M.T. Dicks. Mode of action of pediocin PD-1, an antimicrobial peptide produced by *Pediococcus damnosus* NCFB 1832, against *Oenococcus oeni*. 7th Symposium on Lactic Acid Bacteria, Genetics, Metabolism and Applications. Egmond aan Zee, The Netherlands (2002).
32. H.A. Nel, R. Bauer, L.M.T. Dicks, E.J. Vandamme and G.M. Wolfaardt. Fermentation upscaling of pediocin PD-1, a bacteriocin produced by *Pediococcus damnosus*, and its application in the prevention of biofilm formation by the malolactic bacterium *Oenococcus oeni*. 7th Symposium on Lactic Acid Bacteria, Genetics, Metabolism and Applications. Egmond aan Zee, The Netherlands (2002).
33. R. Bauer, M.L. Chikindas, and L.M.T. Dicks. Purification, partial amino acid sequence and mode of action of pediocin PD-1, a bacteriocin produced by *Pediococcus damnosus* NCFB 1832. VIeme Congress de SF, Bordeaux, France (2004).
34. R. Bauer, H. Volschenk and L.M.T. Dicks. Cloning, characterization and functional expression of a new malolactic enzyme-encoding gene, isolated from *Pediococcus damnosus* NCFB 1832, in *Saccharomyces cerevisiae*. VIeme Congress de SFM, Bordeaux, France (2004).

35. Rolene Bauer, Helène Nieuwoudt, Jan Bekker, Maret duToit, Jens Kossmann, and Ben Burger. Microbial production of acrolein and detection in wine. 13th Australian Wine Industry Conference, Adelaide (2007).
36. Du Plessis G, Kirby BM, Bauer R, Tuffin M, Cowan DA. Actinobacterial diversity of the Ethiopian Rift Valley Lakes. Soil Metagenomics 2010, Braunschweig (Germany), December 8-10.
37. Heath C, Hu X-P, Taylor M, Bauer R, Cary C, Cowan DA. Discovery and characterisation of a novel esterase from an Antarctic soil metagenome. Soil Metagenomics, Braunschweig, Germany, December 8-10 (2010).
38. Stomeo F, Bauer R, Tuffin M., Cary C, Pointing S, Stevens M, Cowan DA. Analysis of bacterial diversity of soil from the Antarctic McMurdo Dry Valleys shallow vertical transects. Soil Metagenomics, Braunschweig, Germany, December 8-10 (2010).

CONFERENCE PAPERS AND PRESENTATIONS AT NATIONAL SYMPOSIA

39. R. Kritzinger and L.M.T. Dicks. Biopreservation with antimicrobial peptides. [**Oral**]. Dairy Symposium of the South African Society of Dairy Technology, Margate (1999).
40. R. Bauer, H.A. Nel and L.M.T. Dicks. The use of an antimicrobial peptide, pediocin PD-1, in winemaking. 25th Conference of the South African Society for Enology and Viticulture, Somerset West (2001).
41. H.A. Nel, R. Bauer, G.M. Wolfaardt and L.M.T. Dicks. The effect of antimicrobial peptides on biofilm formation in wine tanks and barrels. 25th Conference of the South African Society for Enology and Viticulture, Somerset West (2001).
42. H.A. Nel, R. Bauer, E.J. Vandamme and L.M.T. Dicks. The influence of medium composition on the production and activity of pediocin PD-1, an antimicrobial peptide active against malolactic bacteria. 25th Conference of the South African Society for Enology and Viticulture, Somerset West (2001).
43. I.R. Van der Merwe, R. Bauer, T.J. Britz and L.M.T. Dicks. Characterization of thoenicin 14, a bacteriocin-like peptide isolated from *Propionibacterium thoenii* strain 14. 12th Biennial Congress of the South African Society for Microbiology. Bloemfontein (2002).

44. M. Smith, R. Bauer, E. Balla and L.M.T. Dicks. Bacteriocin AS-48, a broad-spectrum antimicrobial peptide produced by *E. faecalis*. 12th Biennial Congress of the South African Society for Microbiology. Bloemfontein (2002).
45. H.A. Nel, R. Bauer, L.M.T. Dicks and G.M. Wolfaardt. Pediocin PD-1 production and its inhibitory effect on biofilms of the malolactic bacterium *Oenococcus oeni*. 12th Biennial Congress of the South African Society for Microbiology. Bloemfontein (2002).
46. R. Bauer, H.A. Nel, H. Volschenk and L.M.T. Dicks. Strategies for the control of malolactic fermentation in wine. [**Oral**]. 18th Congress of the South African Microbiology Society, Stellenbosch (2004).
47. Carin E. Basson, Christelle Cronje, Jens Kossmann, Jan-Hendrik Groenewald, E. Schäfer and Rolene Bauer. Investigating cytosolic carbon metabolism in fruit. 28th Conference of the South African Society for Enology and Viticulture, Somerset West (2008).
48. Carin E. Basson, Christelle Cronje, Jens Kossmann, Jan-Hendrik Groenewald, E. Schäfer and Rolene Bauer. Manipulation of carbohydrate pools for improved fruit quality. 28th Conference of the South African Society for Enology and Viticulture, Somerset West (2008).
49. Rolene Bauer, H el ene Nieuwoudt, Maret duToit, Florian F. Bauer, Jan Bekker, Jens Kossmann, and Ben Burger. Acrolein in wine: GC-MS detection by high capacity sampl enrichment probe. [**Oral**]. 28th Conference of the South African Society for Enology and Viticulture, Somerset West (2008).
50. Gavin George, Rolene Bauer, Jens Kossmann, and James R. Lloyd. Silencing multiple genes using virus induced gene silencing for improved fruit quality. [**Oral**]. 28th Conference of the South African Society for Enology and Viticulture, Somerset West (2008).
51. Rolene Bauer, Iban E Mu oz and Jens Kossmann. Microbial polysaccharides as carbohydrate sinks in sugarcane. 35th Annual Conference of the South African Association of Botanists (2009).
52. Carin E. Basson, Christelle Cronj e, Jens Kossmann, Jan-Hendrik Groenewald and Rolene Bauer. Manipulation of carbohydrate pools in strawberry. 35th Conference of the South African Association of Botanists, Stellenbosch (2009).

53. Carin E. Basson, Christelle Cronjé, Jens Kossmann, Jan-Hendrik Groenewald and Rolene Bauer. Investigating cytosolic carbon metabolism in strawberry. 35th Conference of the South African Association of Botanists, Stellenbosch (2009).
54. Gavin George, Marna van der Merve, Rolene Bauer, Jens Kossmann, James Lloyd. Manipulating Plastidial Pyrophosphate metabolism. [Oral]. 35th Annual Conference of the South African Association of Botanists (2009).
55. Rolene Bauer, Maret du Toit, Jens Kossmann. Microbial production of the acrolein precursor 3-HPA by wine lactobacilli. The Biennial National Conference of the South African Society for Microbiology (2009).
56. Ohlhoff C, Mulako I, Huddy R, Bauer R, Tuffin I, and Cowan DA. High-Throughput Robotic Screening of a Compost Metagenomic Library: Discovery of Lignocellulosic Thermozyms. South African Society for Biochemistry and Molecular Biology, Bloemfontein (2010).
57. Y Gao, R Bauer, SG Burton, R Huddy, M Le Roes-Hill, IM Tuffin, DA Cowan. Characterization and screening of an actinobacterial isolate for thermophilic lignocellulosic enzymes. Cape Biotechnology Forum, Somerset West (2010).
58. X-P Hu, T January, R Bauer, S Fall, R Huddy, I Mulako, M Taylor, IM Tuffin, DA Cowan. Searching for lignocellulosic enzymes using a metagenomic approach. Cape Biotechnology Forum, Somerset West (2010).
59. M Oldale, R Bauer, SG Easton, M Le Roes-Hill, IM Tuffin, DA Cowan. Isolation and Characterisation of thermophilic esterases from Actinomycetes used in the digestion of lignocelluloses. Cape Biotechnology Forum, Somerset West (2010).
60. LA Matthews, R Bauer, SG Burton, S Easton, M Le Roes-Hill, IM Tuffin, DA Cowan. Screening for alpha-L-arabinofuranosidases from thermophilic actinobacteria for the digestion of lignocellulosic feedstocks for biofuel production. Cape Biotechnology Forum, Somerset West (2010).
61. RG Crisp, R Bauer, SG Burton, DA Cowan, A Casanueva, M Le Roes-Hill, IM Tuffin. The identification and characterization of thermophilic lignin degrading peroxidases from Actinomycetes for use in bioethanol production. Cape Biotechnology Forum, Somerset West (2010).
62. C Ohlhoff, R Bauer, A Casanueva, DA Cowan, R Huddy, I Mulako, IM Tuffin. High-throughput robotic lignocellulose conversion to fuel: Taking a high-throughput shortcut

across the metagenomic highway. [**Oral**]. Cape Biotechnology Forum, Somerset West (2010).