

SIEW LENG TAI (771007-6083-184)

CONTACT: Siew.tai@uct.ac.za/079-3639268



PERSONAL INFORMATION

Office Address: Department of Chemical Engineering
University of Cape Town
Private Bag X3
RONDEBOSCH 7701
Tel.: 021 650 5933
Email: siew.tai@uct.ac.za

QUALIFICATIONS

- 2002 – 2006: PhD (Industrial Microbiology), Delft University of Technology, The Netherlands
Supervisor: Prof Jack Pronk
Thesis title: Physiological Impact and Context Dependency of Transcriptional Responses: a chemostat study in *Saccharomyces cerevisiae*
- 2000 – 2002 MSc (Biochemical Engineering), Delft University of Technology, The Netherlands, (*cum laude*)
- 1996 – 1999 BEng (Chemical Engineering, University of Manchester Institute for Science and Technology (UMIST), Manchester, UK (*1st class Hons*))

PROFESSIONAL HISTORY

- 2013 – present: Senior Lecturer, Department of Chemical Engineering, Centre for Bioprocess Engineering Research (CeBER), University of Cape Town
- 2012 – 2013 Active Pharmaceutical Ingredient (API) Section Head, Production Department, The Biovac Institute, Cape Town, South Africa
- 2011 – 2013 Discipline Engineer – Production Team Leader, Project Management Office, The Biovac Institute, Cape Town, South Africa
- 2009 – 2012 Bioprocess/Active Pharmaceutical Ingredient (API) Manufacturing Specialist, Production Department, The Biovac Institute, Cape Town, South Africa
- 2006 – 2008 Laboratory Manager and Postdoctoral Fellow, Institute for Wine Biotechnology, University of Stellenbosch, South Africa
- 2002 – 2002 Research Scientist, Delft University of Technology, Delft, The Netherlands
- 1999 – 2000 Sales and Technical Engineer, Exact Control Sdn. Bhd., Selangor, Malaysia

SCHOLARLY AND PROFESSIONAL ACTIVITIES

- Supervision of scientists and engineers at Honours, MSc and PhD levels

- Lecturing of both components of the undergraduate chemical engineering curriculum (across all years of study, Final Year Design), undergraduate biotechnology curriculum (3rd and 4th years) and postgraduate chemical engineering and bioprocess engineering curricula
- Research consultant to the local industry
- Course convener for final year core courses for Process Synthesis and Final year design project.
- 4th year Chemical Engineering Undergraduate student advisor
- Department Space Management & IT representative
- Chemical Engineering New Curriculum Committee
- Chemical Engineering ECSA ELO Team Member
- ASPEN Plus® & Superpro Designer Software Champion
- External course moderator/examiner for various universities in South Africa (University of Stellenbosch, CPUT)
- Peer reviewer of journals
- CSUR NRF award recipient 2014 - 2016

RESEARCH INTERESTS

Bioprocess engineering in the field of vaccines and biopharmaceuticals in the context of the South African economy is still very much in its infancy. Having had worked in industry in the pharmaceutical field, my research interest mainly encompasses:

- Novel and improved bioreactor design
- Novel host and vector systems
- Scale up issues related to bioreactor design and strain/cell line specificity
- Improving cost efficiency in manufacturing of cheaper drugs
- Adherence of bioprocessing manufacturing principles to regulatory requirements of Medicines Control Council, SA(MCC) and World Health Organization (WHO) for vaccine/biopharmaceutical production
- Improving Upstream and downstream processing
- Optimization of bioprocesses and product yield
- Commercialization of products from bench scale

My other areas of interest also include work on bioproducts manufacture. In particular my interest lies within the platform of:

- Beer and wine fermentation
- Sustainable energy/Biorefineries
- Recombinant host systems for bioproducts

On a more fundamental research platform, I am also interested in metabolic engineering, systems biology, transcriptomics and genomics within various model organisms.

RESEARCH SUPERVISION

	Pre-2007	2007–2017
Postgraduate degrees completed under my co-supervision:		
MSc	2	2
PhD	0	1
Postgraduates currently under my supervision/co-supervision:		
MSc		4/1

PUBLICATION RECORD

	Pre-2007	2007–2017	In Press
In refereed journals and books:	4	6	1
Technical reports:		1	
Presented at international conferences:			
Presented at national conferences:		3	
Patents:			

LIST OF PUBLICATIONS

1. Franken J, Brandt BA, **Tai SL**, Bauer FF. Biosynthesis of levan, a bacterial extracellular polysaccharide, in the yeast *Saccharomyces cerevisiae*. PLoS One. 2013 Oct 11;8(10).
2. Snoek IS, **Tai SL**, Pronk JT, Steensma Yde, Daran JM. Involvement of Snf7p and Rim101p in the transcriptional regulation of TIR1 and other anaerobically upregulated genes in *Saccharomyces cerevisiae*. FEMS Yeast Research, 2010;10(4):367-84
3. **Tai SL**, Daran-Lapujade P, Walsh MC, Pronk JT, Daran JM. [Acclimation of *Saccharomyces cerevisiae* to low temperature: a chemostat-based transcriptome analysis](#). Mol Biol Cell. 2007 Dec;18(12):5100-12. Epub 2007 Oct 10.
4. **Tai SL**, Boer VM, Vuralhan Z, Arifin Y, Walsh MC, Piper MD, de Winde JH, Pronk JT, Daran JM. [Transcriptional responses of *Saccharomyces cerevisiae* to preferred and nonpreferred nitrogen sources in glucose-limited chemostat cultures](#). FEMS Yeast Res. 2007 Jun;7(4):604-20. Epub 2007 Apr 10.
5. **Tai SL**, Snoek I, Luttik MA, Almering MJ, Walsh MC, Pronk JT, Daran JM. [Correlation between transcript profiles and fitness of deletion mutants in anaerobic chemostat cultures of *Saccharomyces cerevisiae*](#). Microbiology. 2007 Mar;153(Pt 3):877-86.
6. **Tai SL**, Daran-Lapujade P, Luttik MA, Walsh MC, Diderich JA, Krijger GC, van Gulik WM, Pronk JT, Daran JM. [Control of the glycolytic flux in *Saccharomyces cerevisiae* grown at low temperature: a multi-level analysis in anaerobic chemostat cultures](#). J Biol Chem. 2007 Apr 6;282(14):10243-51. Epub 2007 Jan 24.
7. Hazelwood LA, **Tai SL**, Boer VM, de Winde JH, Pronk JT, Daran JM. [A new physiological role for Pdr12p in *Saccharomyces cerevisiae*: export of aromatic and branched-chain organic acids produced in amino acid catabolism](#). FEMS Yeast Res. 2006 Sep;6(6):937-45.
8. Vuralhan Z, Luttik MA, **Tai SL**, Boer VM, Morais MA, Schipper D, Almering MJ, Kötter P, Dickinson JR, Daran JM, Pronk JT. [Physiological characterization of the ARO10-dependent, broad-substrate-specificity 2-oxo acid decarboxylase activity of *Saccharomyces cerevisiae*](#). Appl Environ Microbiol. 2005 Jun;71(6):3276-84.
9. **Tai SL**, Boer VM, Daran-Lapujade P, Walsh MC, de Winde JH, Daran JM, Pronk JT. [Two-dimensional transcriptome analysis in chemostat cultures. Combinatorial effects of oxygen availability and macronutrient limitation in *Saccharomyces cerevisiae*](#). J Biol Chem. 2005 Jan 7;280(1):437-47. Epub 2004 Oct 20.
10. Vuralhan Z, Morais MA, **Tai SL**, Piper MD, Pronk JT, [Identification and characterization of phenylpyruvate decarboxylase genes in *Saccharomyces cerevisiae*](#). Appl Environ Microbiol. 2003 Aug;69(8):4534-41.