

RESUMÉ

Dr Benoît Divol (Researcher in Wine Biotechnology)

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Vision statement:

My research focuses on three main fields: enhancing enzymes production in wine yeasts, understanding microbial interactions in order to control spoilage and understanding the positive contribution of wine lactic acid bacteria during malolactic fermentation.

During the vinification process, enzymes addition has become a common step. We aim to unravel and enhance the production of enzymes by *Saccharomyces cerevisiae* or other wine yeasts during alcoholic fermentation by means of genetic engineering tools or co-inoculation.

Malolactic fermentation is a major step of the winemaking process, even though it remains poorly understood. Moreover, most of the starter cultures used by the winemakers are not adapted to South African wines. We aim to understand the influence of South African conditions on the malolactic fermentation efficiency and the production of aroma compounds by *Oenococcus oeni*.

Another aspect of the work is to understand the dominance of *O. oeni* and *Lactobacillus plantarum* after alcoholic fermentation through their potential production of bacteriocins.



PERSONAL INFORMATION

30 years

Single

QUALIFICATIONS

- Diplôme National d'Œnologie (National Diploma in Oenology; BSc level), Bordeaux 2 University, France
- Diplôme d'Ingenieur des techniques agricoles (Engineer diploma in agriculture, MSc level), ENITA de Bordeaux, France
- Diplôme d'Études Approfondies (Diploma in advanced studies, MSc level), Bordeaux 2 University, France

Genetic study of arginine transport in Oenococcus oeni. Implication in the metabolism.

- Doctorat (PhD), INP de Toulouse, France
- Botrytis-affected wines microbiology during maturation. Genetic characterisation of Saccharomyces cerevisiae strains responsible for refermentations.*

NRF RATING

- No NRF rating at present.

WORKING EXPERIENCE

- Post-doctoral fellow, Institute for Wine Biotechnology, Stellenbosch University, South Africa (June 2005 – October 2007)

Regulation of the PGU1 gene (encoding for an endo-polygalacturonase) in Saccharomyces cerevisiae. Implication in aroma release and improvement of filtration in wine.

- Researcher in Wine Biotechnology, Insitute for Wine Biotechnology, Stellenbosch University, South Africa (since November 2007)

Main research focus:

- Enzymes production by wine yeasts
- Lactic acid bacteria molecular biology
- Interactions between microorganisms

BURSARIES

- PhD funded by the Syndicat des crus classés de Sauternes et Barsac and by Château d'Yquem

TEACHING

Undergraduate teaching courses

- Practical work: determination of sulphur dioxide concentration in wine

Postgraduate teaching courses

- Lectures and pratical work: Grape-based beverages
- Pratical work: Microbiology techniques

Postgraduate supervision

- Graduates:1
 - Co-supervisor for D-degrees 1
- Registered students:5
 - Co-supervisor for PhD-students 3
 - Supervisor for MSc-students 2
 - (- Coordinator for BSc(Hons) students 8 in 2008)

RESEARCH

Research programme

- Various running projects relevant for the wine industry are currently on-going:
 - Development of polysaccharides-degrading yeasts by means of genetic engineering tools
 - Analysis of endo-polygalacturonase activity in recombinant wine yeasts containing a reconstituted *PGU1* gene
 - Genetic characterisation of β -glucosidase-encoding genes of various origins and expression in *S. cerevisiae*; Investigating the possibility of co-inoculation
 - Engineering a wine yeast strain in order to reduce alcohol production via the production of glucose oxidase.

In collaboration with Prof Maret du Toit:

- Evaluating the influence of lactic acid bacteria and malolactic fermentation on the chemical profile of wine with omics-technologies and multi-variate data analysis.

Research collaborators

- Institut Universitaire des Sciences de la Vigne et du Vin, University of Burgundy, France (Prof Hervé Alexandre)

Application for funding submitted

Research outputs (since 1997)

- Papers in refereed scientific journals 7
- Popular scientific articles 1

▪ Published conference proceedings	 3
▪ Abstracts of papers at conferences	 11
- international	7
- national	4

SERVICES

Managerial services for IWBT management team

- Member of the IWBT management team
- General coordinator of the BSc(Hons) post-graduate studies
- Supervisor of the IWBT culture collection management
- Supervisors of post-graduate students
- Organiser of weekly scientific meetings at the IWBT

Membership of professional societies

- Member of the South African Society for Enology and Viticulture (since 2008)

Other professional services

- Internal examiner of 1 PhD thesis and 2 MSc theses, DVO and IWBT, Stellenbosch University
- Acted as reviewer for 2 accredited research journals

Updated: March 2008