

Alternatives to sulfur dioxide for controlling *Brettanomyces* spoilage in wine

Project ID: ICHDR7 (PhD)

Brettanomyces is a yeast associated with wine spoilage, particularly during storage. Sulfur dioxide (SO₂) is the most commonly approach used to control this yeast (Harris *et al* 2010). However, the use of SO₂ has several downsides, including the potential to develop resistance (Curtin *et al* 2012). Novel approaches to avoid SO₂ in managing *Brettanomyces* such as RNA silencing, other biological agents such as peptides (yeast killer factors), enzymes (β-glucanase) and physical method of control (low voltage, high pressure, UV treatment) will be investigated. The development of rapid/real-time sensors for *Brettanomyces* might also contribute to management of this spoilage organism. This project would take advantage of current joint research between the AWRI and UoA on this topic.

We seek a highly motivated PhD candidate with a high level Honours or Masters qualification or equivalent in microbiology, molecular biology, bioinformatics or fermentation science. The project will be based at the Waite campus of The University of Adelaide. Skills the candidate will gain during their HDR include:

- Design and development of novel approaches to managing wine spoilage, by both biological and physical means.
- Transcriptome sequencing and assembly, along with *in-silico* identification of siRNA targets using RNAseq data.
- *In-vitro* validation of selected antimicrobial agents or technologies against *Brettanomyces* and other wine related yeast.
- Real world validation of antimicrobial activities investigated in an industrial setting.

References

- > Harris *et al* (2010) Inhibitory effect of hydroxycinnamic acids on *Dekkera* spp. *Applied Microbiology and Biotechnology* **86**:721-9.
- > Curtin *et al* (2012) Genotype dependent sulphite tolerance of Australian *Dekkera* (*Brettanomyces*) *bruxellensis* wine isolates. *Letters in Applied Microbiology* **55**:56-61.

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