

# Broadening your winemaking yeast portfolio: Identification of an SO<sub>2</sub> tolerant non-*Saccharomyces*

Natalia Caliani<sup>1,2</sup>, Krista Sumbly<sup>1,2</sup>, Joanna Sundstrom<sup>1,2</sup>, Cassandra Collins<sup>1,2</sup>, Kelsey Laverne<sup>3</sup>, Eveline Bartowsky<sup>1,4</sup>, Anthony Borneman<sup>1,5</sup>, Kim Chalmers<sup>1,6</sup>, Vladimir Jiranek<sup>1,2</sup>



## Background

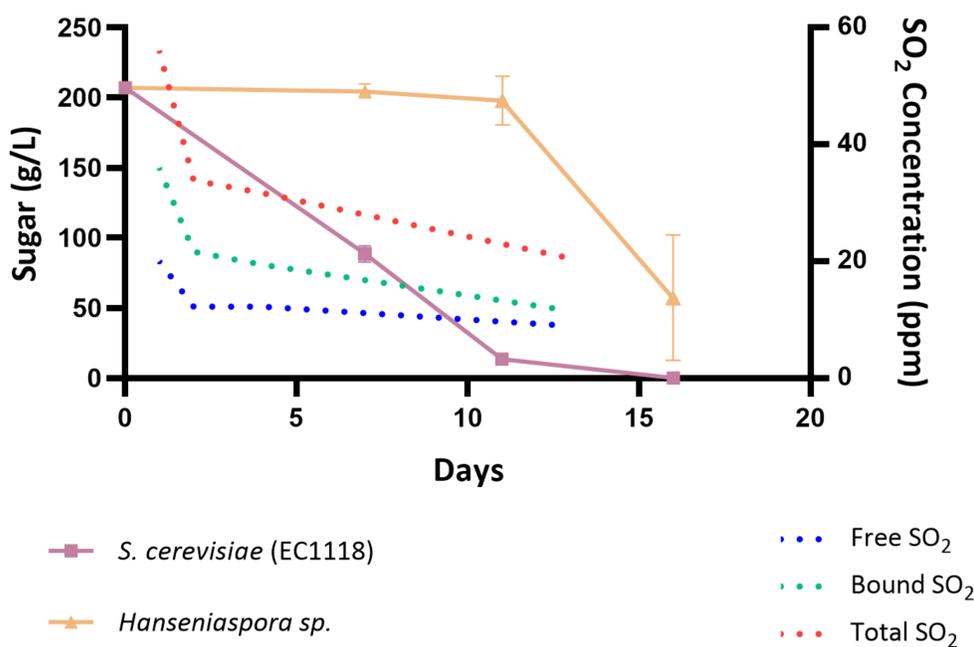
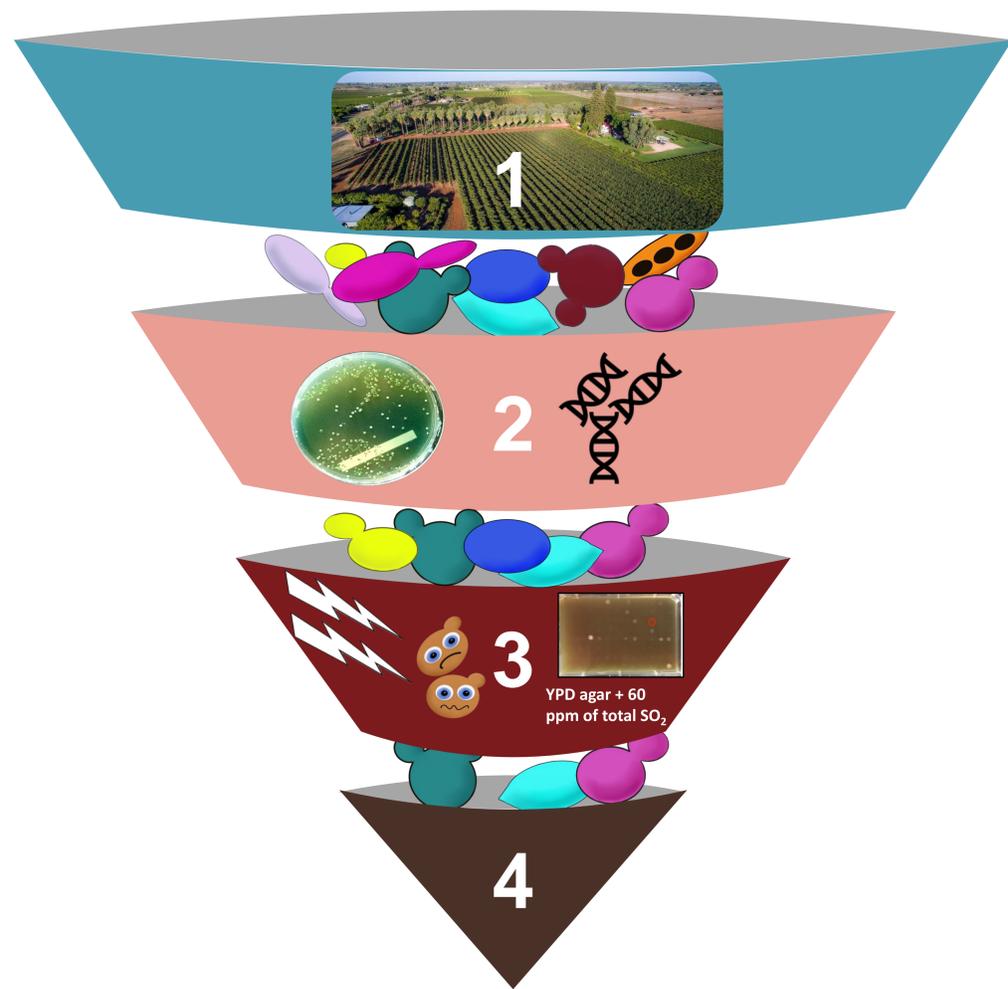
Non-*Saccharomyces* yeast are gaining winemaker interest worldwide because of their potential to improve wine quality (aroma, length, and texture). However, there are currently only a handful of commercial non-*Saccharomyces* strains available for winemakers to choose from.

## Project Aim

To isolate and identify non-*Saccharomyces* strains with useful winemaking properties to expand the commercially available options for winemakers.

## Methods and Results

1. Grape, juice and fermentation samples were collected from multiple grapevine varieties.
2. Yeast were isolated from those samples using selective media. We obtained 480 yeast single colony isolates, which were then identified by genomic methods (ITS PCR).
3. Based on species identification and isolate origin, a sub-set of 19 isolates were chosen for further screening. They were pre-screened for their ethanol and SO<sub>2</sub> tolerance on solid growth media. The 13 isolates that displayed greater resistance to both stressors were further screened.
4. Those 13 isolates were screened for their SO<sub>2</sub> tolerance in 25 mL of Chemically Defined Grape Juice Medium (CDGJM) spiked with 20, 35, 50 or 65 ppm of total SO<sub>2</sub> (potassium metabisulfite). Fermentations were carried out in an automated fermentation sampler\*.



## Key finding

The most promising candidate, a *Hanseniaspora opuntiae* isolate, withstood 65 ppm SO<sub>2</sub>, similar to the *Saccharomyces cerevisiae* control. Even though, it could not finish fermentation, it consumed around 150 g/L of sugar.

## Industry significance

This *Hanseniaspora* strain will be evaluated for its desirable sensory properties. If these are positive, it could broaden the portfolio of commercial strains enabling winemakers to protect their juice with SO<sub>2</sub> and still gain the advantages of non-*Saccharomyces* yeast contribution to their winemaking.

### FOR MORE INFORMATION

Natalia Caliani  
E: natalia.caliani@adelaide.edu.au  
W: www.arcwinecentre.org.au/

\*If you want to know more about the automated fermentation sampler we use, check:  
<https://doi.org/10.3390/fermentation7040205>

### ACKNOWLEDGEMENTS



The ARC Training Centre for Innovative Wine Production is funded by the Australian Government (IC170100008) with additional support from Wine Australia and industry partners.



<sup>1</sup>ARC Training Centre for Innovative Wine Production  
<sup>2</sup>University of Adelaide  
<sup>3</sup>Ecole Nationale Supérieure des Sciences Agronomiques de Bordeaux Aquitaine  
<sup>4</sup>Lallemand Australia Pty Ltd  
<sup>5</sup>The Australian Wine Research Institute  
<sup>6</sup>Chalmers Wines Pty Ltd