



WINE RESEARCHERS SEQUENCE 'BRETT' GENOME IN WORLD FIRST

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Scientists at The Australian Wine Research Institute have sequenced the genome of *Dekkera bruxellensis* (*Brettanomyces*), the yeast organism commonly known as 'Brett', in a world first for the Australian wine industry.

The breakthrough offers Australian winemakers a competitive advantage in managing the troublesome yeast, which has the potential to spoil wine with its 'medicinal' and 'metallic' characters.

"The Australian Wine Research Institute has been working proactively for more than two decades to give Australian wine producers an upper hand against Brett," said Professor Sakkie Pretorius, Managing Director, AWRI.

"Sequencing the Brett genome, which reveals its genetic blueprint, means the Australian wine industry can future-proof its strategy against Brett and the risk of spoilage. We've put science to work to build economic security for our industry."

Brettanomyces is well known to winemakers throughout the world as a so-called 'spoilage yeast'. In Australia, the yeast has been brought under control through hard work by winemakers using research and recommendations by the AWRI. The incidence of Brett spoilage in Australia has dropped by ninety per cent.

AWRI recommendations address oak barrel hygiene and effective sulfite use at low dosage in combination with appropriate pH management. The possibility of Brett developing sulfite resistance was one reason why the AWRI set out to crack its genetic code, using new genomics technology to identify and target Brett's weak spots more effectively. The project was funded by the Grape and Wine Research Development Corporation (GWRDC).

"Sequencing the Brett genome means we can investigate the potential for an emergence of a 'super' strain that is resistant to sulfite treatment. We've already found the most important gene responsible for sulfite tolerance in Brett," said Dr Chris Curtin, the lead AWRI researcher on the Brett genomics project.

"It was similar to working on a giant jigsaw puzzle, with millions of pieces, without a pattern or a picture to work from. But those long hours of painstaking work over many months delivered results. We've now cracked the code of 'the enemy' and we're working on new weapons for winemakers to use against this spoilage yeast."

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The work is described in an industry paper published in the November/December 2011 issue of the *Wine and Viticulture Journal*.

The Australian Wine Research Institute, a member of the Wine Innovation Cluster in Adelaide, is supported by Australia's grapegrowers and winemakers through their investment body, the GWRDC, with matching funds from the Australian Government.

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From left to right: The AWRI team involved - Dr Paul Chambers, Dr Anthony Borneman, Professor Sakkie Pretorius, Dr Chris Curtin