

Raise your glass to *Oenococcus oeni*, a real wine bug

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A person pours wine, on April 1, 2011 in Pauillac, southwestern France

Chateau Paradise or Chateau Rotgut? Why is it that one wine can be exquisitely smooth, and another stomach-turningly tart?

Oenologists say the answers are many, but one factor is a germ that helps to lower a wine's acidity.

Known by its Latin name of *Oenococcus oeni*, the useful bug is a so-called lactic acid bacterium.

It is widely involved in the second fermentation stage in red wines, and in some white and sparkling ones too, after a first fermentation—turning grape sugar into wine—has taken place.

In a process called malolactic conversion, *O. oeni*'s job is to "de-acidify" the wine and create a full, rounded mouth-feel.

Commercial winemakers use industrialised bacteria for a standardised product, but plenty of variables, such as the wine's level of [citric acid](#), can still cause an expensive upset.

New research by Spanish and Italian scientists may provide help.

In a study published by Britain's Royal Society, the team said they had drawn up a draft map of *O. oeni*'s toolkit—152 proteins that are unique to the bacterium and help to dictate the success of malolactic conversion.

The "proteome reference map" derives from the genome of a strain of *O. oeni* called ATCC BAA-1163—a code of DNA studded with 1,398 genes.

Only 10 percent of the strain's proteins have been sequenced so far, but even this should be helpful, the authors say.

"The harsh [wine](#) environment represents a challenge to the survival of *O. oeni* and can strongly affect the successful outcome of the vinification," the investigators say.

"A better understanding of the molecular mechanisms related to the stress adaptation and technical performance of *O. oeni* is crucial for the

characterisation and selection of strains for industrial purposes."

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