# Increased Microorganism Alcohol Tolerance Via Transformation of its pntAB Locus

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## ABSTRACT

Researchers at the University of California, Davis have developed microorganisms with increased alcohol tolerance by modifying the organisms' pntAB locus through expression of one or both of its pntA/pntB genes.

## FULL DESCRIPTION

Microorganisms that demonstrate increased tolerance to alcohol have applications in many, significant, industrial and commercial processes. Such organisms offer advantages in diverse fermentation techniques, including winemaking. These microorganisms possess altered proteins, outer envelopes, or plasma membrane lipid bilayers. Increased alcohol tolerance can occur in either a fungal or a bacterial species. Previous research has determined that these microorganisms can either inherit such characteristics from an ancestor or develop increased alcohol tolerance on their own.

Researchers at the University of California, Davis have developed a microorganism with increased alcohol tolerance as a result of transforming the expression of one or both of its pntA and pntB genes. Increased alcohol tolerance in bacteria has important implications when converting malic acid to lactic acid during winemaking. This process - known as malolactic fermentation or conversion - imparts important flavor profile and taste characteristics to many red and some white wines. This malolactic fermentation can occur as either a secondary fermentation or concurrent with the primary fermentation.

## APPLICATIONS

- Diverse commercial and industrial fermentation processes performed at high alcohol concentrations – including winemaking

## FEATURES/BENEFITS

- Maintains the productivity of bacteria and fungi even at higher alcohol concentrations
- Provides potential new processes routes for commercial scale fermentation
- Reduce production cost and increase production efficiency for industrial fermentation

## PATENT STATUS

| Country | Type | Number | Dated | Case |
|---|---|---|---|---|
| United States Of America | Published Application | 20190055525 | 02/21/2019 | 2019-582 |

## INVENTORS

- Mills, David A.

## OTHER INFORMATION

**KEYWORDS**

Microorganism alcohol tolerance, Fermentation, Bacteria, Fungi, Malolactic fermentation/conversion

**CATEGORIZED AS**

- **Agriculture & Animal Science**
  - Transgenics
- **Biotechnology**
  - Food
  - Genomics

**RELATED CASES**

2019-582-0

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Prebiotic Oligosaccharides
- Bifidobacterial Probiotics for Nursing and Weaning
- Reducing Free Milk Glycan Monomers Generated by the Neonate Gut Microbiota Eliminates Colonization by Dysbiotic Microbiome Members
- Additional Glycosyl Hydrolase is Critical to Bacteria's Ability to Consume HMOs
- Bifidobacterial Probiotic Supplements for Infants
- Glycoprotein Cleaving Enzyme Isolated from Bifidobacteria



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