



Modified Yeast to Boost Biofuel Yields

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WARF: P140199US02

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a yeast strain genetically engineered for enhanced xylose fermentation.

Overview

Producing biofuel on an industrial scale requires efficient fermentation of cellulosic plant material. Glucose and xylose are two of the most abundant sugars found in biomass. The yeast most commonly used for fermentation – *Saccharomyces cerevisiae* – can ferment glucose but not xylose.

Researchers hope to improve fermentation by identifying/mutating relevant genes in yeast. The ultimate goal is to create a genetically modified 'super-strain' ideal for industrial ethanol production.

The Invention

A UW–Madison researcher has developed an *S. cerevisiae* strain that is 80 percent more effective at fermenting xylose. He discovered that knocking out several genes (*hog1*, *isu1*, *gre3*, *ira1/2*) enables dramatically faster xylose fermentation under the anaerobic conditions favored by industry.

Applications

- Industrial ethanol production
- Plastics manufacturing and biomaterials

Key Benefits

- Strain is nine times better at fermenting xylose than its non-modified parent.

Additional Information

Related Technologies

- [WARF reference number P120307US01 describes another recombinant yeast strain with enhanced xylose fermentation capabilities.](#)
- [WARF reference number P100228US02 describes a recombinant yeast strain with improved ethanol tolerance.](#)

Tech Fields

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