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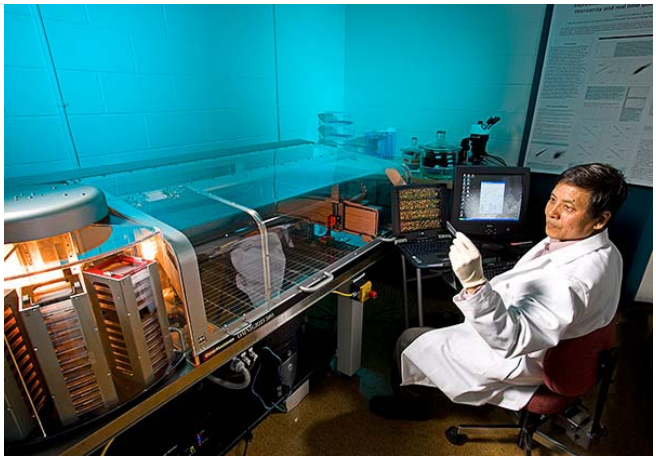
Challenges for Today. Solutions for Tomorrow.

Tolerant Ethanologenic Yeast Detoxify Biomass Conversion Inhibitors



What is this technology?

The newly-developed ethanologenic yeast *Saccharomyces cerevisiae* NRRL Y-50049 can withstand common inhibitors generated from lignocellulosic biomass conversion process. This tolerant strain is able to *in situ* detoxify inhibitors furfural and 5-hydroxymethylfurfural into less toxic compounds while producing a normal yield of ethanol.

Patent:

- U.S. Patent Application S/N 12/143,965 filed June 2008, Inihibitor tolerant *Saccharomyces cerevisiae* strain.

Publications:

- Liu, Z.L., B.C. Saha, and P.J. Slininger. 2008. Lignocellulosic biomass conversion to ethanol by *Saccharomyces*" *in*: Bioenergy pp17-36. J. Wall, C. Harwood, and A. Demain (eds.) ASM Press. Washington DC.
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- Liu, Z.L., and H.P. Blaschek. 2008. Biomass conversion inhibitors and *in situ* detoxification. *In:* Biomass to Biofuels. A. Vertes, N. Qureshi, H. Yukawa, and H. Blaschek (eds.) John Wiley & Sons, Ltd. West Sussex, UK (in press).
- Liu, Z.L., and M. Song. 2008. Genomic adaptation of *Saccharomyces cerevisiae* to inhibitors involving biomass conversion to ethanol. In: Current Advances in Mycology. M. Rai (ed.) Marcel Dekker, Publisher (in press).
- Song, M., and Z.L. Liu. 2007. A linear discrete dynamic system model for temporal gene interaction and regulatory network influence in response to bioethanol conversion inhibitor HMF for ethanologenic yeast. Lecture Notes Bioinfomatics 4532:77-95.
- Liu, Z.L. 2006. Genomic adaptation of ethanologenic yeast to biomass conversion inhibitors. Appl. Microbiol. Biotechnol. 73:27-36.
- Liu, Z.L., Slininger, P.J. and Gorsich, S. 2005. Enhanced biotransformation of furfural and 5-hydroxy methylfurfural by newly developed ethanologenic yeast strains. Appl. Biochem. Biotechnol. 121-124: 451-460.
- Liu, Z. L., Slininger, P. J., Dien, B. S., Berhow, M. A., Kurtzman, C. P., and Gorsich, S. W. 2004. Adaptive response of yeasts to furfural and 5-hydroxymethylfurfural and new chemical evidence for HMF conversion to 2,5-bis-hydroxymethylfuran. J. Ind. Microbiol. Biotechnol. 31: 345-352.

Moving Forward

- Partnership
- Pilot R&D
- Scale up

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