



Apr 9th, 2008 - 5:00 PM

Biological Breathalyzer

Morgan Schiermeier
Missouri University of Science and Technology

Herman Armstrong
Missouri University of Science and Technology

Rachel Klapper
Missouri University of Science and Technology

Brian Pink
Missouri University of Science and Technology

Jackie Schneider
Missouri University of Science and Technology

Follow this and additional works at: <https://scholarsmine.mst.edu/ugrc>

Schiermeier, Morgan; Armstrong, Herman; Klapper, Rachel; Pink, Brian; and Schneider, Jackie, "Biological Breathalyzer" (2008). *Undergraduate Research Conference at Missouri S&T*. 44.
<https://scholarsmine.mst.edu/ugrc/2008/oure/44>

This Poster is brought to you for free and open access by Scholars' Mine. It has been accepted for inclusion in Undergraduate Research Conference at Missouri S&T by an authorized administrator of Scholars' Mine. This work is protected by U. S. Copyright Law. Unauthorized use including reproduction for redistribution requires the permission of the copyright holder. For more information, please contact scholarsmine@mst.edu.

Morgan Schiermeier

Joint project with Herman Armstrong, Rachel Klapper, Brian Pink and Jackie Schneider

Department:	Biological Sciences
Major:	Biology
Research Advisors:	Dr. Katie Shannon and Dr. David Westenberg
Advisor's Department:	Biological Sciences

Biological Breathalyzer

The aim of this research is the construction of a biological breathalyzer through synthetic biology, specifically through use of the metabolic pathways of a species of the *Pichia* taxa. The yeast utilized is able to metabolize both ethanol and methanol. However, when both ethanol and methanol are present, the yeast prefers to metabolize ethanol such that an AOX gene is not expressed because the first known by-product of methanol metabolism is the AO enzyme from the AOX gene. The AOX gene promoter is fused with a fluorescence protein gene so expression of the AOX gene can be visually detected. When the cell is supplied with both ethanol and methanol, the amount of time before fluorescence will correspond to the amount of ethanol given to the cell. In this way, the concentration of ethanol can be determined.

Morgan Schiermeier is a senior at Missouri S&T majoring in biological sciences. He is from Vienna, Missouri and has been involved in the iGEM project for the last year.