EXPLOITABLE FOREGROUND

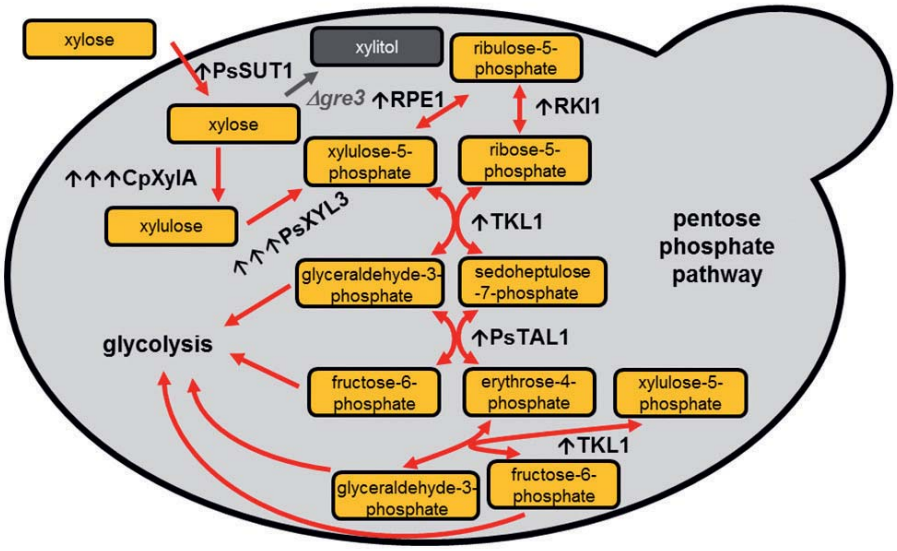
Development of 2nd Generation Biorefineries - Production of Dicarboxylic Acids and Bio-based Polymers Derived Thereof

Robust xylose-utilizing industrial yeast

Explanation and Purpose

An industrial Saccharomyces cerevisiae strain Ethanol Red has been engineered for efficient utilization of xylose. The strain comprises overexpression of three native and four heterologous genes, including a xylose isomerase from Clostridium phytofermentans, and deletion of the native GRE3 gene to prevent xylitol accumulation. The strain was further adapted to hardwood spent sulfite liquor (SSL) by adaptive laboratory evolution.

The strain is suitable for utilization of residual xylose in SSL streams.



Exploitation Strategy

The strain is available for research and commercial use from Technical University of Denmark under standard terms. The strain will be employed as platform strain in other research projects.

IPR Measures

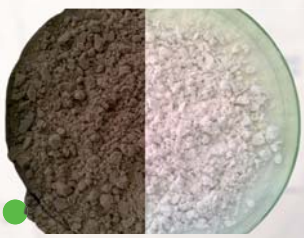
The isomerase gene is covered by a patent assigned to Lesaffre et Compagnie, hence a licence would be needed for commercial exploitation of the strain.

Further Research

The strain will be further engineered for production of various bio-based fuels and chemicals.

Impact of Exploitation

The yeast strain ferments glucose and xylose present in the hardwood spent sulfite liquor. The sugars can be converted to ethanol or, if the strain is further engineered, to other products.



Contact for Exploitable Result
Technical University of Denmark
Center for Biosustainability
Dr. Jens William Kindtler, CBO
jwki@biosustain.dtu.dk

Project Coordination
The Novo Nordisk Foundation Center for Biosustainability, DTU, Denmark
Dr. Irina Borodina
irbo@biosustain.dtu.dk

Project Dissemination
WIP Renewable Energies, Germany
Dr. Rainer Janssen
rainer.janssen@wip-munich.de

www.biorefine2g.eu

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