Synthetic Biology of Novel Thermophilic Bacteria for Enhanced Production of Ethanol from 5-Carbon Sugars

LDRD
LABORATORY DIRECTED RESEARCH & DEVELOPMENT

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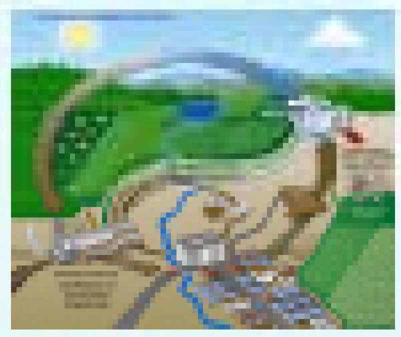
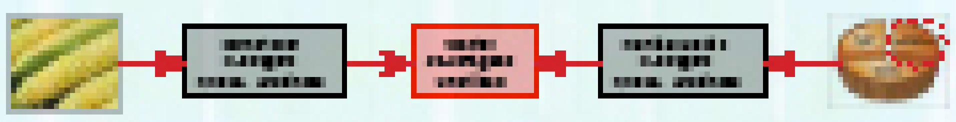
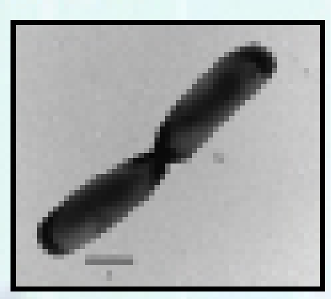
The Problem: Energy Independence Part of The Energy Solution … Plant Biomass



Bioethanol And Bottlenecks with State of the Art

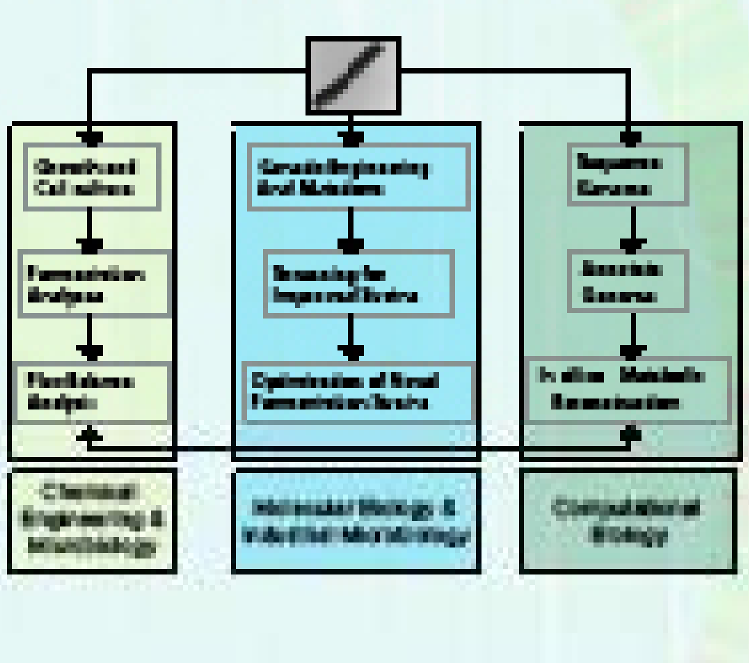


Our Proposed Solution: Engineer Thermophilic Bacteria for Ethanol Production

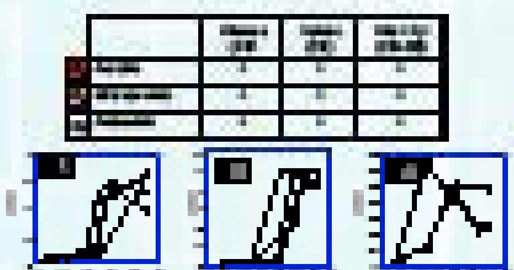


Scientific Advantages of Our Proposed Research

Synthetic Biology: Interdisciplinary Approach Leveraging Existing and Emerging Sandia Core Technologies

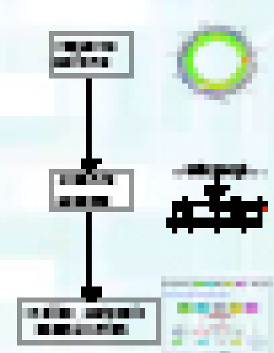


Geobacillus thermoglucosidasius M10EXG Metabolic Analysis: Glucose and Xylose Utilization with Varying O_2 Concentrations

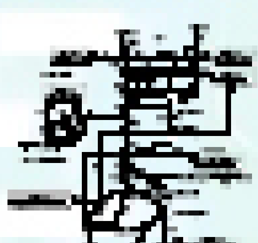


End-point Metabolite Analysis for G. thermoglucosidasius M10EXG

Genome Sequencing and *in silico* Metabolic Reconstruction



Flux Balance Analysis of Glucose Metabolism Under Micro-aerobic Growth by G. thermoglucosidasius M10EXG.



Significance of The Project

Sandia National Laboratories