SOLAZYME INTEGRATED BIOREFINERY PROJECT

PRESENTATION TO BIOMASS TECHNICAL ADVISORY COMMITTEE

NOVEMBER 15, 2012
AGENDA

• Solazyme Technology Overview

• Solazyme IBR Project Overview

• Project Funding

• Project Scope and Schedule

• Project Performance and Status
**Limited Suitable Land for Oil Crops**

- 17% Oil
- 83% Carbohydrate

**Global Petroleum Demand** (B barrels/year)

Source: EIA

**Natural Oils Market Growing** (M MT/year)

Source: FAO

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Source: FAO
SOLAZYME BACKGROUND

FLEXIBLE INPUT

- Sugarcane
- Corn and Stover
- Miscanthus
- Switchgrass
- Forest Residue
- Waste Streams

MULTIPLE MARKETS

- Fuels
- Chemicals
- Nutrionals
- Skin & Personal Care

HIGHLY PRODUCTIVE MICROALGAE

- > 80% oil*
- *The average wild algae only has a 5-10% oil content

OIL DESIGNED TO SPECIFICATION
OIL TAILORING PLATFORM

**CHAIN LENGTH CONTROL**

**SATURATION LEVEL**

**FUNCTIONAL GROUPS**

**Chain Length Engineering (C10 – C14)**

**Saturation Engineering**

**High Oleic Engineering (C18:1)**

![Graphs showing chain length, saturation, and high oleic engineering for natural host and optimized strain.](image-url)
COMPREHENSIVE FUELS STRATEGY

LAND

SEA

AIR
Solazyme & Propel bring Soladiesel® BD to consumers in pilot program

Soladiesel® BD meets or exceeds ASTM quality specifications

Soladiesel® BD significantly outperforms ultra-low sulfur diesel in total hydrocarbons (THC), carbon monoxide (CO) and particulate matter tailpipe emissions

In four markets across the Bay Area, drivers can now choose Propel B20 biodiesel made from Solazyme’s 100% algae-derived Soladiesel® BD
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<table>
<thead>
<tr>
<th><strong>PROJECT TITLE</strong></th>
<th>Solazyme Integrated Biorefinery (SzIBR); Diesel Fuels from Heterotrophic Algae</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROJECT DESCRIPTION</strong></td>
<td>Solazyme will build, operate and optimize a pilot-scale “Solazyme Integrated Biorefinery.” SzIBR will demonstrate integrated scale-up of Solazyme’s novel heterotrophic algal oil biomanufacturing process, validate the projected commercial-scale economics of producing multiple advanced biofuels, and enable Solazyme to collect the data necessary to complete design of the first commercial-scale facility.</td>
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<tr>
<td><strong>PROJECT AWARD DATE</strong></td>
<td>January 28, 2010</td>
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<tr>
<td><strong>PROJECT TYPE</strong></td>
<td>Cooperative Agreement</td>
</tr>
<tr>
<td><strong>TOTAL GOV’T SHARE</strong></td>
<td>$21,765,738</td>
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This project is housed at a Solazyme-owned facility which supports multiple Solazyme activities. The facility was not purchased with DOE funds.
SOLAZYM IBR PROJECT OBJECTIVES

- Expeditiously commence construction and operations
- Integrate all process unit operations into a pilot-scale biorefinery
- Validate feasibility of low cost production at commercial scale
- Demonstrate refining of algal oil into fully-compliant liquid transportation fuels
- Accelerate development of high-impact lignocellulosic feedstocks
- Successfully complete the project on schedule
PROJECT SIGNIFICANCE

First of its kind algae biorefinery producing tailored oils that can be refined into drop-in fuels

• Fully integrated unit operations- an indispensable step in reaching commercial scale
• Scaled feasibility of producing renewable drop-in replacements for petroleum
• National security benefits- SzIBR is capable of making hundreds of thousands of gallons for use in military platforms
• Critical link to convert cellulosic feedstocks to oil
  • Creating path to cellulose-derived oils and fuels from wood pulp waste & other feedstocks
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DOE cost capped at $21,765,738. Remaining project execution costs are paid by Solazyme.

DOE Cost Share $21,765,738 (71.5%)
Solazyme Cost Share + $8,688,313 (28.5%)
Total Project Forecast = $30,434,051

Project expenses include:

• IBR equipment
• IBR construction
• Staff labor and travel

• Fermentation feedstock
  • Sucrose and cellulosic sugar
• Algal oil manufacturing
• Algal oil refining to fuel
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PROJECT SCOPE AND SCHEDULE

- **IBR Construction & Commissioning**  
  4Q2011 – 3Q2012

  - All equipment installed and operated in integrated process
  - 58 jobs created (2Q2012)
  - First crude algal oil production June 2012

- **Algal Oil Manufacturing**  
  4Q2012 – 3Q2013

  - Domestically sourced sugar cane and cellulosic feedstocks
  - Algal oil production underway

- **Fuel Production**  
  4Q2013 – 1Q2014

  - Refining partner to convert oils to drop-in transportation fuel
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**PROJECT PERFORMANCE**

*Solazyme has met all project objectives to date, and is on track for on time project completion 1Q2014.*

<table>
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<th>Project Objective</th>
<th>Status</th>
<th>Scheduled Completion Date</th>
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<td>Validate feasibility of low cost production at commercial scale</td>
<td>Ongoing</td>
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IBR PROJECT STATUS (NOVEMBER 15, 2012)

- IBR has been built and is fully operational
- DOE manufacturing runs in progress