Financing Algae Projects

Martin A. Sabarsky, CEO
October 2, 2014
Summary of Cellana Financing Strategy

1. **Establish Robust, Multi-Product Business Model**
   A. Capable of being successful based on current yields, costs, & prices

2. **De-Risk Commercial Development in Staged Approach**
   A. Establish breadth and depth of platform through industrial-scale production of diverse strains meeting business model criteria
   B. Conduct large-scale product trials across all product areas
   C. Sign binding, contingent off-take agreements for product streams from future commercial facilities (e.g., 2013 Off-Take with Neste Oil)
   D. Scaling based on modular components (PBRs, Ponds) designed to be on the same order of magnitude as those demonstration facility ( <10x )

3. **Maximize Non-Dilutive Funding**
   A. Joint Venture with Shell Oil – one of the largest in the industry
   B. Multiple multi-million-dollar grant programs / consortia
Cellana Partners Since Inception -- Corporate and Gov’t

**Over $100 million** invested in R&D, facilities, production, product trials

- **Pilot Facility Production (10+MT) ($25MM+)**
- **Ongoing Demonstration Facility Production (13+MT)**
- **CEROS Funding ($700K)**
- **Shell JV Funding ($70MM+)**
- **Ongoing DOE / USDA Funding ($15MM+)**

1997 / 2005 • 2006 • 2007 • 2008 • 2009 • 2010 • 2011 • 2012 • 2013 • 2014

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Cellana Partners Since Inception -- Academic & Nat’l Labs

*Over $100 million* invested in R&D, facilities, production, product trials
Cellana’s Biorefinery Business Model Builds on a Foundation of Biofuel Research to Address Additional Valuable Products

Omega-3 nutritional oils and high-value aquaculture / animal feed products are an extension of Cellana’s core competency - screening, developing, and producing algae biofuel feedstock.
ALDUO™ Enables Economic Algae Production Unencumbered by Contamination by Balancing Higher-Cost PBRs with Lower-Cost Open Ponds

Covered by US Patents 7,770,322 & 5,541,056, Similar Patents/Patents pending in Europe, Australia, South Africa, Brazil, Japan, Mexico
Three-Product Biorefinery: 3 Products From Each Strain Via ALDUO™ + “Conventional” Upstream/Downstream Processes

- “Off-the-shelf” ag inputs + sunlight + CO₂ + ALDUO™ = ReNew Algae
- “Off-the-shelf” harvesting, de-watering, & oil/biomass separation techniques

ReNew Algae

ReNew Feed

ReNew Omega-3

ReNew Fuel
What We Like About Marine Algae—The Right Kinds of Proteins

Amino acid distribution is comparable to high-value food & feed proteins

Source: Williams and Laurens, 2010
... And They Make the Right Kinds of Oils for *BOTH* Biofuels *AND* Omega-3 Nutritional Oils ...
Flexible Biorefinery Production / Revenue Model
Bioproducts Generated from the Use of the Entire Algae Biomass

891kg Total per MT* (11% yield loss)

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

121kg Biocrude Oil
62kg Omega-3 Oil (35% conc.)
708kg Algae Meal (Residual Proteins, Sugars, Minerals, Lipids, & Micronutrients)

@ $100/bbl, $0.68/kg (fossil petroleum px benchmark)
@ $100/kg (discount to Martek DHA wholesale px benchmark)
@ $1.00/kg (premium to soymeal px benchmark; discount to fishmeal px benchmark)

$6,928 per MT (dry weight)
$82
$6,138
$708

* Reflects recovery based on initial whole algae fraction of 6% Omega-3 oils, 25% Biocrude oil, 69% Algae Meal (Protein/Sugars/Minerals/Lipids/Micronutrients), and 11% total yield loss after two separations
Highly Profitable Production of Algae Bioproducts
Projected Revenue & Costs per MT for 88-ha. Commercial-Scale Facility in USA, 2016

Estimated 46% Gross Margin and 62% Cash Margin at current yields / costs
(Higher margins / lower unit costs at larger scale and over time)

- **Revenue**
  - $6,928 per MT
  - $6,138
  - $708
  - $82

- **Production cost**
  - $3,712 per MT
  - $1,046 depreciation
  - $2,666 cash cost

- **Estimated:**
  - Gross Margin 46%
  - Cash Margin 62%

- **Estimated Cash Flow**:
  - Omega-3 Oil: $100 per kg (35% conc. DHA/EPA)
  - Algae Meal: $1.00 per kg
  - Biocrude Oil: $100 per bbl, $0.68 per kg

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Commercial-Scale Off-Take Agreement with Neste Oil

- Off-Take Agreement for algae oil announced June 2013
- Neste Oil is the largest refiner of renewable diesel in the world
- Multi-year off-take agreement
- Commercial-scale quantities of algae oil
- Contingencies for Cellana production capacity, EU/US sustainability criteria, and other factors
- Non-Exclusive for both parties
- “Samples have shown that Cellana is able to produce algae oil suitable for renewable fuel production by Neste Oil.”
- “The off-take agreement with Cellana allows us access to commercial-scale volumes of cost-competitive algae oil in the future.”

Neste Oil's renewable fuel plant in Rotterdam in the Netherlands was commissioned in 2011.

Neste Oil started up the world’s largest renewable diesel refinery in Singapore in November 2010.
Over 6 MT of Cellana’s ReNew™ Feed Used in Diverse & Successful Feed Trials

- Finfish, shellfish, chicken, pigs, cattle – most major sources of meat
- Successful large-scale feed trial for Salmon, Carp, & Shrimp
  - *Marine microalgae from biorefinery as a potential feed protein source for Atlantic salmon, common carp and whiteleg shrimp*, V. Kiron (Bodo University) *et al.*, published online: Aquaculture Nutrition, 3 APR 2012
    - Cellana’s ReNew Feed was acceptable for the three animals at the maximum levels tested (Salmon 10%, Carp 40%, Shrimp 40%)
    - There were negligible differences in growth and hardly any in the biochemical composition during the study period
- Successful large-scale feed trial for Broiler Chicks
    - Cellana’s ReNew™ Feed could substitute for 7.5% of soybean meal alone, or in combination with corn, in diets for broiler chicks when appropriate amino acids are added
Modular Growth Enables Scale-Up of Technology to Commercial Facilities

- **2004+** Laboratory Research
- **2004+** Pilot Facility
- **2008+** Kona Demonstration Facility (2.5 hectares)
- **2015-2016** N. America, Phase 1 (88 hectares; $83MM capex; 2016 Production: ~4,600 MT)
- **2018-2019** N. America, Phase 2 (additional 88 hectares for 176 hectares total; $84MM additional capex; 2019 Production: ~11,000 MT)

Other target sites around the globe identified – generally lower cost than in USA
Cellana Financing Strategy / Process

• In process of raising <$5MM Series A financing
  - Support corporate development and pre-commercial facility development activities

• Finance / Build First Commercial Facility (FCF)
  - FCF will be <$100MM to minimize total capital/financing required

• Project Equity
  - Assume 100% equity for first (small-scale) owned & operated commercial facility
  - Minimize equity % in project financing packages for expansions / subsequent commercial facilities

• Maximize project debt for all commercial facilities
  - Potentially available for 1\textsuperscript{st} and 2\textsuperscript{nd} commercial facilities
    ▪ DOE/USDA loan guarantees for renewables projects
    ▪ Local/State government cleantech support programs
  - Higher debt levels possible for 3\textsuperscript{rd}, 4\textsuperscript{th}, etc. commercial facilities
Scaling of Algae Biomass Industry – Easy as “A, B, C”

<table>
<thead>
<tr>
<th>Crude Oil Production</th>
<th>≤ 1 billion gpy</th>
<th>1-2 billion gpy</th>
<th>10+ billions gpy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production cost</td>
<td>&gt; $2/kg</td>
<td>≤ $2/kg</td>
<td>≤ $1/kg</td>
</tr>
<tr>
<td>Algae biomass yield</td>
<td>&lt; 70MT/yr</td>
<td>&gt; 50MT/yr</td>
<td>&gt; 60MT/yr</td>
</tr>
<tr>
<td>Food, feed, &amp; fuel prices</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
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Thank You

For further information please visit www.cellana.com

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