Value Proposition

Improving Animal and Human Health and Nutrition, by Upgrading Plant-Based Meal to High Quality Protein
Market Challenge

• Year 2050 – 100% More Food
  – Largest Increase: Animal Protein

• Fish are Most Efficient at Producing Animal Protein
  – Wild-caught fisheries
    • 57% fully exploited
    • 30% over-exploited
    • Annual harvest peaked at 86 million tons in 1996
    • Harvest now stabilized at 80 million tons
Market Challenge

• **Aquaculture is Filling the Growing Gap**
  – Growth rate of 9% annually
  – Supplies >40% of world market demand
  – Will soon exceed wild caught harvest
  – But aquaculture depends on fish meal as primary feed ingredient
  – Fish feed represents 40-70% of aquaculture production costs
Market Challenge

• Fish Meal Resources
  – 70% of annual production used in aquaculture
  – Fish meal production has dropped by >40% since 2000 due to over-exploitation of wild stocks
  – Aquaculture growth will soon consume all fish meal
  – Prices have risen to $1,500-2,000+ per ton
Market Challenge

• Plant Based Proteins as Replacements for Fish Meal
  – Soybean meal or soy protein concentrates
  – Corn distillers’ grains
  – Canola meal

• Successful at 20-50% Replacements
  – But fiber, oligosaccharides, and anti-nutritional factors limit higher inclusion rates
Market Opportunity

Global Commodity Pricing
(Source: World Bank)

Price / MT

Fish Meal

Soybean Meal
Process Description

• Fungal Incubation Process
  – GRAS Status fungi
  – Convert oligosaccharides and fibers into high protein cell mass
  – Degrade/consume anti-nutritional factors, and enhance digestibility
Bench-Scale Research
Pilot-Scale Production
Process Description

• **Protein Levels**
  – SBM-based: ~70% protein
  – DDGS-based: >50% protein
  – Canola meal-based: ~50% protein

• **Anti-nutritional Level Reductions**
  – Trypsin inhibitors, glucosinolates: 80-95%
  – Oligosaccharides: 95-100%
  – Fiber: 15-25%
Technology Platform

- **Sustainable Process**
  - Biological Conversion
  - Low Energy and Water Use
  - No Waste or By-Products

- **Sustainable Product**
  - Renewable Plant-Based Inputs
  - Anti-Nutritional Factors Removed
  - High Protein / Amino Acid Digestibility

- **Strong Intellectual Property Portfolio**
Product Advantages

Digestibility

Fishmeal | AquaTech 2.0 | Sola | Hamlet | Pepsoygen | Empyreal

Growth Performance

Fish Meal | AquaTech 1.0 | SPC Competitor
Scale-Up / Financial Projections

2014
Pilot Plant Operation

2015
Commercial Plant Construction / Operation (15,000 MT)
Capital: $20M
EBITDA: $8.3M

2016
Commercial Plant Construction / Operation (150,000 MT)
Capital: $60M
EBITDA: $83M
World-Class TEAM

• **Mark Luecke** – Managing Director and CEO
  – Innovation Partners / Start-Up Leadership and Transaction Experience

• **Jason Bootsma, Ph.D.** – Chief Technology Officer
  – Biological Process Engineering, Scale-Up Experience

• **Dennis Harstad** – Chief Operating Officer
  – Biological Plant Construction, Start-Up, Management Experience

• **Daryl Basham, Ph.D.** – Vice President, Intellectual Property

• **Mary Beth Fishback, M.S., MPH** – Director of Operations

• **Sue Lancaster, M.S.** – Director of Business Development

• **Bill Gibbons, Ph.D.** – Chief Science Officer – Biological Processing

• **Mike Brown, Ph.D.** – Chief Science Officer – Animal Nutrition

• **Todd Lahti** – Independent Board Member
  – MCN BioProducts – Sold to Bunge in 2012
World-Class Capabilities
Company Milestones

• Pilot Scale Plant Operation
• Feeding Trials in Multiple Species
  – Purchase Agreements
• Commercial Plant Construction
  – Capital Raise
• Research and Development Pipeline
  – Other Upgraded Plant-Based Meal
  – Upgraded Plant-Based Oil