



ALGAE BIOMASS SUMMIT 2017

SALT LAKE CITY • OCTOBER 29 – NOVEMBER 1

2017 Algae Biomass Summit Detailed Agenda

Sunday, Oct 29

12:00 pm – 7:00 pm Registration

6:00 pm – 7:00 pm Algae Biomass Organization Annual Meeting

7:00 pm -- 8:15 pm Algae 101

Whether you are attending for the first time of the 11th, you will take something valuable away from this industry orientation. Perfect for investors, those new to the Summit, or anyone wanting an inside track to the week's activities and personalities.

Monday, Oct 30

7:00 am – 5:00 pm Registration

8:00 am – 9:00 am Opening Plenary Session 1 Keynote

9:00 am – 10:15 am Plenary Session 1 Panel: Nutrition

The Growing Role of Algae in Health & Nutrition

Whether as a sustainable source of alternative proteins, nutraceuticals and oils, or as a production platform for innovative therapies and new drugs, algae are increasingly being looked to as a key source of health and nutrition solutions for the 21st century. This panel brings together algae innovators with brand owners – from global nutrition leaders to pioneers in plant-based products – to discuss opportunities and challenges in bringing algae health solutions to the global market.

Chris Butt, Principal Scientist, DSM

Uma Sudhan, CEO, Valensa International

Xun Wang, CEO, Triton Algae Innovations

Miguel Calatayud, Qualitas Health

10:15 am – 10:30 am Ribbon Cutting and Grand Opening of the 2017 Algae Biomass Summit

10:30 am – 11:00 am Exhibit Hall Opening / Energy Break / Young Innovators Lounge

11:00 am – 11:30 am Algae Foundation and Technical Standards Update

11:30 am – 12:45 pm Plenary Session Panel 2: Finance

Getting to Scale: Where Will the Future of Algae Tech Investment Come From?

Algae innovation offers solutions in agriculture, health, environment, materials, manufacturing, and more. This diversity is both the industry's strength and its challenge. Investors from Wall Street to Main Street discuss the investment landscape from ag tech to domestic infrastructure.

Moderator: Martin Sabarsky, CEO, Cellana

Ab Basu, Executive Director, Rural Jobs Coalition

Reid C. Hutchins, Principal, Advantage Capital

Rep. Scott Sandall, State Representative Utah District 1

12:45 pm – 1:45 pm Lunch in the Exhibit and Poster Hall

1:45 pm – 3:15 pm Breakout Session 1 – Concurrent Track Panels

Biology

Searching for Solutions: Methods for Strain Screening and Characterization

The vast functional diversity of algae has motivated us to screen existing strains to identify better traits for commercial development. At the same time, it is important to understand how strains behave in engineered cultivation systems. The presentations in this session will cover new methods for isolating strains with improved performance, as well as evaluating their growth and productivity. This session will present strain selection activities at multiple scales, the impact of leveraging genetics for strain selection, evolutionary approaches, and other analytical techniques.

Moderator: Kenneth Reardon, Colorado State University

Taraka Dale, Los Alamos National Laboratory

Michael Huesemann, Pacific Northwest National Laboratory

Paul Roessler, Algenol Biotech

Christina Tyler, Los Alamos National Laboratory

Josh Stepanek, St. Cloud State University

Commercialization, Finance & Policy

Products, Products, Products: Producing and recovering nutraceuticals and other high valued nutritional products

A variety of high valued products are being investigated in the commercial space. This session will present on challenges and advancements not only in production but recovery of Spirulina, Astaxanthin, Polyunsaturated Oils, and Omega-3 oils.

Moderator: Ian Woertz, MicroBio Engineering, Inc.

Amha Belay, Earthrise Nutritionals

James Irwin, Algaecan Biotech, Ltd.

Yubin Zheng, Shandong Jinjing Biotechnology Co., Ltd.

Rebecca White, Qualitas Health, Inc.

Thushan Withana-Gamage, POS Bio-Sciences

Engineering & Analysis

Beginning with the End in Mind: How Algae Applications Affect Growth Rates and the Cultivation System Design

As interest in the diverse set of applications for industrial scale algae cultivation increases, more attention is being paid to how these applications influences growth environments. In this session, speakers will address how algae cultivation systems are affected by their focus on production of fertilizer, wastewater treatment and carbon sequestration.

Moderator: Sandeep Kumar, Old Dominion University

Ruth Spierling, MicroBio Engineering, Inc.
Martin Gross, Gross-Wen Technologies, Inc.
Daniel Mohler, University of Kentucky, CAER
Derek Hess, Colorado State University
Sandeep Kumar, Old Dominion University

Focus Topic

The Elephant in the Room: Macroalgae!

Macroalgae represent a promising area for the production of biomass. The Department of Energy is currently investing with the goal of developing transformative technologies to reduce the cost of algal-based production. This session will overview current technologies, future research projects, and current economics for the production of macroalgae.

Moderator: Ira Levine, University of Southern Maine
Jason Quinn, Colorado State University
Stefan Kraan, Ocean Harvest Technology
Mark von Keitz, ARPA-E
Dinhabandu Sahoo, University of Delhi
Charles Yarish, University of Connecticut

3:15 pm – 4:00 pm Exhibit Hall / Energy Break / Young Innovators Lounge

4:00 pm – 5:30 pm **Breakout Session 2 – Concurrent Track Panels**

Biology

Approaches to Identifying and Developing Novel Strains

Strains with improved performance can be isolated from natural environments or developed through cellular engineering. Presentations in this session will cover the isolation of strains from deserts and high salt environments, the use of synthetic biology to develop new strains, and the use of phylogenetics to evaluate novel strains.

Moderator: Taraka Dale, Los Alamos National Laboratory
Dries Vandamme, KU Leuven Campus Kulak Belgium
Michael Sandmann, Institute for Food & Environmental Research e.V.
Richard Sayre, Los Alamos National Laboratory

Commercialization, Finance & Policy

Dollars and Cents: Economic and Policy changes in algae

This session will cover a broad range of topics including funding outlook, research tax credits, changes in EPA regulations for genetic organisms, and IP valuation. The economic viability of algae systems are dependent on advancements in all of these areas.

Moderator: Rebecca White, Qualitas Health, Inc.
Thomas Byrne, Carlson & Company LLP
Jeremiah Frueauf, Sterne Kessler Goldstein & Fox LLP

Clare Thorp, Biotechnology Innovation Organization

Engineering & Analysis

Leveraging Advances in Computational Modeling to Bend the Algae Cost Curve

The design and operation of algae production systems is benefiting from advances in modeling and less expensive computational power. In this session, speakers will address how computational modeling serves as an important tool in optimizing algae cultivation systems.

Moderator: Carlos Quiroz-Arita, Colorado State University
Jeremy Pruvost, AlgoSource Technologies-University of Nantes
Samuel Compton, Colorado State University
Neal Adler, MicroBio Engineering, Inc.
Myra Blaylock, Sandia National Laboratory
Carlos Quiroz-Arita, Colorado State University

Focus Topic

Turning One Green Thing into Another: Novel Algae Conversion Techniques at the Interface of Engineering and Commercialization

A critical step in gaining economic value from algae cultivation is conversion to valuable products. There are a broad range of downstream processing techniques available, giving producers options about which products to bring to market, and what engineered processes can be used to get there. This session bridges the gap between engineering and commercialization in a discussion of algae conversion and processing techniques that are compatible with a market-driven product development approach.

Eric Monroe, Sandia National Laboratory
Philip Pienkos, National Renewable Energy Laboratory
Andre Coleman, Pacific Northwest National Laboratory
Pascale Champagne, Queen's University
Jessica Tryner, Colorado State University

5:30 pm – 7:00 pm Grand Opening Reception / Poster Session #1
Exhibit & Poster Hall Open

Tuesday, Oct 31

7:00 am – 5:00 pm Registration
7:00 am – 8:00 am Exhibit & Poster Hall Open
7:15 am – 8:00 am Continental Breakfast in Exhibit & Poster Hall

8:00 am – 8:30 am Plenary Session 3 Keynote
8:30 am – 9:45 am Plenary Session 3 Panel: Agriculture & Feed

Sustaining the Future of Fish and Animal Feed

Algal omega-3 oils have broken out of the box, and are now being added to the ingredient portfolios of global feed leaders. What is the market opportunity, what are the challenges, and where do algal feed ingredients go from here? This panels assembles perspectives from the growing list of feed industry players who've invested in algae ingredients for a lively discussion on the future of feed.

9:45 am – 10:30 am Exhibit & Poster Hall / Energy Break / Young Innovators Lounge

10:30 am – 12:00 pm Breakout Session 3 – Concurrent Track Panels

Biology

Leveraging –Omics Tools to Understand Metabolic Diversity in Algal Systems

Microorganisms are complicated biological factories, but -omics tools offer new ways to understand the physiology, metabolism, and environmental responses of algae and cyanobacteria. Presentations in this session will provide information on new –omics tools and highlight their usefulness for probing algal metabolism.

Moderator: Michael Guarnieri, National Renewable Energy Laboratory
Robin Gerlach, Montana State University
Niu Du, University of California-San Diego
Aumaya Taleb, University of Nantes-GEPEA Laboratory
Peter Karp, SRI International
Kenneth Reardon, Colorado State University

Commercialization, Finance & Policy

Across the Pond: Advancements in Europe

Focusing on advancements across the value chain being made in Europe, the session will cover economic challenges, high valued products, and market analysis.

Moderator: Rene Wijffels, Wageningen University
Maria Barbosa, Wageningen University

Engineering & Analysis

Making the Most Out of Algae: Advances in Extraction, Processing and Conversion

Alongside the wide range of products that can be produced using algae is an equally varied set of techniques for mechanically and chemically altering algae into commercially viable products. In this session, speakers will address several key advances in the extraction, processing, and conversion of algae.

Moderator: Lieve Laurens, National Renewable Energy Laboratory
Katherine DeRose, Colorado State University
Michael Kempkes, Diversified Technologies, Inc.
Andrew Bessette, Old Dominion University
Xiang Cheng, University of Toronto
Lieve Laurens, National Renewable Energy Laboratory

Focus Topic

Beyond Fuels: Opportunities in Agriculture and Chemicals

Algae have the potential to produce chemicals and materials, and to provide solutions to agricultural challenges. Presentations in this session provide examples of these new opportunities, ranging from high-value products to integrating algae cultivation with agricultural residues.

Laura Carney, Heliae
Adriana Alvarez De la Hoz, University of Minnesota
Jianping Yu, National Renewable Energy Laboratory
Gregory Rorrer, Oregon State University
Peter Lammers, Arizona State University

12:00 pm – 1:30 pm Lunch in the Exhibit and Poster Hall / Poster Session #2

1:30 pm – 3:00 pm Breakout Session 4 – Concurrent Track Panels

Biology

Alternative Culturing Strategies

Productivity is essential for successful algal cultivations. This session focuses on alternative approaches to achieving high productivity, including polycultures, feeding strategies, and the manipulation of system ecology.

Moderator: Michael Huesemann, Pacific Northwest National Laboratory
Anthony Siccardi, Texas A&M AgriLife Research
Ty Samo, Lawrence Livermore National Laboratory
Omar Chiriboga, Oregon State University
Matthew Jackson, Montana State University
Frederique Belanger-Lepine, Universite Du Quebec, Trois-Rivieres

Commercialization, Finance & Policy

Thinking Outside the Pond: Advancements in Photobioreactors

Photobioreactors represent promising growth systems addressing some of the core issues with open systems. This session will present on advancements in physical growth systems and impact of automation on operations.

Moderator: Valerie Harmon, Harmon Consulting
Albert Vitale, Commercial Algae Professionals
Fritz Wintersteller, SCHOTT Tubing

Heikki Hyttinen, Subitec GmbH
Ed Legere, Algenol Biotech
Eugene Roebroek, LGem

Engineering & Analysis

Water, Water, Everywhere: Novel Approaches for Cost Effective Algae Harvesting and Dewatering

Moving from dilute volumes of algae suspended in water to dried and concentrated algae produce is an energy intensive and economically costly component of microalgae cultivation and processing. In this session, speakers will discuss a range of novel approaches for cost effective harvesting and dewatering of algae.

Moderator: Jordan Kern, University of North Carolina - Chapel Hill
Teodora Shuman, Seattle University
Alyssa Aligata, Colorado State University
Xuezhi Zhang, Institute of Hydrobiology, Chinese Academy of Sciences
Ashok Damle, Techverse, Inc.
Sridhar Viamajala, University of Toledo

Focus Topic

Navigating the Dual Role of Carbon as Pollutant and Critical Feedstock

Algal biofuels have tremendous potential as a low-carbon source of transportation fuel. At the same time, the potential for widespread, cost-competitive algae cultivation may be intrinsically limited by a lack of access to concentrated carbon feedstocks. Speakers in this session will discuss the role of algae in mitigating carbon pollution via co-location with power plants and approaches for addressing potential carbon supply bottlenecks in cultivation.

Moderator: Babetta Marrone, Los Alamos National Laboratory
Jacques Beaudry-Losique, Algenol Biotech
Everett Eustance, Biodesign Swette Center for Environmental Biotechnology of Arizona State University
Kyle Poole, MicroBio Engineering, Inc.
John Benemann, MicroBio Engineering, Inc.
Agasteswar Vadlamani, The University of Toledo

3:00 pm – 3:30 pm Exhibit Hall Opened / Energy Break / Young Innovators Lounge

3:30 pm – 5:00 pm Breakout Session 5 – Concurrent Track Panels

Biology

Waste Not Want Not: Impacts of Nutrient Source on Algal Biology

Nutrients are a critical aspect of algal systems for both biological and economic reasons. This session emphasizes research that evaluates the impact of a

variety of nutrient sources on algal biology, including data from small- to large-scale cultivations.

Moderator: Todd Lane, Sandia National Laboratory
Todd Pedersen, Montana State University
Rob Gardner, University of Minnesota
Thinesh Selvaratnam, AzCATI, Arizona State University
Ian Woertz, MicroBio Engineering, Inc.
Jorijn Janssen, Wageningen University and Research

Commercialization, Finance & Policy

Industry Leaders: Reports from Commercialization's Front Line – Part 1

Xun Wang, Triton Algae Innovations

Engineering & Analysis

Designing Algae Systems that Meet the “Triple Bottom Line”

Taking advantage of algae's economic and environmental potential requires approaches for measuring and optimizing the design of algae systems as both: 1) a stand-alone industrial processes; and 2) interactive components within larger industrial ecology contexts. In this session, speakers will discuss the application of techno-economic analysis (TEA) and life-cycle assessment (LCA) to measure the sustainability of algae systems in different circumstances.

Moderator: Jordan Kern, University of North Carolina – Chapel Hill
Chih-Ting Kuo, UIUC
Michael Walsh, Institute for Sustainable Energy, Boston University
Jennifer Markham, National Renewable Energy Laboratory
Deborah Sills, Bucknell University
Jordan Kern, UNC Chapel Hill, Institute for the Environment

Focus Topic

Striving to Close the Cycle: Role of Algae in the Fossil Fuel and Mining Industry

The Western U.S. has large reserves of fossil fuels, including coal, oil and gas, as well as large deposits of valuable minerals. Algae can play a role in both, improved economics and decreased footprint of operations by utilizing low value waste streams for the cultivation and processing of algae. The presentations in this session will summarize approaches and processes with the potential for value-enhanced operations through the use of algal-based technologies and products.

5:00 pm – 6:00 pm Evening Reception

5:30 pm – 6:30 pm VIP Event

Wednesday, Nov 1

7:00 am – 8:00 am Algae Biomass Organization Annual Membership Meeting

7:15 am – 8:00 am Continental Breakfast in Exhibit & Poster Hall
 7:30 am – 11:00 am Registration
 7:30 am – 10:45 am Exhibit & Poster Hall Open

8:00 am – 9:30 am Breakout Session 6 – Concurrent Track Panels

Biology

Algae as a Crop: Detection and Mitigation of Pathogens

Culture stability is critical to the integrity of large-scale production of algal biomass. This session highlights current research on strategies for improving biomass stability, with a focus on identifying and treating non-desirable contaminants.

Moderator: Rob Gardner, University of Minnesota
Thomas Dempster, AzCATI-Arizona State University
Carolyn Fisher, Sandia National Laboratory
Ryan Simkovsky, University of California-San Diego
Kunal Poorey, Sandia National Laboratory
Todd Lane, Sandia National Laboratory

Commercialization, Finance & Policy

Industry Leaders: Reports from Commercialization's Front Lines – Part 2

Engineering & Analysis

Waste not, want not: Optimizing the Use of Algae as a Treatment Method for Wastewater

A growing number of municipal and industrial wastewater facilities are taking advantage of the tremendous 'win-win' potential for integrating algae cultivation in wastewater treatment systems. Pilot-scale and commercial-scale demonstrations are proving that these systems can be reliable, effective, and economical. In this session, speakers will discuss ongoing projects that demonstrate the potential for algae cultivation to be paired with wastewater treatment.

Moderator: Ruth Spierling, MicroBio Engineering, Inc.
Lei Lui, Queens University
Juchao Yan, Eastern New Mexico University
Tryg Lundquist, Cal Poly San Luis Obispo
Garrett, Pallo, Clearas Water Recovery
Daniel Johnson, University of Illinois

9:30 am – 10:15 am Exhibit Hall Opened / Energy Break / Young Innovators Lounge
 10:15 am – 10:45 am Awards presentations / Announcement of the 2018 Summit

10:45 am – 12:15 pm Plenary Session 4: Nutrient Recycling

KEYNOTES:

Rob Teegarden, Vice President, Orlando Utilities Commission

Monetize carbon, nitrogen and other nutrients from waste streams

Mark Edwards, Co-Founder, Sustainable Phosphorus Alliance

The Looming phosphorus crisis and the opportunities it presents

Nutrient Recycling: Cashing in on Carbon, Nitrogen, and Other Nutrients and Turning Environmental Mitigation into Economic Opportunity

Recent years have seen a wave of endorsements for algae and other microbial approaches to mitigating industrial carbon emissions; this has taken on a more international flavor following ratification of the Paris Climate accord late in 2016. More recently domestic and international interests and projects have emerged that utilize algae to mitigate nutrient, typically phosphorus and nitrogen, releases from domestic wastewater, agriculture, and feedlot operations. Together with CO₂ these nutrients provide all of the ingredients to grow algae and produce a variety of marketable outcomes such as carbon capture and utilization (CCU), feeds, and foods. Representatives from utilities, manufacturing and agriculture discuss challenges and opportunities for applications of algae in nutrient recycling.

Moderator: Mark Allen, Accelergy

Rob Teegarden, Vice President, Orlando Utilities Commission

Mark Edwards, Co-Founder, Sustainable Phosphorus Alliance

Dal Wayment, General Manager, South Davis Sewer District, Utah

12:15 pm

2017 Summit Adjourns

1:15 pm - 6:15 p.m. Utah Algae Technology Tour

An exciting tour of regional algae technology deployments and research. This is your chance to interact directly with the engineers and scientists making real-world algae applications possible, view technologies up close, and network with fellow Summit attendees. You can add this tour to your ticket when you register.